Observation and inference worksheet pdf

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Quantitative vs Qualitative Observations Click link for the PDF of this worksheet: Qualitative-vs-Quantititive-Observations This is a nice review sheet to practice identifying Qualitative and Quantitive observations. Qualitative (think quality) are observations you can’t really put a number on, while Quantitative (think quantity) are observations that are measurable or have a number value. In this exercise, I have the students also underline the word(s) that help them decide if the observation is Qualitative or Quantitative. For fun, and to review Inferences, I have the students infer what the dog is thinking as s/he listens to the human given directions p , A trumptt made from a ram's hom and sounded in the synagogue on the Jewish High Holy Days. 81 THE CRITICAL READING SECTION 80 No wonder. But the wonder is what you can make a paradise out of. I told her that I grew up in a lumpen~ apartment in Cracow, squeezed into three rudimentary rooms with four other people, surrounded by squabbles, dark political rumblings, memories of wartime suffering, and daily struggle 85 for existence. And yet, when it came time to leave, I, too, felt I was being pushed out of the happy, safe enclosures of Eden. • Pertaining to dispossessed, often displaced, individuals who have been cui off from the socioeconomic dass with which they would ordinarily have been identified. 13. This passage serves mainly to (A) provide a detailed description of what the author loved most about her life in Poland (B) recount the author's experience of leaving Cracow (C) explain why the author's family chose to emigrate (D) convey the author's resilience during times of great upheaval (E) create a factual account of the author's family history 14. In lines 2·3, "I feel that my life is ending" most nearly reflects the author's (A) overwhelming sense of the desperate life that she and her family have led . (B) "d ,,,Ii,,';on Ih'l ,h, ;""v;ng ,(,m;!;" lif, (C) unsettling premonition that she witt not survive the voyage to Canada (D) severe state of depression that may lead her to seek professional help (E) irrational fear that she witt be permanently separated from her family 15. In lines 5·6, the author's description of the crowd on the shore suggests that (A) her family does not expect to find a warm welcome in Canada (B) her relatives will not be able to visit her in Canada (C) her family's friends have now turned against them (D) she will find it difficult to communicate with her Polish friends (E) the step she is taking is irreversible 82 16. The passage as a whole suggests that the autho r diffe rs from her parents in that she (A) has happier memories of Poland than her parents do (B) is more sociable than they are (C) feels no response to the rhythms of the Polish anthem (D) has no desire to wave to the crowd on the shore (El is not old enough to comprehend what she is leaving behind 17. For the author, the experience of leaving Cracow can best be described as (A) (B) (C) (D) (E) enlightening exhilarating annoying wrenching ennobling 18. In lines 17-19, the author's description of the customs police suggests that the author views them with (A) alarm (B) skepticism (C) disrespect (D) caution (E) paranoia 19. In lines 29·37, the author indicates that "nostalgia" differs from "tesknota" in that CA) tesknota cannot be explai ned in English (B) tesknota denotes a gloomy, bittersweet yearning (C) tesknota is a feeling that neve r ends (D) nostalgia is a more painful emotion than tesknota (E) nostalgia connotes a greater degree of desire than tesknota 20. By describing her feelings as having "shades and degrees" (tine 33), the author suggests that (Al she is allowing herself to grieve only a little at a time (B) she is numb to the pain of her grief (C) she is overwhelmed by her emotions (D) her sadness is greatest at night (E) her emotional state is multifaceted Passage-based Reading 21. In lines 33-34, the phrase ''I'm destined to know intimately" implies that the author (Al cannot escape the path her father has chosen for the family (B) believes that the future will bring many new emotional experiences (C) will be deeply affected by the experience of emigrating (D) must carefully analyze her conflicting emotional reactions (E) has much to learn about the experience of emigrating 22. The author refers to the "camera eye" (line 46) and the "heavy curtain" (line 47) in order to suggest (A) (B) (C) (D) (E) the difference between reality and art the importance of images to the human mind the difference between Poland and Canada her inability to overcome her fear of death her inability 10 imagine her future life Questions 26-31 are based on the following passage. The followi,zg passage is adapted from the writings of a Nobel Prize-winning scientist. Line 5 10 15 23. The description of the author as '"engaged in a stubborn refusal to move" (lines 65-66) suggests her (A) determination to claim her space on the crowded deck of the ship (B) refusal to accept the change in her life (C) wish to strike back at her parents for taking her away from Poland (D) resolve not to become a Canadian citizen (E) need 10 stay in close proximity to her family 20 25 24. In lines 66·69, the author suggests that her parents' comforting gesture indicates (A) a recognition of feelings of distress over their departure (B) their exhilaration and relief at the thought of personal freedom (C) a great deal of ambivalence regarding their decision (D) pain so great that they can feel no joy in their departure (E) a complete loss of feeling due to the stressful events 30 35 40 25. The author mentions the anecdote about the person she met at a "stylish party in New York" (line 70) in order to (A) prove that the author had become less childlike and more sophisticated (B) demonstrate tha t the author's parents had become affluent in Canada (C) describe how wealthy children are raised in Asian countries (D) make an important point about childhood happiness (E) show that the author had ultimately lived in the United States as well as Canada 45 50 Any scientist who is not a hypocrite will admit the important part that luck plays in scientific discovery. Our estimate of the importance of luck is inherently biased: we know when we benefit from luck, but in the nature of things cannot assess how often bad luck deprives us of the chance of making what might have been an important discovery. A colleague and I carried out an experiment in which little tissue fragments, which were \'ery difficult to work with, were injected into mice of different strains. If we had been more experienced, we would have injected only white blood cells (which would have been easier to handle) into the mice. We now know that if we had done this, we would not have discovered actively acquired toler· ance because the grafts would have in effect rejected their hosts. ObViously, we were lucky, but our scientific training enabled us to recognize the Significance of the accident. I think, therefore, that there was no need for the distinguished neurophysiologist Hodgkin to refer to his "feeling of guilt about suppressing the part which chance and good fortune played in what now seems to be a rather logical development." It might nevertheless seem as ifluck plays a dominant role in scientific discovery. I would like to challenge this view fo r the following reasons: we sometimes describe as "lucky" a person who wins a prize in a lottery at long odds; but if we describe such an event as luck, what word shall we use to describe the accidental d iscovery on a park bench of a lottery ticket that turns out to be the winning one? The two cases are quite different. A person who buys a lottery ticket is putting himself or herself in the way of winning a prize. This individual has, so to speak, purchased candidacy for such a turn of events and all the rest is a matter of mathematical probabilities. $0 it is with scientists. A scientist is anyone who, by observations and experiments conducted, by the literature read, and even by the company kept, puts himself or herself in the way of making a discovery. These individuals, by deliberate action, have enormously enlarged their awareness-their candidacy for good fortune- and will now take into account evidence of a kind that a beginner or a casual observer would probably overlook or misinterpret. I honestly do not think that blind luck of the kind enjoyed by someone who finds a winning lottery ticket for which he or she has not paid plays an important part in ~cience or that many important discoveries arise from the casual intersection of two lines. "Evidence that transplanting living tissues between adult organisms is pOS5ible. 83 THE CRITICAL READING S ECTIO N 55 Nearly all successful scientists have emphasized the importance of preparedness of mind, and I wanllO emphasize that this preparedness of mind 60 is worked for and paid for by a great deal of exertion and reflection. If these exertions lead to a discovery, then I think it would be inappropriate to credit such a discovery to luck. 26. The outcome of the experiment described in lines 9-l2 suggests that (Al luck worked against the scientists at first (B) the injection of only white blood cells into the mice allowed the two scientists to make their discovery (el the mice represented the perfect animals on which to conduct the experiment (0) the scientists involved were able to capitalize on luck (El scientific experiments occur in the concrete world, not in the abstract world of theory 27. In lines 35-40, the author uses the example of the lottery win ner in order to (A) suggest that blind luck occurs more frequently than people realize (B) suggest that luck plays a more important part in most events t han people realize (e) suggest that luck is not the correct term to use when referring to a significant scientific discovery (D) illustrate th~1I those who rely solely on,luck are unlikely to find success (E) illustrate that the two forms ofluck are analogous 28. In lines 44-45, "deliberate" most nearly means (A) cunning (B) slow (e) compelling (D) cautious (E) intentional 84 29. The author implies that a scientist achieves "candidacy for good fortune~ (line 46) by (A) making careful and repeated mathematical calculations (B) playing hunches rather than depending on research (C) performing enough experiments to increase the statistical probability of success (D) obtaining k nowledge that allows him or her to recognize important evidence (E) understanding the difference between luck and discovery 30. The meaning of the phrase "casual intersection of two lines" (line 54) is most dearly conveyed by which of the following? (A) Informal kinds of experiments (8) Two detailed plans (C) Geometrically precise experiments (D) Unanticipated coincidence (E) Predetermined events 3 1. The primary purpose of the passage is to (A) delineate a Single definition ofluck (8) show that scientists d iscover what they intend to find (e) compare science 10 a game (D) share the pleasure in making scientific discoveries (El discuss the role of luck in science THE CRITICAL READING SECTION Answer Key I.e 17. D 2. D 18. e e 19. B 4. B 20. E 5. B 2 1. C 6. E 22. E 7. A 23. B 8. E 24. A 9. D 25. D e 26. D 11. A 27. C 12. B 28. E 13. B 29. D 14. B 30. D 15. E 31. E 3. 10. 16. A Additional practice questions can be found in The Official SAT On/;ne Course at www.collegeboard.com/satonlinecourse. 86 CHAPTER 7 Practice for the Critical Reading Section Here's a chance to practice the test-taking skills and concepts you've been working on. Tryout diffe rent ways of approaching questions before you take the pract ice tests in the last section of this book. This chapter is intended to give you practice with the differe nt types of questions, so it isn't arranged in the same way as the actual SAT. 87 THE CRITICAL READING SECTION Practice Questions-Sentence Completion Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, ~ fits the meaning of the sentence as a whole. Example: Hoping to -.----- the dispute, negotiators proposed a compromise that they felt would be ------- to both labor and management. (A) enforce .. useful (B) end .. divisive (el overcome .. unattractive (D) extend .. satisfactory (El resolve .. acceptable @@©@ . 1. Investigation of the epidemic involved determining what was ------- about the people who were affected, what made them differ from those who remained well. (Al chronic (B) unique (C) fortunate (D) misunderstood (E) historical 2. Because management ......• the fact that employees find it difficult to work alertly al repetitious tasks, it sponsors numerous projects to .•..... enthusiasm for the job. (A) recognizes .. generate (B) disproves .. create (e) respects .. quench (D) controls .. regulate (E) surmises .. suspend 3. They did their best to avoid getting embroiled in the quarrel, preferring to maintain their .•.. as long as possible. (A) consciousness (8) suspense (C) interest (0) decisiveness (E) neutrality 4. The strong affinity of these wild sheep for mountains is not ....; mountain slopes represent .... because they effectively limit the ability of less agile predators to pursue the sheep. (A) (B) (C) (D) (El 88 useful .. peril accidental .. security instinctive .. attainment rest rained .. nourishment surprising .. inferiority 5. Even those who do not .•. -••• Robinson's views .... him as a candidate who has courageously refused to compromise his convictions. (A) shrink from .. condemn (B) profit from .. dismiss (C) concur with .. recognize (D) disagree with .. envision (E) dissent from .. remember 6. The alarm voiced by the committee investigating the accident had a .... effect, for its dire predictions motivated people to take precautions that ..•.... an ecological disaster. (A) trivial .. prompted (B) salutary .. averted (C) conciliatory .. supported (D) beneficial .. exacerbated (E) perverse .. vanquished 7. At the age offorty·fj,·e, with a worldwide reputation and an as yet unbroken string of notable successes to her credit, Carson was at the .... of her career. (A) paradigm (8) zenith (Cl fiasco (D) periphery (El inception 8. The fact that they cherished religiOUS objects.more than most of their other possessions .... the ..•.... role of religion in their lives. (A) (8) (C) (D) (El demonstrates .. crucial obliterates .. vital limits .. daily concerns .. informal denotes .. varying 9. Mary Cassatt, an Impressionist painter, was the epitome of the .... American; a native of Philadelphia who lived most of her life in Paris. (Al (8) (C) (D) (El conservative provincial benevolent prophetic expatriate 10. In the nineteenth centu ry many literary critics saw themselves as stern, authoritarian figures defending society against the .... -.. of those .... beings called authors. (A) (B) (C) (D) (E) depravities .. wayward at rocit ies .. exemplary merits .. ineffectual kudos .. antagonistic indidments .. secretive Practice for the Critical Reading Section Practice Questions-Passage-based Reading The passages below are followed by questions based on their content; questions following a pair of related passages may also be based on the relationship between the paired passages. Answer the questions on the basis of what is ~ or ~ in the passages and in any introductory material that may be provided. Questions I-II are based on the following passage. Fear of communism swept through the United States in the years fol/owing the Russian Revolution of 1917. Several stares passed espionage acts that restricted Line political discussion, and radicals of all descriptions were 5 roul/ded up in so-called Red Raids cOl/ducted by the attorney general's office. Some were convicted and imprisoned; others were deported. This was the background of a trial in Chicago involving twenty men charged under lllinois's espionage statute with 10 advocating the violent overthrow of the government. The charge rested on the fact that all the defendants were members of the newly formed Communist Labor party. The accused in the case were represented by Clarence Darrow, one of the fo remost defense attorneys in the 15 country. Throughout his career, Darrow had defended the poor and the despised against exploitation and prejudice. He defended the rights of labor unions,for example, at a time whe71 many $Ought to outlaw the strike, and he was resolute in defending constitutional 20 freedoms. The following are excerpts from Darrow's sum mation to the jury. Members of the Jury. . . . If you want to convict these twenty men, then do it. I ask no consideration on behalf of any one of them. They are no better than any other 25 twenty men or women; they are no better than the mil· lions down through the ages who have been prosecuted and convicted in cases like this. And if it is necessary for my clients to show that America is like all the reSI, if it is necessary that my clients shaH go to prison to show it, 30 then let them go. They can afford it if you members of the jury can; make no mistake about that. The State says my clients ~dare to criticize the Constitution." Yet this police officer (who the State says is a fine, right-living person) twice violated the federal Con35 stitulion while a prosecuting attorney was standing by. They entered Mr. Owen's home without a search warrant. They overhaulrd his papers. They found a flag, a red one, which he had the same right to have in his house that you have to keep a green one, or a reHow onr, or any 40 other color, and the officer impudently rolled it up and put another flag on the wall, nailed it there. By what right was that done? What about this ki nd of patriotism that 45 50 55 60 65 70 75 80 85 violates the Constitution? Has it come to pass in this country that officers of the law can trample on constitu· tional rights and then excuse it in a court of justice? . Most of what has been presented to this jury to stir up feeling in your souls has not the slightest bearing on provo ing conspiracy in this case. Take Mr. Lloyd's speech in Milwaukre. It had nothing to do with conspiracy. Whether the speech was a joke or was serious, I will not attempt to discuss. But I will say that if it was serious it was as mild as a summer's shower compared with many of the statements of those who are responSible for work· ing conditions in this country. We have heard from people in high places that those individuals who express sympathy with labor should be stood up against a wall and shot. We have heard people of position declare that individuals who criticiu the actions of those who are getting rich should be put in a cement ship with leaden sails and sent out to sea. Every violent appeal that could be conceived by the brain has been used by the powerful and the strong. [repeat, Mr. Lloyd's speech was gentle in comparison. Mr clients are condemned because they say in their platform that, while they vole, they believe the ballot is secondary to education and organization. Counsel sug· gests that those who get something they did not vote for are sinners, but I suspect you the jury know full well that my clients are right. Most of you have an eight·hour day. Did you get it by any vote you ever cast? No. It came about because workers laid down their tools and said we will no longer work until we get an eight·hour day. That is how they got the twelve· hour day, the ten· hour day, and the eight-hour day-not by voting but by laying down their tools. ·Then when it was over and the victory won .. then the politicians, in order to get the labor vote, passed legislation creating an eight-hour day. That is how things changed; victory preceded law.... You have been told thaI if you acquit these defendants you will be despised because you will endorse everything they believe. But I am not here to defend my clients' opin· ions. I am here to defend their right to express their opinions. I ask you, then, to decide this case upon the facts as you have heard them, in light of the law as you under· stand it, in light of the history of our country, whose in· stitutions ynu and I are bound to protect. I. Which best captures the meaning of the word "consideration~ in line 23? (A) Leniency (B) Contemplation (C) Due respect (D) Reasoned judgment (E) Legal rights 89 THE CRITICAL READING SECTION 2. By "They can afford it if you members of the jury can" (lines 30·31), Darrow means that (A) no harm will come to the defendants if they are convicted in Ihis case (B) the jurors witl be severely criticized by the press if they convict the defendants (e) the defendants are indifferent about the outcome of the trial (D) the verdict of the jury has financial implications for all of the people involved in the trial (El a verdict of guilt), would be a potential threat to everyone's rights 3. Lines 32·45 suggest that the case against Owen would have been dismissed if the judge had interpreted the Constitution in which of the following ways? (A) Defendants must have their rights read 10 them when they are arrested. (D) Giving false testimony in court is a crime. (C) Evidence gained by illegal means is not admissible in court. (D) No one can be tried twice for the same crime. (E) Defendants cannot be forced to give incriminating evidence against themselves. 4. In line 47, the word ~bearing" most nearly means (A) connection (B) posture (C) endurance (D) location (E) resemblance 5. In lines 46·62, Darrow's defense rests mainly on convincing the jury that (A) a double standard is being employed (B) the prosecution's evidence is untrustworthy (C) the defendants share mainstream American values (D) labor unions have the right to strike (E) the defendants should be tried by a federal rather than a state court 6. The information in lines 46-62 suggests that the prosecution treated Mr. Lloyd's speech primarily as (Al (B) (C) (D) (El sarcasm to be resented propaganda to be ridiculed criticism to be answered a threat to be feared a bad joke to be dismissed 7. Darrow accuses "people in high places" (lines 54-55) of (A) conspiring to murder members of the Communist party (B) encouraging violence against critics of wealthy business ol,'ners (C, pressuring members of the jury to convict the defendants (D) advocating crud and unusual punishment for criminals (E) insulting the public's intelligence by making foolish suggestions 8. The word "education" (line 65) is a reference to the need for (Al establishing schools to teach the ph ilosophy of the Communist Labor party (8) making workers aware of their economic and political rights (Cl teaching factory owners about the needs of laborers (D) creating opportunities for on-the-job training in business (E) helping workers to continue their schooling 9. the statement "victory preceded law" (line 77) refers to the fact that (Al social reform took place only after labor unions organized support for their political candidates (B) politicians need to win the support oflabor unions if they are to be elected (Cl politicians can introduce legislative reform only if they are elected to office (D) politicians did not initiate improved working conditions but legalized them after they were in place (El politicians have shown that they are more interested in winning elections than in legislative reform 10. Judging from lines 78-80, the jury had appare ntly been told that finding the defendants innocent would be the same as (A) (B) (Cl (D) (E) denying the importance of the Constitution giving people the right to strike encouraging passive resistance inhibiting free speech supporting communist doctrine 11. In order for Darrow to win the case, it would be most crucial that the jurors possess (A) a thorough understanding oflegal procedures and terminology (B) a thorough understanding of the principles and beliefs of the Communist Labor party (C) sympathy for labor's rights to safe and comfortable working conditions (D) the ability to separate the views of the defendants from the rights of the defendants (E) the courage to act in the best interests of the nation's economy 90 Practice for the Critical Reading Section Questions 12-17 are based on the following passage. The follow ing is adapted from a translation of a novel first published in 1894. The author of the novel was a Puerto Rican legislator. The thin crescent of the new moon was greeted by torrential rains. Juan del Sallo, confined by the weather, was at his desk amidst a sea of paper. He Lint! reached into one of the pigeonholes and extracted 5 a bundle wrapped in a rubber band: his son's letters. Gabriel, twenty-four years old, was in his final semester oflaw studies in Spain. Although Gabriel was away from Puerto Rico and already a man, TO Juan regarded as unfinished his mission as a father. He must prepare Gabriel for the disappointments of reality, and with consummate tact, without wounding his optimism, he sent him brief accounts of the island, entrusting him with the 15 maturity to form his own convictions. Juan removed the most recent letter from the bundle and began to reread it, tenderly. aDon't think," Gabriel wrote, "t hat I have come to believe our land is a paradise. I know all too 20 well that life is a st ruggle everywhere. But I cannot conceal from you the sorrow that your words have caused me, and a few paragraphs in your letter have struck me with the impact of cold water. 25 "In the first paragraph, Father, you wrote just as stirring the air with a fan will never split mountains, fits oflyrical passion will not solve arduous problfms. Those \\--ords caused me to tear up an 'Ode to the Patria' which J had written. In the ode, I sang the glories of my land, basing it upon its natural opulence and upon the romanticism of a great cloud of loving sentiment. I tore it up, wnvinced that it was like the breeze of a fan, spending its force in the void of futility. 35 ~Second paragraph .. . shrce Humanity owns 30 the world, as it grows it must becomf worthy of the splendor of its creation. Many societies succumb to theories without ever having the good fortune to put a Single one of their philosophical 40 speculations into practice. ... Natiom are like individuals: they achieve more when they plan to plant a tiny tret, and do it, than when they propose to raise an entire forest and then fall asleep in the furrows. Reality! Here you have the 45 great lever. We should concern ourselves with what already exists, in order to achieve what should be. By only singing of what we would like it to be, we accomplish nothing. I sense a severe loved him infinitely. as though Gabriel were made of fragi le Bohemian crystal. Thus passed the hours of that nostalgic day. 12, The passage is primarily concerned with a (Al father's attempt to regain his son's affection (B) son's skill at setti ng his father's mind at ease (e) father's desire for his son to include artistic sentiments in his life (D) son's ambition to return to his homeland as a successful lawyer and poet (E) father's efforts to guide his son's intellectual and emotional growth 13. Juan apparently considers "lyrical passion~ (line 27) to be (Al a necessary component in the creation of enduring poetry (B) an effective technique for inspiring action in others (C) an emotion that Gabriel needs to experience (D) of little consequence in practical malleTS (El less compelling than olher artistic feelings 14. Gabriel's stated reason for destroying his aOde to the Pat ria" most strongly suggests that (A) Gabriel's optimistic illusions had been shattered (8) (C) (D) (E) Gabriel's writing skills suddenly embarrassed him Gabriel had reversed his feelings about Puerto Rico Juan had preViously ridiculed similar pieces Juan had successfully turned Gabriel's attention back to his studies 15. Which of the following best paraphrases the point made by mentioning trees and forests in lines 42-43? (A) Detailed planning is essential in large operations. {Bl Even the strongest structure will come to ruin if it is built on a weak foundation. (e) Following through on a small project is preferable to simply conceiving a large one. (D) If individuals work together harmoniously, the entire commun ity will prosper. (El The most invigorating work is that Which is selfgenerated, not that assigned by others. criticism in these words. and since I know how much you love our land. that criticism is immensely important to me.Juan enjoyed rereading it all. His son had imagi· nation and wit. He loved everything with childlike candor, but was Simultaneously a thinker begin55 ning the great journey along life's rugged trail. Juan 50 91 THE CRITICAL REA DING SECTION 16. It can be inferred from th~ passage that Gabriel sees his father as a man who Questions 18-22 are based on the following passage. their heat budgets. But if they should stretch up as a tree does, they would lift their working parts, their leaves, into the streaming Arctic winds. Then it is likely that the plants could not absorb enough heat from the Sun to avoid being cooled below a critical temperature. Your heat budget does not balance if rou stand tall in the Arctic. Such thinking also helps explain other characteristics of plant design. A desert plant faces the opposite problem from that of an Arctic plantthe danger of overheating. It is short of water and so cannot cool itselfby evaporation without dehydrating. The familiar sticklike shape of desert plants represents one of the solutions to this prob· lem: the shape exposes the smallest possible surface to incoming solar radiat ion and provides the largest possible surface from which the plant can radiate heat. In tropical rain forests. by way of contrast, the scorching Sun is not a problem for plants because there is sufficient water. This ,"",orking model allows us to connect the general characteristics of the forms of plants in different habitats with factors such as temperature, availability of water, and presence or absence of seasonal diffe rences. Our Earth is covered with a patchwork qUilt of meteorological conditions, and the patterns of this patchwork are faithfully reflected by the plants. This excerpt discusses the rdatiollSlJip between plants and tlleir environments. 18. "[he passage primarily focuses on which of the following characteristics of plants? 30 (A) has strong views that arc well worth considering (8) has made great sacrifices to send him to law school (e) expects him to become a powerful and important leader (D) writes harsh observations that need to be moderated (E) is somewhat unsure of himself despite his confident manner 35 4(] 17. It can be inferred from the letters cited in the passage that which oflhe following exchanges has already occurred? (A) Juan voiced doubts abollt Gabriel's economic decisions. (B) Juan encouraged Gabriel to consider practicing law in Spain. (e) Gabriel sought his father's advice on affairs of the heart. (D) Gabriel displayed a dear reluctance to accept criticism. (E) Gabriel expressed some loftily idealistic thoughts. 45 50 55 Line 5 10 15 20 25 92 Why do some desert plants grow tall and thin like organ pipes? Why do most trees in the tropics keep their leaves year round? Why in the Arctic tundra are there no trees at all? After many years without convincing general answers, we now know much about what sets the fashion in plant design. Using terminology more characteristic of a thermal engineer than of a botanist, we can think of plants as mechanisms that must balance their heat budgets. A plant by day is staked out under the Sun with no way of sheltering itself. All day long it absorbs heat. If it did not lose as much heat as it gained, then eventually it would die. Plants get rid of their heat by warming the air around them, by evaporating water, and by radiating heat to the atmosphere and the cold, black reaches of space. Each plant must balance its heat budget so that its temperature is tolerable for the processes of life. Plants in the Arctic tundra lie dose to the ground in the thin layer of still air that dings there. A foot or two above the ground are the winds of Arctic cold. Tundra plants absorb heat from the Sun and tend to warm up; they probably balance most of their heat budgets by radiating heat to space. but also by warming the still air that is trapped among them. As long as Arctic plants are dose to the ground, they can balance (A) Their ability to grow equally well in all environments (B) lbeir effects on the Earth's atmosphere (C) Their ability to store water for dry periods (D) Their fundamental Similarity of shape (E) Their ability to balance heat intake and output 19. Which of the following could best be subs'tituted for the words sets the fashion in" (line 6) wi thout changing the intended meaning? u (A) (8) (C) (D) (E) improves the appearance of accounts for the uniformity of defines acceptable standards for determines the general characteristics of reduces the heat budgets of 20. According to the passage, which of the following is most responSible for preventing trees from growing tall in the Arctic? (A) (8) (C) (D) (E) The hard, frozen ground The small amount of available sunshine The cold. destructive winds The large amount of snow that falls each year The absence of seasonal differences in temperature Practice for t he Critical Reading Section 21. The author suggests that the "sticklike shape of desert plants" (lines 41-42) can be attributed to the (A) inability of the plants to radiate heat to the air around them (8) presence of irregular seasonal differences in the desert (C) large su rface area that the plants must expose to the Sun (D) absence of winds strong enough to knock down tall, thin plants (E) extreme heat and aridity of the habitat 22. The contrast mentioned in lines 46-48 specifically concerns the (A) (B) (C) (D) (E) availability of moisture scorching heat of the Sun seasonal differences in tem perature variety of plant species heat radiated by plants to the atmosphere see a dark woman in a flowered dress doing a bit of cakewalk to the lively notes of a mouth organ. 35 Her bare feet would raise the saffron dust that floated down on the coveralls and bunion-split shoes of the man breathi ng music in and out of his harmonica. The Black people watching her would laugh and rub their knees, and it would be easy for 40 the valley man to hear the laughter and not notice the adult pain that rested somewhere under the eyelids, somewhere under their head rags and soft felt caps, somewhere in the palm of lhe hand, somewhere behind the frayed lapels. somewhere in 45 the sinew's curve. He'd have to stand in the back of Greater Saint Matthew's Church and let the tenor's voice dress hi m in silk, or touch the hands of the spoon carvers (who had not worked in eight years) and let the fingers that danced on wood kiss 50 his skin. Otherwise the pain would escape him even though the laughter was part of the pain. 23. The author's perspective on the Bottom is that of Questions 23-28 are based on the following passage. (A) an unsympathetic outsider (B) an adult recalling early dreams (C) a participant defending a course of action (D) an angry protester trying to prevent an undesirable event (E) a sad observer of a transformation The following description of a small town is from a novel by an African American which was published in 1973. [n that place, where they tore the nightshade and blackberry patches from their roots to make room for the Medallion City Golf Course, there Line was once a neighborhood. It stood in the hills 5 above the valley town of Medallion and spread all the way to the river. It is called the suburbs now, but when Black people lived there it was called the Bottom. One road, shaded by beeches, oaks, maples, and chestnuts, connected it to the valley. 10 The beeches are gone now, and so are the pear trees where children sat and yelled down through the blossoms to passersby. Generous funds have been allotted to level the stripped and faded buildings that clutter the road from Medallion up to the 15 golf course. They are going to raze the Time and a Half Pool Hall, where feet in long tan shoes once pointed down from chair rungs. A steel ball will knock to dust Irene's Palace of Cosmetology, where women used to lean their heads back on 20 sink trays and doze while Irene lathered Nu Nile into their hair. Men in khaki work clothes will pry loose the slats of Reba's Grill, where the owner cooked in her hat because she claimed she couldn't remember the ingredients without it. 25 There will be nothing left of the Bottom (the footbridge that crossed the river is already gone), but perhaps it is just as well, since it wasn't a town anyway: just a neighborhood where on quiet days people in valley houses could hear singing 30 sometimes, banjoes sometimes, and, if a valley man happened to have business up in those hillscollecting rent or insurance payments-he might 24. The name "the Bottom" is incongruous because the neighborhood (A) contains only demolished bu ildings (B) has become more prosperous since it was named (C) is a fertile piece of land (D) has only recently been established (E) is located in hills above a valley 25. ~Generous" as used to describe Hfunds" (line 12) is intended to seem (A) ironic, because the funds are being used to destroy something (8) progreSSive, because the narrator is showing how times change (e) objective, because the narrator knows the amount (D) humorous, because the cleanup is not t ruly expensive (E) equivocal, because the funds are inadequate 93 THE CRITICAL READING SECTION 26. In th~ second paragraph, the author conveys a feeling of tension by juxtaposing which two of the following elements? (A) The assertion that the neighborhood's destruction is insignificant versus the carefully drawn richness of its life (B) The author's expression of affection for the neighborhood versus frustration at its reluctance 10 change (C) Nostalgia about the way the town used to be versus a sense of excitement about its future (D) Appreciation fo r the town's natural beauty versus disapproval of its ramshackle state (E) Sadness about the town's fate versus sympathy fo r the reasons for it 27. The author's statement that the valley man might no t perceive the pain underlying the laughter of t he Bottom's residen ts (lines 38-45) emphasizes that the Boltom's residents (A) had frequent contact with other reside nts of the valley (B) understood the valley man well, even though they did not see him often (C) were not the carefree people they might appear to be (D) concealed their real feelings from outsiders (E) were concerned about the destruction of their neighborhood 28. The author portrays the Bottom as a place (A) that lacked economic prosperity but had a rich emotionalJife (B) that was too filled with sadness to be able to survive (C) that needed to become more up-to-date in order to prosper (D) whose effect on its residents was difficult fo r them to understand (E) in which people paid more attention to the way things seemed to others than to the way th ings really were 94 Q uestio ns 29-30 are based on the following passage. MI am a very serious woman,B was Bella Savitzky Abzug's simple but powerful response to those who made light of her often boisterous activism. Abzug's Un" forceful manner and flamboyant appearance may 5 have drawn ridicule from some of her adversa ries in the American polit ical a rena, but this very serious woman dedicated her life to the public service on behalf of the oppressed and ignored. Abzug gained fame nationally as the first Jewish woman elected to the 1(1 United States Congress and later internationally as a leader in the global women's movement, where he r courage and indomitable spirit made a lasting impression on younger activists. 29. The tone of the q uotat ion in line 1 is best described as (A) (8) (C) (D) (E) dignified apologetic exhilarated hostile cynical 30. The primary purpose of the passage is 10 (A) provide a character sketch of a political figure (8) promote interest in the global women's movement (C) emphaSize the importance of public service to a society (D) explore both sides of a national controversy (E) champion the righls of those whose voices are not heard THE CRITICAL READING SECTION Answer Key Sentence Completion I. B 6. B 2. A 7. B 3. E 8. A 4. B 9. E 5. C 10. A Passage-based Reading I.A 16. A 2. E 17. E 3. C 18. E 4. A 19. D 5. A 20. C 6. D 21. E 7. B 22 . A 8. B 23. E 9. D 24. E 10. E 25. A I I. D 26. A 12. E 27. C 13. D 28. A 14. A 29. A 15. C 30. A Additional practice questions can be found in The Official SAT Online Course at www.c o llege board.com/satonlinecourse. 96 • PART III The Writing Section 97 CHAPTER 8 About the Writing Section Writing is a skill needed for success in both college and the workplace. The writing section gives you a chance to demonstrate the writing skills you've developed through your high school course work, particularly in English class, and th rough writing outside of school, such as personal journal entries and letters. The sect ion is composed of: • An essay: You will have to write a firs t draft of an original essay, under timed conditions. • Multiple-choice questions: You will have to recognize sentence errors, choose the best version of a piece of writi ng and improve paragraphs within a writi ng context. The mult iple choice sections measure your ability to • comm un icate ideas clearly a nd effectively; • improve a piece of writing through revision and edit ing; • recognize and identify sentence-level errors; • understand grammatical elements and structures and how they relate to one another in a sentence; • recognize correctly fo rmed grammatical structures; • clearly express ideas through sentence combin ing and use of tra nsitional words and phrases; and • improve coherence of ideas within and among paragraphs. In the essay component of the writing section, the student-written essay assesses you r ability to develop and express ideas effectively. It evaluates your ability to do the kind of writing required in college - writing that develops a point of view, presents ideas logically and clearly, and uses precise la nguage. You're not expected to be an expert in any particular field, but the topic of the essay (also called a prompt) does allow you to support your ideas by using what you've learned from your course work, your readings outside of school and your experiences in and out of school. The 99 THE WRITING SECTION essay must be written in a lim ited time. which doesn't allow for many rev isions, so it is considered and scored as a first draft. The multiple-choice component includes 49 questions on grammar, usage, paragraph organization and multi-paragraph coherence, and assesses your ability to use language in a clea r, The multiple-choice questions consistent manner and to improve a piece of writing through include three types: revision and editing. 1. improving sentences (see Chapter 10) The mult iple-choice questions don't ask you to define or use 2. identifying sentence elTors grammatical terms and don't test spelli ng or capitalization. In (see Chapter 11) some questions, punctuation marks, such as the semicolon, may 3. improving paragraphs (see Chapter 121 help you choose the correct answer. But questions like those mainly test the structure in which the punctuation appears. ~eplnMlnd Approaches to the Multiple-Choice Questions)- Read the directions carefully, and then follow them.)- Look at the explanations for each correct answer when you use the practice materials in this book. Even if you got the question right, you may learn something from the explanation.)- Eliminate the choices you are sure are wrong when you are not sure of the answer. Make an educated guess from those that remain. How the Writing Section Is Scored You will be given two subscores for the writing section: a multiple-choice subscore that will range from 20 to 80 and an essay subscore that will range from 2 to 12. If you write a n essay that is not on the assigned topic, you will receive an essay subscore ofO. The essay subscore will contribute about 30 pe~cent toward the total writing score, and the score on the multiple-choice questions will contribute about 70 percent. The total writing score will be placed on the College Board 200 to 800 scale. Developing Writing Skills Good writing, especially in college, requires you to develop your ideas with relevant and appropriate information. This is true for any subject that you'll be studying, whether it 's English, history, science, social studies, mathematics or fi ne arts. Though each of your inst ructors may have different expectations for your writing assignments, every instructor will wa nt ideas that are well thought out and clearly expressed. 100 About the Writing Section To write better, you have to write more. Practice helps improve your writing ski lls. To write better, you have to read more. Reading helps improve the way you use language. Successful college writing The more you read - challenging material in particular includes: • weH-developed ideas, with - the more you'll be exposed to interest ing and provocative relevant and accurate supportideas and to varied, even unusual, ways of using language. If ing information you read well-written books and articles. you may be inspired • clearly expressed thesis statements to use similar language in your own writing. • good organization Table 8. 1 lists characteristics of effective writing and pro• appropriate, accurate and varied vocabulary vides examples of ineffective sentences and corrected sen• variety of syntax (sentence tences. You will need to recognize these charac teristics when structure) you work on the writing multiple-choice sect ions. ~ePlnMlnd Table S.1 Characteristics of Effecti ve Writing, with Examples Characteristics of Effective Writing Examples of Ineffective Writing Corrected Sentences 1. Consistency Sequence of tenses After he broke his arm, he is home for two weeks. After he broke his arm, he was home for two weeks. Shift of pronoun If you are tense, one should try to relax. If you are tense, you should try to relax. Parallelism The master carpenter showed us how to countersink the nails, how to varnish the wood, and getting a smooth surface was also demon· strated. The master carpenter showed us how to countersink the nails, varnish the wood, and get a smooth surface. Noun·number agreement Ann and Sarah want to be a pilar. Ann and Sarah want to be pilots. Subject-verb agreement There is eight people on shore. There are eight people on shore. 2. Logica l Expression of Ideas Coordination and subordination Nancy has a rash, and she is probably allergic to something. Nancy has a rash; she is probably allergic to something. Logical comparison Harry grew more vegetables than his neighbor'S garden. Harry grew more vegetables than his neighbor. Modification and word order Barking loudly, the tree had the dog's leash wrapped around it. Barking loudly. the dog had wrapped his leash around the tree. (continued) 101 THE WRITING SECTION Table 8 .1 (continued) Exam pl es of Cha racte r i stics of Effective Writing In effective Writing Corre cted Se nte nces 3. Clarity a nd Precision Ambiguous and vague pronouns In the newspaper they say that few Diction He circumvented the globe on his Wordiness people voted. The newspaper reported that few people voted. trip. He circumnavigated the globe on his trip. There are many problems in the contemporary world in which we There are many problems in our contemporary world. live. Missing subject towed away. If you park here and do not eat in the restaurant, your car will be towed away. When you bake 8 cake, the oven should be preheated. When you bake a cake, you should preheat the oven. If your car is parked here while not eating in the restaurant, it will be Weak passive verbs 4. Appropriate Use of Conventions 102 Adjective and adverb confusion His friends agree that he drives reckless. His (riends agree that he drives recklessly. Pronoun case He sat between you and I at the stadium. He sat between you and me at the stadium. Idiom Natalie had a different opinion towards her. Natalie had a different opinion of her. Comparison of modifiers Of the sixteen executives, Meg makes more money. Of the sixteen executives, Meg makes the most money. Sentence Whether or not the answer seems correct. The answer seems to be correct. fragment Comma splice or fused sentence $hawna enjoys crossword puzzles, she works on one every day. Shawna enjoys crossword puzzles, and she works on one every day. CHAPTER 9 The Essay The ability to write effectively is one of the key factors in doing well in college. Writing is an essential part oflearning. Through the writ ing process, you develop, examine and refine your ideas. Through formal writing assignments, you demonstrate what you understand and how weJJ you are able to communicate it to others. The SAT essay measures you r ability to write effectively under timed conditions. The SAT essay is similar to the on-demand writing done in many college classes. You will be given 25 minutes to respond to an essay topic, also called a prompt. The topic will be general enough for you to respond to wit hout needing advanced knowledge on a specific subject. The topic will be relevant to a wide range of fields and interests - literature, the arts, sports. politics, technology, science, history and current events. The essay readers are not looking for one correct viewpoint. You may support a viewpoint that is described in the prompt or you may develop a different viewpoint. However, you must write on the topic you are given, or your essay will receive a score of O. There is no formula for writing an effective essay. You are free to choose your ~ own writing style. For example, you can write an essay that is narralive, expository, persuasive or argumentative. Furthermore, there are ~ep In Mind no gUidelines on how to organize you r essay; use the approach that best You must use a pencil on the fits your topic and point of view. Good writing is not strict adherence essay. Essays written in pen cannot be scanned and will to a formula; rather, it is the strong development of ideas. the ability to appear blank (and receive a connect to an audience. precise use oflanguage, effective organization score of zeroJ. and appropriate choices of evidence. Your essay will show how well you can develop, support and present your point of view. You will need to support your ideas with reasoning. You can draw on any part of your knowledge base that supports your reasoning, including any or all of the following: • what you have learned in school • what you have read in and outside of school in literature. science or other areas • current events • your extracurricular and outside activities • your observations and your own experiences 103 THE WRITING SECTION You are not expected to produce a polished piece of writing in the 25 minutes that you have to write the essay. Readers scoring the essays k now that you did not have the topic ahead of time or the time to make significant revisions. How well you write is morc important than how much you write, The First Section but to cover the topic adequately you will probably need to write at least one page. Your essay must be completely written on the li nes pro· The ess ay is the first part of the SAT. vided on your answer sheet. For an example of the answer sheet, look at the practice tests in the back of the book. You will have enough space if you write on every line, avoid wide margins and keep your handwriting to a reasonable size. It's important that your handw riting be legible. As long as your handwriti ng is clear, you may write in print o r script. But remember that the SAT reader isn't familiar with your handwriting. How the Essavs Are Scored Essays written for the SAT are scored using a holistic approach. In holistic scoring, an essay is considered in its entirety rather than feature by feature. The reader reads the entire essay and determines a score based on an overall impression . To score essays written o n specific topics, readers are trained to use the SAT Scoring Guide shown in Exh ibit 9.1 in conjunction with sample essays illustrating each score point. The readers are on you r side. They are urged to be positive and reward what is done well rather tha n to penali ze what is done poorly. The readers know that the essays are written by high school students A perfect s core for an essay is as first drafts under timed conditions. The readers are reminded to 12 (two s cores of 6). The majorignore handwriting and to avoid judging a n essay by its length. ity of papers will fall in the middle of the scoring range of To ensure accurate and reliable scori ng, two readers independently 2 to 12. evaluate and score each essay on a sca le of 1 to 6. Therefore, the combined score for readers will range from 2 to 12. If the readers' scores are different by more than one point on the six-point scale, a third reader, the scoring di rector, resolves the difference. On the SAT. fewe r than 3 percent of the essays scored go to a third reader. SAT readers, who are experienced high school teachers and college professors, receive extensive trai ning and prac tice in holistic scoring using the Scoring Guide. The readers are required to qualify for scoring by completing a rigorous online training course that will familiarize them with holistic scoring and teach them to ~ evaluate essays. To qualify after training, a reader must score a high ~ep In Mind percentage of practice papers in exact agreement with the preassigned scores as determined by expert readers. Duri ng live scoring, the readIf the readers' scores are differs are monitored in real time, and scoring directors review readers' rent by more than one point on the six-point scale, a third scoring of selected essays. ~eplnMlnd reader, the scoring director, scores the e ssay. 104 The Essay Exhibit 9.1 SAT Scoring Guide Score of 6 Score of 5 Score of 4 An essay in this category demonstrates cleaf and consistent mastery, although it may have a few minor errors. A typical essay An essay in this category demonstrates reasonably consistent mastery, although it will have occasional errors or lapses in quality. A typical essay An essay in this category demonstrates adequate mastery; although it will have lapses in quality. A typical essay • effectively and insightfully develops a point of view on the issue and demonstrates outstanding critical thinking, using clearly appropriate examples, reasons and other evidence to support its position • effectively develops a point of view on the issue and demon· strates strong critical thinking, generally using appropriate examples, reasons and other evidence to support its position • develops a point of view on the issue and demonstrates competent critical thinking, using adequate examples. reasons and other evidence to support its position • is well organized and clearly focused, demonstrating clear coherence and smooth progression of ideas • is well organized and focused, demonstrating coherence and progression of ideas • is generally organized and focused, demonstrating some coherence and progression of ideas • exhibits skillful use of language, using a varied. accurate and apt vocabulary • exhibits facility in Ihe use of language, using appropriate vocabulary • exhibits adequate but inconsistent facility in the use of language, using generally appropriate vocabulary • demonstrates meaningful variety in sentence structure • demonstrates variety in sentence structure • demonstrates some variety in sentence structure • is free of m ost errors i n grammar, usage, and mechanics • is generally free of most errors in grammar, usage, and mechanics • has some errors in grammar. usage, and mechanics Score of 3 Score of 2 Score of 1 An essay in this category demonstrates developing mastery, and is marked by ONE OR MORE of the following weaknesses: An essay in this category demon· strates lirrle mastery, and is flawed by ONE OR MORE of the following weaknesses: An essay in this category demonstrates very little or no mastery, and is severely flawed by ONE OR MORE of the following weaknesses: • develops a point of view on the issue, demonstrating some critical thinking, but may do so inconsistently or use inadequate examples, reasons or other evidence to support its position • develops a point of view on the issue that is vague or seriously limited, and demonstrates weak critical thinking, providing inap· propriate or insufficient examples, reasons, or other evidence to support its position • develops no viable point of view on the issue, or provides linle or no evidence to support ils position • is limited in its organization or focus, or may demonstrate some lapses in coherence or progression of ideas • is poorly organized and/or focused, or demonstrates serious problems with coherence or progression of ideas • is disorganized or unfocused, resulting in a disjointed or incoherent essay • displays developing facility in the use of language, but sometimes uses weak vocabulary or inappropriate word choice • displays very linle facility in the use of language, using very limited vocabulary or incorrect word choice • displays fundamental errors in vocabulary • lacks variety or demonstrates problems in sentence structure • demonstrates frequent problems in sentence structure • demonstrates severe flaws in sentence structure • contains an accumulation of errors in grammar, usage and mechanics • contains errors in grammar, usage and mechanics so serious that meaning is somewhat obscured • conlains pervasive errors in grammar, usage or mechanics that persistently interfere with meaning Essays not written on the essay assignment will receive 8 score of zero. 105 THE WRITI NG SECTION Approaches to the Essay)- Read the promp! carefully, and make sure you write on the topic given. Essays not on topic will receive a zero. ~ Decide your viewpoint on the topic. If you have trouble focusing on the ma in point, try complet ing this sentence: "When people finish reading my essay, I want them to understand that The words you use to fill in that blank might well become part of your thesis statement.)- Spend a couple of minutes on planning. Use your test booklet to create a quick sentence outline. Begin with the thesis from the above approach. Follow it with two or three Single-sentence statements of examples or reasons you will use to develop your point of view. For example. suppose you are answering the essay question given as the sample later in this chapter: Think carefully about the issue presented in the following excerpt and the assignment below. Some people believe that there is only one foolproof plan, perfect solution, or correct interpretation. But nothing is ever that simple. For better or worse, for every so-called final answer there is another way of seeing things. There is always a "however." Assignment: Is there always another explanation or another point of view? Plan and write an essay in which you develop your point of view on this issue. Support your pOSition with reasoning and examples taken from your reading, studies, experience, or observations. The student sample that scored a 6 may have been the result of an outline like this: • Thesis: An attribute can be either a vice or a virtue. depending on a person's point of view. • Point 1 - I had always believed that perfectionism was a virtue: it was a motivator to achieve high goals, which I had done. • Point 2 - Later, I discovered that others, including a teacher, perceived my perfectionism to be a vice, resulting in fatig ue, stress and illness. • Conclusion - There is always a "however." I realized that perfectionism is neither all good nor all bad. You have only 25 minutes to write you r essay, so don't spend too much time outlining. A little planning time, however, may be essential to make sure that your essay does not wander off topic or stray from your foc used thesis statement. 106 The Essay . . Vary the sentence structure in your writing. Good writing uses a variety of sentence types to show the proper relationships between ideas. Simple sentences communicate single observations. Compound sentences show that two ideas are related and are roughly equal in weight, and complex sentences show that of two related ideas, one is more important than the other. Essays that receive high scores almost always use a variety of sentence structures. Sentence variety also makes your writing more engaging and easier to read! Remember that as you write. Here are samples of the three kinds of sentences: • Simple: "My best frie nd lives two blocks away from me," This sentence is called simple because there is one subject - "my friend" - and one verb - "lives." It makes a single observation. • Compound: "My best friend lives two blocks away from me, but her house is much nicer than mine," This sentence is compound because it comprises what could be two or more si~ple sentences that are connected with one of the words we call coordinating conjunctions - and, or, but, for or nor. These words indicate that there is a relationship between these two observations and that the two statements are of roughly equal importance. You may learn that the words so and yet sometimes function as coordinating conjunctions as well. Either half of the compound sentence could have been a simple sentence by itself. • Complex: "Although my friend lives two blocks away from me, I don't go to her house very often." This sentence is complex because it contains two observations but they are not of equal importance. The first one "although my friend lives two blocks away from me" - cannot be written as a simple sentence because of the connecting word "although." That word, called a subordinating conjunction, expresses the relationship between the two ideas and indicates that the other observation, the one that does not begin with a subordinating conjunction, is the more important one. The fact that you don't go to your friend's house very often is, in this sentence, more important than the fact that she lives only two blocks away. All your ideas will not be related to each other in the same way, so you should vary the sentence structure that communicates how your ideas are related to each other. . . Use clear, precise and appropriate vocabulary. Appropriate words are accurate and specific, not necessarily long and obscure. Avoid too many abstract and indefinite words, a,nd seek concrete, specific ones in their place. Consider the differences in these two sentences: 1. The place where we stopped to eat was full of people dressed up more than we were. 107 THE WRITING SECTION 2. The restaurant where we stopped for lunch was full of men wearing 0 e P IDMind You w on't be judged on your handwritin g, but essay readers m ust be able t o read w hat jackets and ties and women wearing suits and dresses - a noticeable contrast to our jeans and T-shirts. you w rote. so w rite clearly Although the first sentence is grammatically correct, it is general and and leg ibly. unspe.cific. A reader will not easily see the contrast between the speaker and the other people in the restaurant. The second version creates a much more concrete and vivid image in the reader's mind, and it communicates more effectively the contrast between the speaker and the other customers. The sentence is not improved by substituting unnecessarily fancy words where concrete, everyday ones do just fine: "The dining establishment where we rested for our midday repast was peopled with representatives of the paying public who wore garments more typically associated wit h the office and business world than our comfortable and casua l attire." Good writing uses mature and sophisticated language, but some writers think readers are impressed by fancy vocabulary and convoluted sentences. Those writers are wrong.)- Leave time to review what you've written. Although you won't have time for fu ll scale revision, do leave time for rereading your essay and mak ing minor changes in the wording or even in the structure of what you have written. OccaSionally a more appropriate word, or a clearer way to make a point, will occur to you. Don't be afraid to make these minor changes if they improve your essay. Writing Exercise: Using Action Verbs Writing exercises and practice can help you prepare further for the essay component of the SAT. One ofthe best ways you can improve your writing is to minim ize the use of the same verb - especially the verb to be. Reliance on the verb to be in any of its eight pa rts (be, am, are, is, was, were, being, been) makes you r writing sluggish and unclear. More than any other kind of word, the verbs you use communicate what is happening so, whenever possible, try to use a verb to convey the action of your sentence. For example, consider this sentence: "The decision of the manager to bring about an end to the p ractice of overtime assignments and schedule the right number of workers in the first place was greeted with approval by a unanimous number of workers:' What a horrible sentence! It limps along until the passive verb "was greeted," and it merCifully ends a few words later. (A verb or sentence is passive, or in the passive voice, if someone or something other than the subject performs its action s. In th is case, the actual subject of the sentence is "decision," but the act ion, the greeting, was done by the workers. A sentence in which the subject performs the action is called an active sentence.) The main idea of the sentence, however, has little to do with greeting. It is supposed to communicate the fact that workers approved something that the manager decided to do. 108 The Essay If we examine the sentence for words that contain some potential for action, we'll see many: decision, bring, end, practice, assignments, scheduling, workers, greeting and approval. Unfortunately, none of these can be the verb of the sentence because they appear in other grammatical structures (Le., in this sentence, they appear as abstract nou ns, infinitives and gerunds, which are defined and illustrated in the section below). Each functions as the subject or the object of a preposition, but not as a verb. If you could revise the sentence so that one or more of these potential verbs becomes the action-bearing word, you will have a more dynamic and accurate sentence. Quick Grammar Review Although you will not be asked to define or use grammatical terms on the SAT, familiarity with the precedi.ng grammatical terms wm make it easier to understand the pri nciples of this writing exercise on action verbs. Here are some definitions: • Abstract nouns are those nou ns (Le., naming words) that refer to ideas, thoughts or intangible things. The abstract nouns in the sample sentence are decision , end, practice, assignments, and approval. They are general rather tha n specifi c. • Infinitives are verb forms that use the word to. In the sample sentence, the infinitive is "to bring." O ther examples are "We hoped to see our cousin during her visit," or "What do you want to do with the money you've earned?" • Gerunds are specialized verb forms that end in "-ing," take the place of nouns and indicate an action of some kind. In the sentence "Running is an excellent form of exercise," running is a gerund because it takes the place of a noun and names an action. Not all words ending in "-ing" are gerunds, but all gerunds end in "-ing." • Present participles are also verb forms that end in "-ing." Instead of naming an action, though, the participle describes a noun . For exa mple, the word singing can be either a geru nd or a present participle depending on its use. In the sentence "Singing makes me feel happy," it is a geru nd because it names a n action. In the sentence "The singing bi rd woke me up at four o'clock," it is a participle because it describes the bird. • A preposition is a word that shows a particular relationship, such as direction or location, between a noun and the rest of the sentence. Prepositions are usually very short words, such as in, of, to or by. Prepositions are usually followed by nouns, which are called their objects. In the following illustrations, the preposition is italicized and the object is underlined: • the rooms in my hQ.yg • the name of my friend • the trip to Chicago • the tree by my window • A prepositional phrase contai ns a preposition and its object and whatever describing words accompany that object. 109 THE WRITING SECTION Revising Sentences to Use Action Verbs If you revise your sentences so that the verb indicates the action and the subject tells who or what performed that action. you will probably see three other improvements: 1. You will change the passive voice to active. 2. You will reduce the number of abstract nouns. 3. You will eliminate strings of prepositional phrases. If you decide that the real action of the sample sentence lies in the word approval. begin by making that the verb. Then decide who approved of what. You should be able to construct this much of the sentence so far: "Workers approved when the manager decided .. ," Now you can add the details from the original sentence that you think are necessary: "Workers unanimously approved when the manager decided to bring about an end to the practice of overtime assignments and schedule the right number of workers in the first place." This revision is much better, but it is not as good as it can be. There are st ill several abstrac t nouns: end. practice. assignments. Take a moment and determine if these nouns imply actions (they do), and who performs these actions. Do the workers end, practice and assign? Or does the manager do these things? Once you think about it, you'll realize it's the manager who ends, the manager who practices and the manager who assigns. Thisis a lot of activity hiding in nonaction words, and ali of it is bei ng done by someone who is not the subject of the sentence. How can you express this action with the manager as the subjec t? "The manager decided to end assigning overtime and to schedule the right number of workers in the first place." Instead of "to end assigning overtime," you would probably write: "The manager decided to stop assign ing overtime . . ." You see that you don't need the word "practice" at all. You've eliminated one unnecessary abstract noun. Now you have two sentences: "The manager decided to stop assigning overtime and to schedu le the right number of workers in the fi rst place." "Workers unanimously approved the manager's decision." You can leave this revision as two sentences if you like. These two sentences are certain ly clearer than the original. But you might also realize that there is a relationship between them, and you want to combine them in a way that communicates that relat ionship. Because the relationship is chronological (Le., the decision came first, then the approval after) or causative (i.e., the decision caused the approval), 110

The Essay you have a few choices available. Suppose you want to indicate the time sequence. You could write: "After the manager decided to stop assigning overtime and to schedule the right number of workers in the first place, the workers unanimously approved the manager's decision." On the other hand, if you want to indicate cause, you could
write: "Because the manager decided to stop assigning overtime and to schedule the right number of workers in the first place, the workers unanimously approved the manager's decision." Yet you are not happy about the repeated word "decided/decision." Should you change one of them? Can you do that without confusing the reader? Yes, you can,
when you realize that it is the decision of the first clause that the workers approve. What you have been trying to communicate is: "Workers unanimously approved the manager's decision to stop assigning overtime and to schedule the right number of workers in the first place." How much better that reads than the original version! Here's the original
sentence aga in: "The decision of the manager to bring about an end to the practice of overtime assignments and schedule the right number of workers in the fi rst place was greeted with approval by a unanimous number of workers." To sum up, you have made the following improvements: • You have expressed the action of the sentence as a verb. •
You have used the subject of the sentence to tell who performed that action. • You have reduced the number of abstract nouns. • You have reduced the number of prepositional phrases. Following are a few more unclear sentences that need the same type of revision as in the example. You may find this process slow at first, but with practice, you will
make these revisions quickly. Work out your revisions, and then compare them to the suggested revisions that follow. Remember that there will be several good revisions available for each. Yours will be good if you follow these suggest ions: • Avoid the verb to be in favor of a verb that communicates action. • Reduce the number of abstract nouns. •
Replace prepositional phrases with single-word adjectives and adverbs when you can. '11 THE WRITING SECTION Example Exercise: Rewriting Sentences Using Action Verbs 1. The price of the toy on the shelf of the store was intended to be a reflection of the hard work of many workers and the high cost of materials. Rewrite: 2. Under the
management of the new owners of the store the store is designed to serve the basic needs of the majority of the people in the neighborhood. Rewrite: 3. The audience was impressed by the skill of the actors and the imagination of the director of the film at the theater around the corner from my house. Rewrite: 4. The most important idea in the
introduction of the essay is at the end of the paragraph that is found at the beginning of the paper. Rewrite: POSSIBLE REWRITES THAT IMPROVE THE ORIGINAL SENTENCES Here are some possible responses to the exercise. Yours mayor may not look li ke these, but successful ones will sha re the features mentioned above. The original sentence
comes first. followed by a suggested revision. The verbs are italicized and the prepositional phrases a.re placed within brackets. 112 The Essay 1. Original: The price lofthe toy] [on the shelf] (of the store] was intended to be a reflection [of the hard workl [of many workers] and the high cost [of materials]. Rewrite: The toys [on the shelf} cost so much
because a lot [of people) worked hard to make them and the materials were expensive. 2. Original: [Under the management] [of the new owners] [of the store] the store is designed to serve the basic needs [of the majority] [of the people] [in the neighborhood]. Rewrite: The new owners will manage the store so that it serves most (of the neighborhood
people's needs]. 3. Original: The audience was impressed [by the skill] [of the actors] and the imagination [of the director] [of the film] [at the theater] [around the corner] [from my house]. Rewrite: The actors' skill and the director's imagination impressed the audience who attended the theater (around the corner) (from my house]. Or: The actors'
skill and the director's imagination impressed the audience who attended the neighborhood theater. 4. Original: The most important idea [in the introduction] [of the essay] is [at the end] [of the paragraph] that is found [at the beginning] [of the paper]. Rewrite: In the introduction to the essay, the most important idea is found at the end of the first
paragraph. Writing Exercise: Using Abstract and Concrete Language Another way to improve you r writ ing is to recognize the difference between abstract language and concrete language - and to provide concrete illustrations whenever you write about someth ing abstract. For example, when you read a word like success, you know what it means,
but you probably also know that the same word will mean something different to someone else. On the other hand, "a score of 520 on the SAT math section" means the same to anyone who reads it. This is true because success is an abstract word, whereas "a score of 520" is a concrete expression. What would you consider to be an example of success?
For some, it might be a position on the varsity tennis team. F.or others, it might be passing a driver's test. All these examples can be seen as concrete illustrations of the abst ract term success. If you are wr iting about success, you do not clarify your meaning by providing synonyms, such as achievement, accomplishment or reaching a goal. You
achieve clarity by providing specific illustrations so that your reader knows what you mean by the term. 113 THE WRITING SECTION Example Exercise: Using Concrete Language How would you illustrate success? Write three concrete illustrations of success here: 1. ____ 2. ____
3. ____ Example Exercise: Using Abstract Language Beauty, happiness and courage are three other abstract nou ns. How would you illustrate them? Provide three examples of each of them , and then, if possible, compare your respon ses to a fri end 's. Beauty: 1. ----2.
____ 3. ____ Happiness: 1. ----2. ____ 3. ____ Courage: 1. ----2. ____ 3. ____ 114 The Essay
Most of the time. you know a word is abstract because you have a sense of its meaning. In some cases, however, the end ofthe word tells us it is an abstract noun. Common abstract noun endings include -age (as you saw in courage), -ance, -ment, -ness (as you saw in happiness), -ity (or just -ty, as you saw in beauty) and -tion. Although many abstract
nouns have no such endings, so many do that it is a good idea to become familiar with them. Can you think of examples of abstract nouns with each of these suffixes? -age -ance -ment -ness -ity or -ty -tion Example Exercise: Writing Concrete Descriptions of Abstract Concepts To help improve the cla rity of your writing. look again at several of the
abstract words you provided, and think of illustrations that would make the terms more concrete for a reader: Abstract word: Concrete illu.strations: ____ Abstract word: ____ Concrete illu.strations: ____ 115 THE WRITING SECTION Abstract word: ____ Concrete illustrations:
____ The Benefit of Using Both Abstract and Concrete Language You may have realized already that there is a st rong pa rallel between the concepts of abstract/concrete and general/specific. Abstract words tend to be general. They concern ideas rather than things, the intangible rather than the tangible. Their value is their ability
to communicate thoughts, feelings and opinions. Most of your essays (in high school, in college and on the SAT) will be about ideas rather than th ings. Your thesis statement is probably going to be an observation about an idea, a prin ciple, a theory or a belief - in other words, something abstract. Essays that discuss only concrete topics - such as a
car, a piece of jewelry or a friend who moved away - and that never present any abstract ideas about those concrete things will probably not effectively connect to your audience. For example, your friend who moved away is important to you. but until you connect that event in the reader's mind with an abstract idea, such as loneliness, or loss, or
loyalty, that friend's absence doesn't mean much to the reader. Similarly. a ring that you inherited from your grandmother is precious to you, but it's not precious to your reader until you write of it in terms of its sentimental value. your family's heritage, your grandmother's generosity or your love for her - all of which are abstract concepts. The best
essays are about ideas, and you should develop them with appropriate concrete illustrations to clarify your position on those ideas. A frequent observation among teachers of writing (and readers of examination essays) is that student writers do not prOVide enough concrete illustrations. They rarely feel that a student essay has too many facts. How
can you, as a writer, be sure that you have enough concrete informat ion in you r essay? For example, read this opening paragraph from E. B. White's essay "Once More to the Lake," and observe his use of abstract language (underlined) and concrete illustrations (i n italics): "One summer, along about 1904, my father rented a camp on a lake in Maine
and took us all there for the month of August. We all got ringworm from some kittens and had to rub Pond's Extract on our arms and legs night and morning, and my father rolled over in a canoe with all his clothes on; but outside of that the vacation was a success and from then on none of us ever thought there was any place in the world like that lake
in Maine. We returned summer after summer - always on August 1st for one month. I have since become a saltwater man, but somet imes in summer there are days when the restlessness of the tides and fea rful k2ld. of the sea water and incessant wind that blows across 116 The Essay the afternoon and into the evening make me wish for the placidity
of a lake in the woods. A few weeks ago this krling got so strong I bought myself a couple of bass hooks and a spinner and returned to the lake where we used to go, for a week's fish ing and to revisit old haunts." White's abst ract ideas, especially success and placidity, are well illustrated by the many concrete details he prOVides (again, in italics).
Although you may not consider a month of camping by a lake in Maine to be a successful family vacation - you might prefer an amusement park or a city's museums and theaters - you still know exactly what White is ta lking about and his opinion on that subject. How much less satisfying this paragraph wou ld be ifhe had written the following: "My
father used to take us on vacation, butwe all got sick and he fell in the water. Even so, we had a good time. We always used to go to the same place around the same time of yea r. After I grew up I liked other things, but sometimes I miss the old family place, so I got some old fishing gear and went back." Obviously, the ability to manage abstract and
concrete language makes a tremendous difference in the success of White's writing here. A point worth noting is that proper nouns (Le., those that begin with capita l letters) and numbers are very concrete. The presence of such concrete language, when possible, gives you r writing specificity - which makes your writing more interesting. Example
Exercise: Rewriting Sentences Using Concrete Language For each of the abstract statements below, rewrite the sentence and make it more concrete by provid ing specific language. I. What we did yesterday afternoon was lots of fun. Rewrite: 2. I have strong feeli ngs about the attitude you are expressing on that topic. Rewrite: 117 THE WRITING
SECTION 3. That is my favorite performer singing that song on the rad io. Rewrite: 4. That book is the most amazing thing I have ever read. Rewrite: 5. When my friend told me her news, I thought she was the luckiest girl in the world. Rewrite: 6. If you want to be healthy. you have to take care of yourself. Rewrite: POSSIBLE REWRITES THAT
IMPROVE THE ORIGINAL SENTENCES Following are some possible revisions of the preceding sentences. Yours will certainly be qu ite different, depend ing on what conc rete details you have included. In these sample responses, the concrete details are printed in italics. I. Original: What we did yesterday afternoon was lots of fun. Rewrite: The trip
to the mall and the ride on the roller coaster were lots of fun . 2. Original: r have strong feelings about the attitude you are expressing on that topic. Rewrite: r feel very worried when I hear how stubbornly you defend the bullies who tease children. 118 The Essay 3. Original: That is my favorite performer singing that song on the radio. Rewrite: That
is my favorite singer, Miley Cyrus, singing "See You Again" on the radio. 4. Original: That book is the most amazing thing I have ever read. Rewrite: Of all the books I have ever read, The Samurai's Garden best showed me how selfless love can be. 5. Original: When my friend told me her news, I thought she was the luckiest girl in the world. Rewrite:
When Louisa told me that she had wall a basketball scholarship, r thought she was the luckiest girl in the world. 6. Orighlal: If you want to be healthy, you have to take care of yourself. Rewrite: If you want to be healthy, you have to eat fruits arid vegetables, get at least a half hour of exercise every day and sleep seven hours a night. Sample Essays
The rest of this chapter offers examples from students that illustrate every possible score. Although all of the sample essays were handwritten by students, they are shown typed here, in boxes, for ease of reading. However, we a re present ing one in handwriting to remind you that it is important to write legibly and clearly. The essays have been typed
exactly as each student wrote his or her essay, without a ny corrections to spelling, punctuation or pa ragraph breaks. The following is a sample prompt: ~ Automated Score To receive an automated score for your response to this essay question, check out The Official SAT Online Course at www.col1egeboard.com/ satonlinecourse. Think carefully
about the issue presented in the following excerpt and the aSSignment below. Some people believe that there is only one foolproof plan, perfect solutio n, or correct interpretation. But nothing is ever that Si mple. For better or worse, for every so-called fina l answer there is another way of seeing things. There is always a ~however." Assignment: Is
there always another explanation or another point of view? Plan and write an essay in which you develop your point of view on this issue. Support your position with reasoning and examples taken from you r reading, studies, experience, or observations. 119 THE WRITING SECTION Essay #1: This essay received B score of 6. '+ , • < Canlln". on Ihe
reverse lia f neeessa 120 The Essay ContinUMJon 01 Pan A (Wrldna Sample) "om rev.,... . Ide, Write below ont, tI rou need ma,. 'poKe. '" .A'" .0. \~ I "-t1.. \ '1 11 ~...,., . ' .,nlql~.- _~ ~ S"-' . """1:\ ..p... * f... :$I(IS a Ql 'Nm,.t) j.-. Th;$ 1:. 4 \:\: 'u ON J.:.... « r 1..""@; 1\0 ... i. I)+.,.,.... Q:;! t""" s.{1.Icr. + ,; D 1b ...+- :r.-m'....s:.,),... \,.!JQd,2 't- . \,0' a t ;\).
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' ..:1 Tfut :r: """"" - ,~ ·1_·.:\ ' \ Page 3 ,",11\,~,,~1, t n. a-1. .... A-f" f- ~ 121 THE WRITING SECTION WHY ESSAY #1 RECEIVED A SCORE OF 8 This response demonstrates clear and consistent mastery by insight fully exploring the writer's drive for perfectionism. The writer effectively develops the position that whether another person considers this
perfectionism "a vice or virtue depends on his or her point of view," This response demonstrates outstanding critical thinking by not only describing the writer's own intense motivation and the resulting physical and emotional strain, but also by providing examples of ways that others negatively see the writer's drive. ("Others see me crying over the
'B+' I received on the math test and blame my 'emotional instability,' as they call it, on my perfectionism," "My perfectionism is my vice, accord ing to her and yet all this time I thought it was my greatest virtue.") By considering others' viewpoints, the writer is able to look more objectively at his or her motivation. ("Now I understand that my
perfectionism is not 'a ll good,' it was after all responsible for the lack of plenty of sleep as well as being responsible for my head cold. However, I maintain that it is not 'all bad' either.") This weIlorganized essay smoothly moves from one idea to the next, demonstrating a dear coherence. Using a varied, accurate and apt vocabulary, the essay exhibits
the skillful use of language and demonstrates a meaningful va riety in sentence structure ("May is AP test season and for me that means severely high levels of stress. I could be spotted walking down the halls of the school with my Barron's AP World History book under my right arm and a high lighter in my pocket. It was imperative that I study hard
enough to receive a grade of'S' on the test"). This outstanding response scored a 6. 122 The Essay . Essay #2: This essay also received B score of 6. ,heye is ",Iw",ys '" "howevey." E",ch sih,,,,tio,,, h",s its 'oe",e.\1ts ",,,,J. its J.y",w'o",c\:.S. I", the .\1elJ. o-P IM",y\:.et .\1",,,,,,,ce, we .\1",J. '" cOIMPe11i",~ e""IMple th",t S"PPOyts this thesis. ,he Ro"'yi",~
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"'tJ\-Ye'tJ-s 'oe-Poye i'tsi~hHIAI, i'tves\-i't~ . Peyh",ps "'OS\- i",poY\-"'t\-ly, A"'eylc"'t iwes\-oys ",ye 'to\- "'s e",sily sw",y eJ- loy pOPIAI",y op\-i",is"' "'tJ~ eY ",J-vey\-ise",e't\-. While \-he s\-oc~ ",,,,y~e\- cY",sh o-P 1'12'1 w \-he Gye",\- Depyessio't, \-he Cy",sh ",Iso se\- \-he -POIA'tJ-",\-io't -POY '" sOIA'tJ-ey eco'to",y. '-P we Yeco~'tiz.e \-he ~00J- "'tJ- \-he
'o",J- o-P \-he Cy",sh, we ",ye J-es\-i'teJ- \-0 ",,,,~e -PeWey eco'to",ic ",is\-",~es. WHY ESSAY #2 RECEIVED A SCORE OF 6 In this outstanding essay, the writer develops insightfully the ma in idea that "Each situation has its benefits and its drawbacks" by focusing on how the tragedy of the 1929 stock market crash and the Great Depression
necessitated changes that led eventually to a sounder national economy. This response demonstrates outstanding critical thinking by demonstrating that while the 1929 Crash "launched America into the Great Depression," it also motivated Franklin Delano Roosevelt to instigate changes that "laid the groundwork for a safer, more successful economy"
and provided Americans with valuable fi nancial lessons. Paragraphs two and three describe the devastation that followed the crash of the 1920s' booming economy. Paragraphs four and five explore the idea that while the Great Depression was a time of "almost suicidal pessimism," positive actions were taken to ensure that such a catastrophe would
not occur again. This well-orga ni zed essay uses dearly focused and appropriate details to demonstrate a smooth progression of ideas. Using a varied, apt and accurate vocabulary, the writer exhibits a skillful use of language. ("The American public also realized the many positive results of the stock market crash of 1929. In particular, American
citizens , now have an enti rely different fiscal outlook from the one they had before the Crash.") This essay demonstrates clear and consistent mastery and scored a 6. 124 I The Essay Essay #3: This essay received B score of 5. The sh"l-elMel\l- '~eve is ",I",,,,y s '" '\'owevev" is e> ",cc",v",l-e, {'ov 1M0sl- I-\'il\~s il\ He cOl'\e wit-\' cOl\.:I.i\-\ol\.S, I-I.ost-
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the modern teenager by making "some sort of condition or stipulation on every activity that he or she wants to participate in." The essay demonstrates strong critical thinking by providing four appropriate, focused examples of instances when an initial offer from an adult is ruined by a subsequent "however." This focused response is well organized,
moving easily from example to example and demonstrating a progression of ideas. The writer consistently exhibits facility in the use of language and demonstrates variety in sentence structure. ("The teacher continues, 'HOWEVER, the project must have some relevance to the current situation in the Middle East: The boy's head, which had previously
been swimming with ideas, was now drained of all topics, for he had no clue what was happening in the Middle East.") To receive a score of 6, thiS response needs to demonstrate outstanding critical thinking by using the evidence more insightfully to develop the position instead of simply providing one example after another. Overall, this effective
response demonstrates reasonably consistent mastery and scored a 5. 126 The Essay Essay #4: This essay also received a score of 5. Theye is ",Iw", S '" "howevey." Is H- "ot- hl.\e t-h"'t- evey lit-t-Ie sit-I.\",t-io" i" li-l'e seel' we see t-hyol.\~h hey se",ych, -!;"J.i,,!) '" sel.f1ess J.eeJ. is "ot- "'s e", "'s it- """ SOI.\"J.. This ",Iso ye\"'t-es t-o t-he i"-I"",,,,ol.\s
1101J.e" C"'I.\I-!;elJ. 0-1' J.D. S",li,,!)ey's "C"'t-chey i" t-he Rye" I" HolJ.e,,'s se",ych -I'OY "hl.\e people", he co"t-i"l.\ol.\sly e"J.s I.\p J.is",ppoi"t-eJ., -!;"J.i,,!) -I'"'I.\It-s wit-h eveyy peySO" he ",eet-s ",,J. pl",ci,,~ t-he", 1.\"J.ey his "pho"y c",t-e!)oyy" A"J. i" t-his cv"'ty woylJ. 0-1' t-oJ.",y we ",11 shive t-o ",chieve ",,J. "!)et- ",he",J.", 'ol.\t- wit-h e",c h t-hi,,!) t-
h"'t- o"e eySo" ",i"s it- 'oeco",es I.\"",v",il",'ole -I'OY ",,,ot-hey I" Phoe'oe's I.\est- t-O -IT,,J. '" sel.f1ess J.eeJ. she -!;"J.s it- ",I",osti", ossi'ole t-o yove oe wyO" "'s wit-h evey ooJ. J.eeJ. t-h"'t- we ey-l'oy", we -I'eel ooJ. ",'o01.\t- ol.\yselves. ve" i-l' t-he J.eeJ. is "ot- "'t-ot-",I s",cvi-!;ce o"t-o Yol.\ysel-l', yol.\ e"J. I.\p -I'eeli,,!) 'oet-t-ey ",'o01.\tyol.\ "'s '" peyso", ",,J. how
yol.\ helpeJ. ",,,,,,ki,,J. jl.\st- '" lit-t-Ie. A"J. sO t-his "howeve." pey",e"'t-es e",ch ",,J. eveyy ",speet- 0-1' Ol.\y lives, eve" "''''''''''~ t-o 'ol.\t-t- i" t-o seW s",cvi-!;ces, ~ooJ. J.eeJ.s, ",,J. y",,J.o,,, "'C+-S 0-1' ki"J."ess. I" 1101J.e,,'s c",se he -!;"J.s t-he "howeve." i" eveyythi"~ . Seei"~ I",wyeys "Ot- "'s pyot-eet-oys 0-1' jl.\sl-ice ",,J. t-he I",w, 'ol.\t- Y"'t-hey ~yeeJ.y
people who love t-he t-hyill ",,J. powey 0-1' co"J.I.\et-i,,!) t-hel' 127 r THE WRITING SECTION lit evey)'olte, "'1tJ. hl.\Y!-s hll'\Sel-l' by Itevey see'ItB I-he BOoJ. lit people. While I-hls "howevey" I'\Bhl- eXIsl- "'1tJ. be -I'01.\1tJ. 1-0 Iltl-eyl-wllte l!-seW lit I'\osl- SII-I.\",I-IOItS 0-1' li-l'e, we "'s hl.\I'\"'lts C"'It'1- J.well Olt II-. Bec"'l.\se 1-0 J.well Olt ",l1l-he
''ol.\!-s'' "'1tJ. "howeveys" 0-1' li-l'e, wOl.\lJ. oltly bYllt~",Hve "'1tJ. J.epyess'ItB -I'eeliItBs, Wil-h eveyyI-h'ItB lit ll-l'e, y ol.\ C"'1t B"'1t sOl'\el-h'ItB, bl.\l- lit cOltseql.\eltce, sOl'\eolte else wl1110se wh",1- Y0l.\ B"'It. II- IS "'It oltBo'ItB cycle c",l1eJ. ll-l'e. LI-I'e IS '" h Y0I.\I-, "'It ",1.\J.IHolt, "'It ",pplic",Holt, "'1tJ. "'s 10ltB "'s y ol.\ h y YOl.\y besl- "'1tJ. ",I-
le",sl- hy 1-0 ",VOIJ. I-he "howeveys", y ol.\ shol.\lJ. be o\r.",y. WHY ESSAY #4 RECEIVED A SCORE OF 5 This response demonstrates reasonably consistent mastery by developing effectively the pOint of view that "every little situation in life seems to always have some sort of a catch to it," The writer demonstrates strong critical th inking by selecti ng
two appropriate examples of how a character's search fo r "truth" is, for d ifferent reasons, u nsuccessful because of a "however." The writer uses an episode of Friends to illustrate the idea that, because there is always a n attachment,to the gratificat ion from helping others and perform ing "good deeds," perfect ly sel fless acts do not exist. The
response also explores how Holden Caulfie ld's focus on the negative aspects of people prevents hi m from ever "seeing the good in people" or fin ding "true people." The writer concludes by acknowledging the inevitability of "howevers" and "buts" in the life cycle and advocates not letti ng them become d istractions from the positive aspects of li fe.
There is a va riety in sentence structu re. ("Just one little example is all she had to find, but as we see through her search, fi ndi ng a selfless deed is not as easy as it may sound . Th is also relates to the infamous Holden Caulfiel d ofJ. D. Salinger's 'Catcher in the Rye' In Holden's search for 'true people,' he cont inuously ends up disappointed, fin d ing
faults with every person he meets and placi ng them u nder his 'phony category.'") To receive a score of 6, this essay would have to exhibit a stronger organizational structure and smoother progression of ideas by focusi ng on fu lly developing one example before moving to the next. This effective essay scored a S. 128 The Essay Essay #5: This essay
received a score of 4. vee wit-I-. t-I-.e t-I-.esis '''''eve is ",lw", s '" 'I-.owevev.'-" Bot-I-. I-.ist-ovy "'I\J. lit-ev",t-\.\ve "e",v wit-l\ess t-o t-I-.e I IMOst- cevt-",il\l '" \.\I\J.el\i",,le -{'",d t-I-.", t- 1\0 IM",t-t-ev I-.ow '" sit-\.\",t-iol\ """y seeIM, t-I-.eve will ",lw",ys "e ",I\ot-I-.ev -{'",dov t-o cOl\\siJ.ev t-I-.",t- IM"'y sl-.eJ. '" I\ew Ii I-.t- 01\ t-I-.e civC\.\IMSt-"'I\ce The
cOl\cl\.\siol\ o-{' t-I-.e 5ecol\J. WovlJ. W",V C",I\ evl-.",ps e> ovev .p."'scis""", t~eve w"'s '" \\~oweve/' t~"'t- wov.1J.. evl.'\.""' s """"""vv t-I-.eiv vidovy. This "I-.owevev" w"'s t-I-.e est-"lisl-.il\~ t-I-.-eve",to-{' COIMIM\.\I\islM. es it-e t-I-.e colossl",I vido t-I-.e llies I-.",t- ",cl-.ieveJ., t-I-.eve w"'s st-ill "I\ot-I-.ev ",spec+, '" "I-.owevev" t-I-.-e",tW \.\t-ev",t-\.\ve "'s
well is '" t-est-"'IMel\t- t-o t-I-.is t-I-.esis, "'s evil.el\ceJ." t-I-.e t-v"'~ic pl",y o-{' ROIMeo "'I\J. J\.\liet-. ovevcoIMil\~ ",IIMost- il\s\\vIMo\.\I\t-",,le oJ.J.s t-o t-I-.e sciol\ ",I\J. J.",\.\ I-.t-ev o-{' -{'''IMil viv",lvies -{,,,,ll il\ J.eep "'1\J. t-v\.\e love. "Howevev:' t-I-.eiv love is set-" t-I-.e cOl\s\\IMil 1-.",t-veJ. "et-weel\ t-I-.eiv -{'''IMilies. .,.p.p. It-I-.o\.\ I-. t-I-.e sit-\.\",t-iol\
,ve ",lw",y s "I-.owevev" t-I-.-",t- o.('.('set- t-I-.e civ- C'\IMst-"'I\ces As "ot-I-. I-.ist-ovy "'I\J. ~ve",t- wov' C"'I\ "e 1\0 cOl\s\.\IMIM",t-ely pev-{'ed (ov J.is",st-evo\.\s sit-\.\",t-iol\ wit-I-.o\.\t-",t- le",st-, ol\e "I-.owevev." This st-",t-eIMel\t- is il\J.eeJ. pvovel\ vevit-",,,le. 129 THE WRITING SECTION WHY ESSAY #5 RECEIVED A SCORE OF 4 This response
demonstrates adequate mastery by developing the point of view that "Both history and literature bear witness to the undeniable fact that no matter how a situation may seem, there will always be another factor to consider that may shed a new light on the circumstance." The writer demonstrates competent critical thinking by selecting two adequate
examples to illustrate situat ions that seem "hopeful and bright" but are clouded by the inevitable "however," Paragraph two discusses how the "colossal victory the Allies had achieved" at the end of World War II was marred by the "threat of Communism." Paragraph three briefly discusses Romeo and Juliet's forbidden love. The response is generally
focused and demonstrates some progression of ideas and coherence. The writer exhibits adequate facility in the use of language and displays some variety in sentence structure. ("Although the Allied powers reigned triumphant over fascism, there was a 'however' that wou ld perhaps marr their victory. This 'however' was the establishing threat of
Communism. Despite the colossal victory the Allies had achieved, there was still another aspect, a 'however' that was inevitable.") Although this response is competent, to achieve a higher score, the writer would need to develop the point of view more effectively by demonstrating clearer focus and providing more detailed evidence. This essay scored a
4. 130 The Essay Essay #6: This essay also rec8iv~d a score of 4. R",yel l" life ls I-heye '" sll-"",\-lo" INheye 0,,1 o"e ""'SINey ls conec\-. I" .p",c+, eve" ",ss"'"l"~ I-heye ls 0,,1'1 o"e Yl~hl- o.f'\-e" leMs 1-0 """ ill I-ho"~hl- 0,,1- .l.eclslo". So",e\-l",es I-he 'oesl- IN""Y 1-0 le" ls 1-0 -11"".1. I-he "holNevey" ",,,.I. eys"e ",11 ossl'ole ""'SINeys 1-0 I-he .p"llesl-
exl-e"l-. -n.,ls ls '" lesso" Ile",y"e.l. l" ""'1 E"BIlsh cl",ss I-hls ye",y As INe ye",.I. l" 'ooo' ",,,.I. I-hely l",plie",\-lo"s l" O"y Ilves. These .l.lsc"sslo"s le.l. 1-0 """""1 he",l-e.l. .l.e'o",l-es 0" V",ylo"s I-oplcs I-HYO"Bo,,1- I-he ye",y. AI- -11 ysl-, ""'1 cl",ss",,,,l-es ",,,.I. I INo"I.I. 'oeco",e ",,,,'BYY ",Ie",ch ol-hey .pOY .l.ls"Byeel"B ",,,.I. ",I- I-he I-e",chev .pOY sh"c\-"yl,,~
hls lesso"s so I-hese peyspeC\-lve ch",~e.l. "'YB""",e,,\-s INo"I.I. OCC"y. I) ,1- I-he" ""'1 I c",,,e 1-0 cl...ss o"e .1.""'1 + f> IN",,,\-e.l. ,,~ '" ",,"Iso ""'1 '" hOIN I .pell- 0" I-he I-opie. As I s",1- I" cl",ss I Ilsl-e"e.l. 1-0 ,y ",l" ""'1 ch ",y~ "'"e"l-, hyl"~ 1-0 le",y" INh",1- I-he coyyec\- ""'SINey IN""S Eve"I"", Ily I ,po"".I. I" OIN" .peeli" SO" I-he s,,'o·ec\- '0,,1- I ",Iso .po""".I. so",e~ else. -n.,eye ve",Ily
IN""S "0 \lyl~hl-" ""'SlNey, ",,,.I. ""1 opl"lo" IN""S she"~l-he"e.l. '0'1 'oel"~ I-esl-e.l. '0'1 opposl"~ vleINs. s I-he e",y INe,,1- 0" """"""Y of ""'1 cl",ss",,,,l-es see",el.l 1-0 ye",ll~e I-hls ""s INell. E,,~lish ye""1"e.l. '" .l.e'o",l-e, '0,,1- '01- """ """~!Y. o"e. II- 'oec",,"e '" \-l",e 1-0 sh",ye yo"y peyspec\-lve INhlle lisl-e"l,,~ 1-0 I-he ol-heys' 'holNeveys. 131 THE
WRITING SECTION WHY ESSAY #6 RECEIVED A SCORE OF 4 This competent response develops the point of view that "Sometimes the best way to learn is to find the 'however' and pcrsue all possible answers to the fullest extent." The. writer demonstrates competent critical thinking by focusing on an adequate, personal example to support the
position. The response describes the change from the writer's initial anger with other pOints of view in class to an understanding that his or her own "opinion was strengthened by being tested by opposing views." This essay is generally organized to chronicle the shift in the writer's posit ion and therefore demonstrates a progression of ideas. Using
generally appropriate vocabulary, the writer exhibits adequate facility in the use oflanguage. ("These discussions led to many heated debates on various topics throughout the year. At first, my classmates and I would become angry at each other for disagreeing and at the teacher for structuring his lessons so these arguments would occur.") However,
to receive a higher score, th is writer would need to develop the position more effectively by discussing in further depth the ways the example supports the point of view, in addition to retelling the anecdote. Thus, this response demonstrates adequate mastery and scored a 4. 132 The Essay Essay #7: This essay received a score of 3 . The sl-"l-elMelll-
'"T\-.eve is "Iw" s" hewevev" s" ~esl-s I-h,,1- I-heve is "Iw,,),s ,,"el-hev e xpl"'", ,,He" ev peilll- et' view. Hewevev I-heve is IIel- "Iw,,),s ,,"el-hev e xpl"'", ,,He" ev peilll- et' view. '" IM"")' c"ses I-heve is elll)' elle sel"Hell I-e " pveble lM, lie IM"I-I-ev hew elle leel:.s " I- il-. Bec""se ct' I-his, I-he sl-"l-elMelll- '"T\-.eve is "Iw" s" heweve v" is " t"'lse ill cevl-"ill ph),sic,,1
il-e I-he t"'c\- I-h,,1il- IMC\ be seell "s \-v"e b selMe ee Ie. The sl-"l-elMelll- is IICI- \-v"e ill 1M"l-helM"l-k ,,1 e '"'Hells. It' " I-e"chev weve I-e "sl:. t'ev I-he ,,"swev I-e I-he pvebleIM elle pl"s elle I-he ,,"swev we"IJ- be I-\-we. '" I-his c"se I-heve is lie hewevev. The ,,"swev is \-we ,,",1. I-heve is lie el-hev ,,"swev. The sl-"l-elMelll- is "Ise t"'lse ill cevl-"ill ph),sic,,1
"specl-s ct' lit'e. It' selMeelle weve I-e pil-c h " b"seb,,11 ,,",1. I-he b"l-I-ev J-iJ- IIel- hil- il-,),e" ce,,"J- s,,)' I-he b"l-I-ev J-iJ- hil- il- bec""se il- is ce""flel-el)' eviJ-elll- I-h,,1- he J-iJ-II'I-. Theve is lie hewevev. The l-evlM "hewevev" cevl-"illl " IIel- "II et' I-helM lies I-e "s e cl-s et' lit'e b,,1- ,,",1. I-hevet'eve IIel- "Iw" s. Bec""se et' I-hese HIMes wheve il- J-eesll'l-
"ppl), I-he sl-"l-elMelll-. "'"T\-.eve is "Iw" s " hewevev" is t"'lse. WHY ESSAY tl7 RECEIVED A SCORE· OF 3 This response demonstrates developing mastery by asserting the point of view that "in many cases there is only one solution to a problem, no matter how one looks at it." The writer demonstrates some critica l thinking by attempting to prove
that "the statement 'There is always a however' is false." Although the writer attempts to support the main idea, evidence provided is too limited and repetitive to be adequate. ("If a teacher were to ask for the answer to the problem one plus one, the answer would be two. In this case there is no however. The answer is two and there is no other
answer.") To receive a higher score, the essay needs to demonstrate dearer focus and stronger critical thinking by developing the position further. Therefore, the essay remains in the inadequate category and scored a 3. 133 THE WRITING SECTION Essay #8: This essay received 8 score of 2. '"rI-.eve is ",Iw",ys '" '\.-.owevev.'" This s\-",\-e",e,,\- is \-
v"e. I\"'e"'\'s \-\.-.""\- ~~\'\- seco"J. e> \-ells 's \-\.-.'\- \-\.-.e \-v,,\-\.-.. is "o\- ,,Iw",ys e",sy \-0 see. This is e....sy \-0 see i" The Gve",\- G",\-s'oy, 'oy F. ~co\-\- Fi\-z.~ev",IJ.. I" \-\.-.is "ovel, J",y G",\-s'oy \-,ies \-.o \-evo\-eJ. \-\.-.e I",s\- -Ilve ye",vs o-P \-'is He \-0 \-\.-.e 11.10""'''' \-.-.e loves, "",ye" "eJ. D",isy F",y. D"e \-0 \-\.-.e c\"'ss s\-"\-s o-P \-,-\-\.-.e ",,,,\-\.-.",\-,"eJ. Je",I,'' "",,,,,",isy
w\.-.e" ,vi"~ \.-.e w",,\-s \-0. I1e \-\.-.e" \.-.-.e 'oeco",es J.e\-ev",I"eJ. I.-0 e\- we",I\-\.-.. ",,,J. "vs"e \-\.-.is love. L",\-ev i" n-Pe w\.-.e" \.-.e 'oeco",es vic\-. ",,,J. "'ee\-s ",I \-\.-.e \-wo -P",II 'o",d. i" love. 110wev, G",\-s'oy 'oec",'e '" ",o'os\-ev i" ovJ.ev \-0 ~e\- we",I\-\.-.y. Vpo" -Il"J.i,,~ \-\'is i"-Pov"",\-io,,, D",isy ve",liz.es \-\.-.",\- ~",\-s'oy is "o\- \-\.-.e w",,\-s \-0 ""'''y.
10 co"c\"J.e, D",isy w",,\-\-eJ. \-0 ",,,,V\'y G",\-s'oy, 'o,,\- \-\.-.e w",s "o\- we",I\-\.-.y. W\.-.e" \.-.e 'oec",,,,e we",I\-\.-.y, \-\.-.ey co"lJ. "o\- ",,,,,vvy 'oec",,,se \.-.e 'oec",,,,e '" ",o'os\-ev. WHY ESSAY #8 RECEIVED A SCORE OF 2 This seriously limited essay begin s to develop the point of view that "the truth is not always easy to see," but it provides only one vague
and insufficient example to support this position. Although the writer does demonstrate some critical thinking by selecting the appropriate example of Jay Gatsby's deception, the response lacks the focus and organization necessary to exhibit coherence and a progression of ideas. Furthermore, the response displays little facilit y in the use of language.
using a limited vocabulary. ("However, Gatsby became a mobster in order to get wealthy. ... Da isy wanted to marry Gatsby, but he was not wealthy. When he became wealt hy, they cou ld not marry, because he became a mobster.") To receive a higher score, this essay would need to exhibit more facility in the use of language and demonstrate
stronger critical thinking by providi ng more relevant evidence to support the point of view. Consequently, this response demonstrates little mastery and scored a 2. 134 The Essay Essay #9: This essay received a score of 1. li-Ieye is ",1""",'1S '" "~o""evey" i" "'''1 poi"t 0-1' vie"". li-Ie iJ.e", c"'' be q"ite co"'ple>< i" J.i-P-Peye"t sit"",tio"s. k"o""i"B t~e
possibility 0-1' '" "~o""evey" i" "''' i"'poyt",,t i"st",,ce c"'' be ~elp-l"I, '" le",si" Oy both. li-Ie i", oyt",,ce 0-1' ",,,ot~eY ossible e>< 1",,,,,,- tio" Oy oi"t 0-1' vie"" ~"'s ~el eJ. "'''''' t~i" . s s"c~ "'s ",eJ.ici"e ",J.v",,,ce. W~e" Yese",Yc~eys ",,,J. J.octOYs be "'' t~e c~",l1e" e to e>< loye P",y\ WHY ESSAY #9 RECEIVED A SCORE OF 1 This brief response is
fundamentally lacking. Although the response attempts to develop a point of view ("There is always a 'however' in any point of view."), there is little ev idence provided to support this position. The sparse support is incomplete and simply too limited to be organized or focused, resulting in an incoherent essay. Vocabulary is vague ("Knowing the
possibility of a 'however' in an important instance ca n be helpful, unpleasing or both.") and fails to further the progression of ideas. To achieve a higher score, this response would have to exhibit a clearer focus and provide further evidence to support its position. Thus, this response demonstrates only very little mastery and scored a L 135 CHAPTER
10 Improving Sentences Improving or revising written English is a pivotal part of successful writing. The questions in this chapter focus on an important skill: the ability to recognize and write dear. effective and accurate sentences. This is a skill you'll need when writing and making revisions to your writing in high school, in college and beyond. The
following box provides the directions and the example that will appear on the test. The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices
are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices. In making you r selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should
result in the most effective sentence - clear and precise. without awkwardness or ambiguity. Example: Laura Ingalls Wilder published her first book and she was sixty.fiye years old then. (A) and she was Sixty-five years old then (B) when she was sixty·five (e) at age Sixty-five years old (0) upon the reaching of sixt }'·five years (E) at the time when she
was sixty· five Here's another example. This one includes an explanation to help you understand the reasoning behind the correct answer. 137 THE WRITING SECTION EXAMPLE Although several groups were absolutely opposed to the outside support given the revolutionary government, other groups were as eQual in their adamant approval of that
support. CAl (B) (C) (D) (El were as equal in their adamant approval of held equally adamant approval of were equally adamant in approving had approved equally adamantly held approval equally adamant of Answer: The correct answe r 1$ (C). Explana tion: Choice (C) is correct because it expresses the second part of the sentence in a way that is
parallel to the first part. Two groups are being compared: groups "absolutely opposed to" and groups "equally adamant in." Both phrases now have a common structure: an adverb modifyi ng an adjective followed by a preposition . Approaches to Improving Sentences). Read the entire sentence before you look at the choices. Choice A is always the
same as the original sentence, so you may see that the right answer is to leave the sentence unchanged.). Remember that the right answer will be the one correct version among the five choices. This is d ifferent from what you will be asked to do for Identifying Sentence Errors (Chapter 11).). Read each choice along with the entire sentence. Don't
read the choices on their own.). Look for common problem areas in sentences. These include noun/verb agreement, parallelism, placement of modifiers and the use of relative clauses.). Read allfive versions of the sentence aloud, ifpossible, while you're practicing. You will not be able to do this during the actual test, of course. Your ear may tell you
what your eye initially misses.). Read more slowly than you normal/ydo. Our brains sometimes make automatic corrections that we don't notice. Reading more slowly will help you pay closer attention.). Use your test booklet to help you by marking each question that you don't answer. Then you can easily find it later. Writing Exercise: Using
Parallelism You ca n improve your writing enormously by using paralleli sm, which is simply using similar structu res in a series. Because parallelism puts the content of a sentence 138 Improving Sentences into a recognizable pattern. it's easier to understand a parallel sentence. For example. note the parallelism in these sentences: • Hawaii is
famous for its beautiful beaches. and Montana is well known maiestic mountains . fur...!.u . • Sharon wanted to have the party at her house on Saturday night rather than in a restaurant on Sunday afternoon. In the first sentence. Hawaii and Montana a re the two subjects. They are both described with adjectives (which are italicized - Le.,famous a nd
well known), and what they are famou s and well known for in each case follows in a prepositional phrase (which is underlined). The parallelism extends to the fac t that the noun in each prepositional phrase is preceded by an adjective: Hawaii is famous fQ[its; Q!::I!!.!tif!.!i 2!::I!o!;;bC:i Montana is well known fQ[its; maj!:s:ti!;; m~!lmt i!,il];i and How
would you describe the parallelism of the second sentence? Sharon wanted to have the party rather than (where?) at her house (when?) 2n S5!,t!.![gay night (where?) in a restaurant (when?) 2n Sundi!,y aflC[D2QI]. In general, try to balance a word with a word, a phrase with a phrase and a clause with a clause. W ithin those patterns. if you want to be
a careful w riter, try to bala nce similar types of words - for example, adjectives wit h adjectives, prepositional phrases with prepositional phrases, or noun clauses with noun clauses. For example, notice the clumsiness of this sentence: "On a hot day, I like swimming or to sit in the shade:' A better, clearer way to write this sentence would use a
parallel expression: "On a hot day, I like to swim or sit in the shade:' Often the para llelism involves items in a series: "The telephone message was short. quiet and what I couldn't understand." This sentence would be clea rer if it had three adjectives (italicized); "The telephone message was short, quiet and hard to understand." 139 THE WRITING
SECTION Example Exercise: Rewriting Sentences Using Parallelism Rewrite these sentences, using parallelism: 1. Our vacation plans include exploring the city, visiting old friends, and to spend a few days doing nothing at all. Rewrite: 2. Sean had to choose between his brother's baseball game and going to his girlfriend's recital. Rewrite: 3. A
teacher needs patience and to be fa ir. Rewrite: 4. I decided to buy the gift whether the store took credit cards or even making me pay cash. Rewrite: 140 Improving Sentences 5. The movie was not entertaining or an experience that was pleasant. Rewrite: 6. She is hoping fo r a career in med icine, law, or to be an engineer. Rewrite: 7. I try to be
honest. hardworking, and to pay attention to my friends. Rewrite: 8. The produce in that store is fresh, well displayed, and costs too much. Rewrite: 141 THE WRITING SECTION POSSIBLE REWRITES THAT IMPROVE THE ORIGINAL SENTENCES In the following rewritten sentences, the parallel items are italicized, and an explanation follows each
rewrite. 1. Origillal: OUf vacation plans include exploring the city. visiting old friends. and to spend a few days doing nothing at all. Rewrite: Our vacation plans include exploring the city. visiting old friends and spending a few days doing nothing at all. Rationale: The three parallel words are all gerunds - that is, verbs ending in -ing - that are doing the
job of a noun: in this case, telling what the vacation n plans include. Nouns often answer the question "what. Gerunds look like present participles, which are also verbs ending in -ing, but part iciples do the work of an adjective, which is to descr ibe a noun. If you want an even more thorough understanding of grammar, consider this: the gerund is not
only a noun but is Simultaneously performing as a verb. In this case, like the transitive verbs they are, each one takes an object (underlined): exploring the city. visit ing old friends, and spending a few days. 2. Original: Sean had to choose between his brother's baseball game and going to his girlfriend's recital. Rewrite: Sean had to choose between
his brother's baseball game and his girl- friend's recital. Rationale: The parallel items a re in similar form : his brother's this and his girlfriend's that. 3. Original: A teacher needs patience and to be fair. Rewrite: A teacher needs patience and fairness. Or: A teacher needs to be patient and fair. Rationale: The teacher needs two qualities. It does not
matter whether they are expressed as nou·ns (i.e., patience and fairness) or infinitives (i.e., to be patient and [to belfair). Either parallel expression is fine. 142 Im proving Sentences 4. Original: I decided to buy the gift whether the store took credit cards or even making me pay cash. Rewrite: I decided to buy the gift whether the store took credit
cards or even made me pay cash. Rationale: I decided to buy the gift whether the store did this or did that took credit cards or (even) made me pay. You achieve the parallelism when you put both expressions into the same form, in this case, the past tense verb following the subject "store." 5. Original: The movie was not entertaining or an experience
that was pleasant. Rewrite: The movie was not entertaining or pleasant. Or: The movie was neither entertaining nor pleasant. Rationale: Two words tell what the movie was not: entertaining and pleasant. Those two adjectives would make the sentence parallel in structure. Also, remember that when you use the negative word neither, you must use the
equally negative word nor. That pair of connectors emphasizes the parallelism of the sentence. 6. Original: She is hoping for a career in medicine, law or to be an engineer. Rewrite: She is hoping for a career in medicine, law or engineering. Rationale: The series following "in" tells of three choices, so they should be expressed in parallel structure:
medicine, law and engineering. Another possible parallel expression is to name the three professions: She is hoping to be a doctor, a lawyer or an engineer. 7. Original: I try to be honest, hardworking and paying attention to my friends. Rewrite: 1 try to be honest, hardworking and attentive to my friends. Rationale: What three qualities do "I" claim to
have? 1 am hardworking, I am honest and 1 am attentive. The parallel structure uses three adjectives rather than two adjectives and an infinitive verb (the form of the verb that begins with to), as in the original sentence. 143 THE WRITING SECTION 8. Original: The produce in that store is fresh, well displayed and they charge too much. Rewrite; The
produce in that store isfresh, well displayed, and too costly. Rationale: What three words describe the produce in that store? Fresh, well displayed and too costly. Use these three adjectives to ach ieve parallelism. 144 Improving Sentences Sample Quest ions The following sentences test correctness and effectiveness of expression. Part of each
sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternat ives, select choice A; if not, select one of the other choices. In making
your selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should result in the most effective sentence - clear and precise, without awkwardness or ambiguity. Exam ple: Laura Ingalls Wilder published her firsl book and she was sixty-
five years old then. CA) (B) (C) (D) (E) and she was sixty-five years old then when she was sixty-five at age sixty-five years old upon the reaching of sixty-five years at the time when she was sixty-five @.©@@ l. Alice Walker, one of America's best-known writers. she has published both poetry and prose. CA) (B) (C) (D) (E) writers, she has published
writers, has published writers, and publishing writers since publishing writers when she published 2. Consumers are beginning to take notice of electric cars because they are quiet, cause no air pollution. and gasoline is not used. CAl (B) (C) CD) (E) cause no air pollution, and gasoline is not used air pollution is not caused, and gasoline is not lIsed
cause no air pollution, and use no gasoline causing no air pollution and using no gasoline air pollution is not caused, and no gasoline is used 3. The convenience and availability of watercolor paint account for itS popularity with amateur artists. (A) account for its popularity (B) account for their popularity (C) accounts for its popularity (D) is why it is
popular (E) are a reason for its popularity 145 THE WRITING SECTION Answers and Explanations 1. Alice Walker, one of America's best-known writers, she has published both poetry and prose. (A) writers, she has published (B) writers, has published (e) writers, and publishing (D) writers since publishing (E) writers when she published ~eplnMind
Answer: Choice (8) is the correct answer. Restating the subject with a pronoun is a common mistake. Usually the pronoun is both unnecessary and distracting. Explanation: This sentence describes Alice Walker, one of America's best-known writers, who has published both poetry and prose. Choice (8) makes this correction so the sentence is written
properly. Here's why each of the other choices is nol the correct answer: • Choice (A) is incorrect because the pronoun "she" is redundant. Simply dropping "she" will correct this problem . • Choices (C), (D) and (E) are incorrect because they do not contai n verb forms that produce grammatically complete sentences. 2. Consumers are beginning to
take notice of electric cars because they are quiet, cause no air pollution. and gasoHne is not used. (A) cause no ai r pollution, and gasoline is nOI used (B) air pollut ion is not caused, and gasoline is not used (C) cause no air pollution, and use no gasoline (D) causing no air pollution and using no gasoline (E) air pollution is not caused, and no gasoline
is used ~eplnMlnd Parallelism is one sign of clear writing. When you see a pair or a series of items joined by and or or,. make sure the grammatical structure is the same. The words, in most cases, should all be nouns, or all adjectives, or all verbs in the same tense. Answer: Choice (C) is the correct answer. Explanation: In this sentence, you must
recognize that pa rt sofa series separated by commas should parallel each other, as in the sentence produced by choice (C): Consumers are beginning to take notice of electric cars because they are quiet, cause no air pollution, and use no gasoline. Here's why each of the other choices is not the correct answer: • In the original sentence and choice
(A), the first two items in the series ("are quiet" .a nd "cause") take the plural subject "they" and use active verbs, but the third item ("gasoline is not used") introduces a new subject and the passive voice. To follow the structure set forth by the phrase "they are quiet," the words "cause" and "use" - which also take "they" as their subject - should be
used. 146 Improving Sentences • Choices (B), (D) and (E) do not follow this parallel structure and so are incorrect. J. The convenience and availability of watercolor paint account for its popularity with amateur artists. (A) account for its popularity (B) account for their popularity (C) accounts for its popularity (D) is why it is popular (E) are a reason for
its popularity Answer: The co rrect answer is (A). Explanation : This sentence requires you to pay close attention to the plu ral subject. The original sentence is correct, so the answer is (A). Here's why each of the other choices is not the correct answer: • In (B), the verb "accou nt" correctly refers back to the plural subject "convenience and
availability,n but the plural pronoun "their" is incorrect - what is popular is "watercolor paint," not "convenience and availability." {J;ep in Mind Singular and plural parts of your sentences should match. If your subject is plural, your verb should also be plural. for example. You might mali!: the subject with an S or a P to remind yourself that it is
singular or plural. • In (C) and (D), the verb is singular rather than plural. • In (E), the si ngular noun "reason" does not agree with the plura l subject. 147 Recap 1. Read the entire sentence before you look at the choices. 2. Remember that the right answer will be the one correct version among the five choices. 3. Read each choice along with the
entire sentence; don't read the choices on their own. 4. Look for common problem areas in sentences, such as noun! verb agreement, parallelism. placement of modifiers and the use of relative clauses. 5. Read all five versions of the sentence aloud, if possible , while you 're practicing. 6. Read more slowly than you nonnally do to help you pay closer
attention. 7. Be sure that your subjects and verbs agree. 8. Mark each question that you don't answer in your test booklet, so you ca n easily return to it later. 148 Improving Sentences Practice Questions The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each
sentence a re five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices. In making your selection, follow the requirements of standard written
English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should resuit in the most effective sentence - dear and precise, without awkwardness or ambiguity. Example: Laura Ingalls Wilder published her first book and she was Sixty-five yeafs old then. (A) (B) (C) (D) (E) and she was Sixty-five
years old then when she was sixty-five at age Sixty-five years old upo n the reaching of Sixty-five years at the time when she was sixty-five I. He arranged the gems on the counter, the sales assistant proceeded to tell us about the origins of each stone. (A) He arranged the gems (B) (C) (D) (E) The gems, which were arranged The gems were first
arranged After arranging the gems He, having arra nged the gems 2. Some of t he Smithsonian Institution's most prized items, from Duke Ellington's musical transcripts to First Ladies' gowns, coming from unsolicited donations. (Al (B) (C) (D) (El comi ng from they come from they have come from came from which came from 3. Brought to the United
States at the age of thirteen to receive a Western education, his first bOQk discusses Lee ¥an Phou's childhood in China. (Al (B) (C) (D) (E) his first book discusses Lee Yan Phou's childhood in China Lee Yan Phou's childhood in China is the subject of his first book the subject of his first book is Lee Yan Phou's childhood in China l.ee Yan Phou discusses
his childhood in China in his first book Lee Yan Phou, whose childhood was in China, discusses this in his first book 4. Only since t he publication of her first novel Olivia has been considering herself a genuine writer. (Al (B) (C) (D) (E) Olivia has been considering Olivia considered has Olivia considered was Olivia considering could Olivia be able to 149
THE WRITING SECTION 5. Scientists predict technological changes in the next century. they will be as dramalic as was the development of the transcontinental railroad in the last century. (A) century, they will be as dramatic as was (8) centu ry, these will be as dramatic as (e) century; being as dramatic as was (D) century will be dramatic as is (El
century as dramatic as 6. Anita liked to watch television. ofwhjcb she fQuod the science proGrams especially fascinating. (A) (8) (el (D) (E) television, of which she found the science programs especially fascinating television; she found the science programs especially fascinating television, and it was especially the science programs that were of
fascination television; the fascination of the science programs especially television, especially fascinating to her were the science programs 7. Although gale force winds often pass through the Eiffel Tower, (ausin\: it to sway no more than four inches. (A) causing it to sway no more (8) and yet it sways no more (e) they do not cause it to sway more (0)
and they do not cause it to sway (E) yet causing it to sway no more 8. Underestimaling its value. breakfast is a meal many people skip. (A) Underestimating its value, breakfast is a meal many people skip. (B) Breakfast is skipped by many people because of their underestimating its value. (e) Many people, underestimating the value of breakfast, and
skipping it. (0) Many people skip breakfast because they underestimate its value. (E) A meal skipped by many people underestimating its value is breakfast. 150 THE WRITING SECTION Answer Key 1. D 2. D 3. D 4. C 5. E 6. B 7. C 8. D Additional practice questions can be found in The Official SAT Online Course at
www.collegeboard.comlsatonlinecourse. 152 CHAPTER 11 Identifying Sentence Errors When you're writing and making revisions. being able to find mistakes in sentences is one of the most important ski lls you can have. Even writers who know the rules of good written English may need to correct m istakes while they're making revisions. To clearly
express your written ideas. you must know gramma r, usage, word choice and idioms. The following box provides the directions and the example that will appear in the section on Identifying Sentence Errors. The following sentences test your ability to recognize grammar and usage errors. Each sentence contains either a single error or no error at all.
No sentence contains more than one error. The error, if there is one, is underlined and lcuered. If the sentence contains an error, select the one underlined part that must be changed to make the sentence correct. If the sentence is correct, select choice E. In choosing answers, follow the requirements of standard written English. Example: The other
delegates and him immediately A B C accepted the resolution drafted by the D neutral states. No error E Here's another example. This one includes an explanation to help you understand the reasoning behi nd the correct answer. EXAMPLE In the following question, you are asked to identify the grammatical error. 153 THE WRITI NG SECT ION II is
likely that the opening of the convention center, ~reviQusly illi2r July 1, would be postponed A' C because of the bricklayers' strike. No error D E Answer: The correct answer is (C). Explanation: Choice (C), "would be," is the wrong tense of the verb in this sentence. The'sentence concerns when the convention center is going to open. This is a time in
the future. either July I or later if there is a strike. Because the opening will defi· nitely take place, the future tense, "will be," is needed. "Would be" (which is the conditional tense) indicates only that an event might happen. Approaches to Identifying Sentence Errors The questions in this section are different from most other multiple-choice questions.
For Identifying Sentence Errors, you will have to choose the answer that contains a mistake. Here are some approaches to try as you work through Identifying Sentence Errors . ... Read each sentence qUickly but carefully. The error may be obvious as soon as you see it. ... Consider each question as a cluster of truejalse questions, each to be
considered separately. Only one can be false, and that is the one containing the error. If there are no false responses, the answer is (E) - no error. ... Read aloud, if possible, during your practice sessions. You won't be able to do this during the actual test, of course. If you read aloud, you may hear the error immediately. Keep in mind, however. that the
rules for written English are stricter than those for everyday spoken English . ... Examine the underlined choices A to D. Consider which kind of correction may be needed for each one (and refer to the table in Chapter 8 on "Characteristics of Effective Writing"). ... Develop the habit of looking for the most common mistakes people make in grammar:
subject/verb agreement. pronoun agreement and adjective/adverb confusion . ... Look for errors in idiom - words or phrases that are particular to our language because of what they mean when used together. We say that we listen to someone. not listen at someone or by someone; a song is by a composer. not from a composer. We say at the top of the
hill, not at the top on the hill. 154 Identifying Sentence Errors ... Remember that some sentences have no error. Don't spend time looking for what is not there. Mark (E), No error, on your answer sheet if you believe the sentence is correct as written . ... Correct errors even in questions for which you have only to identify the error. As you practice,
correcting the error may help you keep in mind the language principles . . . Move quickly through questions about Identifying Sentence Errors. The other kinds of questions - Improving Sentences (Chapter 10) and Improving Paragraphs (Chapter 12) - will likely take more time . . . Mark questions in your test booklet that you've skipped. Then you can
return to them later. Writing Exercise: Avoid Dangling Participles To improve your writing, make sure you avoid using participial phrases that have no subjevt; they are a frequen t cause of confusion. Ouick Grammar Review: Participles Participles are verb forms that function as adjectives. In the present tense, participles always end in "-ing" (e.g.,
laughing, falling, gusting). In the sentence "The laughing child played with the falling leaves that the gusting breeze shook loose from the quivering branches," the italicized words are all present participles, and they describe nouns, which are underlined. These are the present participles of the verbs laugh,fall, gust and quiver. In the past tense, partic
iples often end in -ed, -en or -t (e.g., cooked, washed; broken, written; spent, lost), and some are irregular (e.g., bought, wrung). In the follOWi ng sentences, the past participles are again italicized, and they describe nouns, which are again underlined: • Raw vegetables are more nut ritious than cooked Q.Il.e.£. • The newly washed car glistened in the
afternoon sunshine. • The jury had a hard time ignoring the written J2!.QQf of the defendant's alibi. • He had nothing to show for his road trip but receipts for all his spent~. • Lost opportunities rarely come around a second time. • You have to declare the value of all the bought goods you bring home from your trip. • Tightly wrung laundry will dry
faster but will need more ironing. These are past participles of the verbs cook, wash, write, spend, lose, buy and wring. 155 THE WRITING SECTION Quick Grammar Review: Participial Phrases A group of words that begins with a participle is known as a participial phrase. Because participial phrases are adjectives, they are used to modify nouns.
Because they are verbs, they need subjects. Read this sentence and see if you detect a problem in its clarity: Tourists see statues of many famous patriots walking a long Boston's Freedom Trail. It appears that the statues are walking, not the tourists. In English, modifiers are usually placed as dose as possible to the words they describe, so this
sentence should read: Tourists walking along Boston's Freedom Trail see statues of many famous patriots. Example Exercise: Rewriting Sentences to Improve the Participial Phrase's Location Revise each of the follOWing sentences so that the participial phrase's location does not cause confusion. The first six are present participles; the last four are
past participles. I. I thought I heard a strange rattle driving my car. Rewrite: 2. Strumming on his guitar, we suddenly remembered where we had seen this fo lk singer before. Rewrite: 156 Identifying Sentence Errors 3. I turned the corner and bumped into an elderly gentleman paying no attention to where I was going. Rewrite: 4. Orbiting between
Mars and Jupiter, research astronomers discovered a new group of asteroids. Rewrite: 5. I saw a long line of traffic looking both ways before I tried to cross the street. Rewrite: 6. The caterer served refreshments to the guests wearing a frilly white apron. Rewrite: 7. Raised in an open field without any pesticides, I prefer vegetables and fruits.
Rewrite: 157 THE WRITING SECTION 8. Cooked too long, she thought the pasta did not taste good any more. Rewrite: 9. Spiced with Italian herbs, I had never tasted anything quite like Imelda's salad. Rewrite: 10. Wrapped in brightly colored paper, Mickey lore open the birthday present. Rewrite: POSSIBLE REWRITES THAT IMPROVE THE
ORIGINAL SENTENCES In the following rewritten sentences (others are possible), the participial phrase is italicized and the noun it describes is underlined. In each case, the participial phrase describes that noun and is located as close to it as the sentence will allow. l. Origillal: I thought I heard a strange rattle driving my car. Rewrite: Driving my
car, I thought I heard a strange rattle. Ratiollale: The st range rattle was not d riving the car. Relocating the parti cipial phrase so it is next to the word I removes that confusion. The sentence "W hile J was driving my car, I thought J heard a strange rattle" is a perfectly good English sentence; it does not use a participial phrase. 2. Original: Strumming
on his guitar, we suddenly remembered where we had seen this folk singer before. Rewrite: Hearing thefolk singer strumming on his guitar, ~suddenly remembered where we had seen him before. Rationale: Whatever revised sentence you write, be sure that you do nol make it sound like "we" were strumming on the guitar. 158 Identifying Sentence
Errors 3. Orighwf: I turned the corner and bumped into an elderly gentleman paying no attention to where I was going. Rewrite: Paying no attention to where I was going.l turned the corner and bumped into an elderly gentleman. Rationale: Who was paying no attention? It is not the elderly gent leman. so the pa rticipial phrase cannot be placed next
to "gentleman." 4. Original: Orbiting between Mars and Jupiter, research astronomers discovered a new group of asteroids. Rewrite: Research astronomers discovered a new group of asteroids orbiting between Mars and Jupiter. Rationale: The original sentence says that the ast ronomers were orbiting between Mars and Jupiter. It's more likely that
the asteroids were. 5. Original: I saw a long line of traffic looking both ways before I tried to cross the street. Rewrite: Looking both ways before I tried to cross the street, 1 saw a long line of traffic. Rationale: Is the traffic looking both ways? Place the participia l phrase by the noun (in this case, pronoun) it actually describes. 6. Origillai: The caterer
served refreshments to the guests wearing a frilly white apron. Rewrite: The~, wearing a frilly white apron, served refreshments to the guests. Or: Wearing a frilly white apron, the ~ served refreshments to the guests. Rationale: The original sentence makes it sou nd li ke on ly guests wearing frilly white apron s received refreshments. Probably the
apron belonged to the caterer, so relocate the part icipial phrase to a posit ion near the noun it describes. 7. Origj1wi: Raised in an open fiel d without any pesticides, Tprefer vegetables and fruits. Rewrite: I prefer vegetables and frujts raised in all open field without any pesticides. Rationa le: It is not the subject "I" who was raised in a field, but the
vegetables and fru its. Rephrase the sentence so that point is clear. 8. Original: Cooked too long, she thought the pasta did not taste good any more. Rewrite: She thought the~, cooked too long, did not taste good any more. Rationale: "She" was not cooked too long; the pasta was. Placing the participial phase next to "pasta" will correct that
misstatement. You can also write, "Because the pasta was cooked too long, she thought it did not taste good any more." This is also accurate, but there is no participial phrase in this version. 159 THE WRITING SECTION 9. Original: Spiced with Italian herbs, I had never tasted anything quite like Imelda's salad. Rewrite: I had never tasted anything
quite like Imelda's ~ which was spiced with Italian herbs. Rationa le: "I" am not spiced with Italian herbs, so the sentence needs rewriting. Place the descriptive participial phrase near the word it describes. to. Original: Wrapped in brightly colored paper, Mickey tore open the birthday present. Rewrite: Mickey tore open the bi rthday present wrapped
in brightly colored paper. Rationale: Although it is possible that Mickey was wrapped in brightly colored paper, it is much more likely that the birt hday present was. Placing the participial phrase near "present" will make that clear. In several of these examples, you might have revised the sentence and removed confusion by some means other than
relocat ing the participial phrase. That's perfectly fine. The lesson here is to recogn ize when the participial phrase is badly located and to take steps to correct the problem. 160 Ide ntifying Sentence Errors Sample Questions The following sentences test your ability to recognize grammar and usage errors. Each sentence contains either a single error
or no error at all. No sentence contains more than one error. The error, if there is one, is underlined and lettered. If the sentence contains an error, select the one unde rlined part that must be changed to make the sentence correct. If the sentence is correct, select choice E. In choosing answers, follow the requirements of standard written English.
Exam ple: The other delegates and him immediately ABe accepted the resolution drafted by the o neulral states. No error E I. The 1Wib1 fiberglass sculptures of Luis Jimenez has received critical A B acclaim nOI only in his home state, New Mexico, but also in New York. e 0 No errQr E 2. Even with a calculator, you must have a basic understanding of
A B mathematics if one expects to solve complex problems correctly. No error e 0 E 3. People who dislike cats sometimes criticize them for beine aloof and A B independent; people who are fimd.cl cats often admire them for the same e 0 qualities. No error E 4. The decision that basjusl been agreed with by the committee members A B should serve as
a hasis for their work in the years to come. No error e 0 E 16 1 THE WRITING SECTION Answers and Explanations I. The b.r.iihl fiberglass sculptures of Luis Jimenez has received B A critical acclaim not only in his home state, New Mexico, but also in C D New York. NQ error E Answer: 1he correct answer is (B). GePinMind answer might be
immediately Explanation: The problem with th iS sentence lies in (B): the subject of the sentence, "sculptures," is plural and requires the plural verb "have apparent because the error is received," Read the entire sentence. The a common one of punctuation or grammar. The other choices are all correct: • The word "bright" in choice (A) is used
properly as an adjective . • In (C), "not only" is part of the combination "not only ... but also," • The preposition in (D), " in," begins a phrase that effectively parallels the preceding phrase "in his home state." The best answer. then. is (8). The corrected sentence reads: "The bright fiberglass sculptures of Luis Jimenez have received crit ica l accla im
not only in his home state, New Mexico, but also in New York." 2. Even with a calculator, you must have a basic understandi ng of A B mathematics if onc cxpects to solve complex problems correctl y. C D No error E Answer: The correct answer is (C). Explarlation: The first part of the sentence addresses "you." Because this pronoun is not underlined,

it cannot be changed, and subsequent pronouns must also use the second person. In (C), the third-person pronoun "one" is used incorrectly; choice (C) shou ld be worded "you expect." 162 Identifying Sentence Errors The other choices are all appropriate: • Choice (A) introduces the conditional relationship set forth in the rest of the sentence. • Choice (B) appropriately uses the preposition "of" with "understanding." • The adverb "correctly" in (D) modifies the verb "solve." The corrected sentence reads: "Even with a calculator, you must have a basic understanding of mathematics if you expect to solve complex problems correctly." ~eplnMlnd As you read a sentence, ask yourself if the error is obvious. If it isn't, consider the common problems: it's not subject/verb agreement (you must have is good) or adjective/adverb confusion (correctly is right, not co,. rect!o But the pronouns do not agree (you/one). Once again, the error is a common one. 3. People who dislike cats sometimes criticize them for bejnK aloof and A B independent; people who are fund..cl cats often admire them for the same C D qualities. No error E Answer: The correct answer is (E). Explanation: All of the underlined choices in this sentence are appropriate: • The word "sometimes" in (A) properly modifies the verb "criticize." • In (8), "being" is the verbal form that fits idiomatically with the phrase "criticize ... for." ~ • The preposit ion "of" in (C) is appropriate to use after "fond." • In (D), the plural pronoun, "them," is used appropriately to refer to "cats," and "for" is the correct preposition to use with the verb "admire." ~ep in Mind If you can't find an error In a sentence, the correct answer may be (E), "No error." Therefore, because all of the underlined parts of this sentence are correct, the best answer is (E), "No error." 4. The decision that bas just been agreed with by the committee members A • sbould serve as a basis for thei r work in tbe years to come. No error C D E Answer: The correct answer is (8). 163 THE WRITING SECTION ~.PInMlnd Explanation: The error is the preposition used in choice (B). In the context of this sentence, the correct idiomatic expression is "agreed to" rather than "agreed with," The other choices are correct: While practicing, read sentences aloud if you can. The error may then become obvious. • In (A), the present-perfect verb phrase is used appropriately to indicate an action that is completed in the present. • In (e), "for" appropriately completes the expression "basis for," and "their" properly refers to the plural noun "members." • Choice (D) properly expresses the time reference in the sentence. The corrected sentence reads: "The decision that has just been agreed to by the committee members shou ld serve as a basis for their work in the years to come," 164 Recap 1. Consider each question as a cluster of true-false questions , each to be considered separately. 2. Read each sentence quickly but carefully, and the error may become obvious. 3. Read aloud during your practice sessions if possible . 4. Examine the underlined choices A to D; then think of which correction may be needed for each. 5. Develop the habit of looking for the most common mistakes people make in punctuation, grammar and other areas. 6. Look for errors in idioms - that is, expressions whose meanings may not be clear from the individual words, but that mean something when used together. 7. Remember that some sentences have no error and that the COfrect answer may be (E), "No error." B. Correct errors when you practice, even if you are asked only to identify the error. 9. Move quickly through questions about Identifying Sentence Errors, because the questions on Improving Sentences and Improving Paragraphs will probably take more time. 10. Mark questions in your test booklet that you've skipped so you can go back to them later. 165 THE WRITING SECTIO N Practice Questions The following sentences lest your ability to recognize grammar and usage errors. Each sentence contains either a single crror or no error at all. No sentence contains more than one error. The error, if there is one, is underlined and lettered. If the sentence contains an error, select the onc underlined part that mus t be changed to make the sentence correct. If the sentence is correct, select choice E. In choosing answers, follow the requirements of standard written English. Example: The other delegates and him immediately ABC accepted the resolution drafted by the D , neutral states. NQ error @~©@® I. Since ~ two pencils, a pad of paper, and a ruler on each desk, students A do nol have to brina thei r own supplies. NQ error BCD E 2. Each time Caroline turns on her computer, she bM to enter a company code, then A her initials, and then enters a password.l:W2rk she can beiin working. NQ error B C D E 3. Flints found in the region extending from the Nile Valley!.Q the highlands of eastern A B Iraq attests to the presence of people there as lonK aio as one hundred thousand C D , years. No error 4. By virtue of~ size and supersensitive electronics, modern radio telescopes are able A to gather more waves and discriminate among 1hgn with greater precision thm B C D , earlier versions could. No error 5. Delgado's dilemma was like many other young writers: he had to choQse between A B assured publication in a student magazine illi! ~robable rejection by a popular C , magazine. No error 166 D Identifying Sentence Errors 6. Air pollution caused by industrial fumes has been studied for years, 1llu only A B recently his the harmful effects of noise pollution ~ known. No error C 0 E 7. No matter how cautioys snowmobiles ill driven, they are capable ofdamagjng the A B C D land over which they travel. No error E 8. The starling isiY.ili...a pest in rural areas that it bas become necessary 10 find ways of A B C controlling the growth cl.1b.rir population. No error o E 167 THE WRITING SECTION Answer Key I. A 2. B 3. C 4. A S. A. 6. C 7. B 8. D Additional practice questions can be found in The Official SAT Online Course at www.collegeboard.comisatonlinecourse. 168 CHAPTER 12 Improving Paragraphs If you think you do a great amount of writing now, just wait until you're in college. That's the main reason the College Board added a writing section to the SAT in 2005. The improving paragrap hs questions call on all you r ski lls in writi ng and rev is· ing. After you read a draft of a short essay, you will be asked to understand how the sentences and the paragraphs work together. You will have to make revisions by combining sentences and by altering structures within sentences. Though you may not realize it, that's the process you go through as you edit and revise your own school essays until they're fina l. The fo lloWing box p rOV ides the directions for Improving Paragraphs that will appear on the test. Di rections: The following passage is an early draft of an essay. Some parts of the passage need to be rewritten. Read the passage and select the best answers fo r the questions that follow. Some questions are about particular sentences or parts of sentences and ask you to improve sentence structure or word choice. Other questions ask you to consider organization and development. In choosing answers, follow the requirements of standard written English. Here's an example of an improving paragraphs question. EXAMPLE (l) At one point in the movie Raiders of the Lost Ark, the evil archaeologist Belloq shows the heroic Indiana 'ones a cheap watch. (2) If the watch were to be buried in the desert for a thousand years and then dug up, Belloq says, it would be considered priceless. (3) I often th ink of the scene whenever I consider the record album-collecting phenomenon, it being one of the more remarkable aspects of popular culture in the United States. (4) Collecting record albums gives us a chance to make a low-cost investment that might pay dividends in the future. (5) When my aunt collected them in the mid-sixties, nobody regarded them as investments. (6) A young fan shelled out dollar after dollar al the corner record store for no other reason than to assemble a complete collection of her fa\·orite musical groups - in my aunt's case, the Seatles and the Supremes. (7) Sycommitting so much of her allowance each week to the relentless pursuit of that one group not yet in her coiled ion the immortal Yardbirds, let us say - she was proving her loyalty to her superstars. 169 THE WR ITING SECTION (8) The recordi ng industry is a capitalist enterprise and so th is hobby has become one. (9) Just as everyone has heard oflhe exorbitant prices being paid for the Beatles' first album in mint condition, so everyone is certain that a payoff is among each stack of old records. (IO) But if thaI album was buried somewhere in my aunt's closet of dusty records, she never knew it. (I l) Long before she learned it, she had t hrown them out. In the context of the first paragraph, which revision is most needed in sentence 3? (A) Insert ~As a matter offaet" at t he beginning. (8) Omit the words "it being". Om it the word "scene". CD) Change the comma to a semicolon. (El Change "t h ink~ to "thought" and "consider" to "considered". eel A nswer: The correct answer is Choice (B). Expla nation: The words "it being" are unnecessary. Approaches to Improving Paragraphs).- Read the essay thoroughly to determine its overall meaning before you look at tile questions. It's important to have a sense of the enti re essay's organization and meaning before you deal with any changes. The essay is mea nt to be a draft, so there will be errors in it, but don't linger over those errors.).- Read more slowly than you usuaIly do, to help you pay closer attention .).- Try all of the options before you decide on your answer. The di rections tell you to choose the best answer. That means one may be sat isfactory but not as good as another. Don't overlook any possibilities.).- Make sure that your answer about a particular sentence or sentences makes sense in the context of the preceding and foIIowing sentences and of the passage as a whole.).- Use your test booklet to help you by marking each question that you don'f answer. Then you can easily find it later. Writing Exercise: Avoiding Wordiness A great way to improve you r writing is to si mplify it. Why use lots of words when just one or two well-chosen words will convey exactly what you want to say? Wordiness results from using unnecessary words and phrases and from adding empty expressions to a sentence. Unnecessa ry words a re someti mes the result of redundancy, or surplus words. For exa mple, expressions such as "two in number" are redundant because two is a number, so the ph rase "in number" does not add any 1 70 Improving Pa ragraphs mea ning to the sentence. Similarly, "sadly unhappy" is redundant. Finally, empty expressions, such as "if you know what I mean," add little to your writi ng except to fill up space - which should not be your goal. Eliminate those unnecessary words and phrases from your writing. Example Exercise: Rewriting Sentences to Avoid Wordiness Here's some practice. Revise the following sentences so that no unneeded words remain: 1. Ou r most favorite balloons were those that were red in color. Rewrite: 2. We put off until later in time the decision about whether or not the funny comedians would be appropriate and fitting for our evening of after-dinner entertainment performers. Rewrite: 3. Snow continued to keep on falling, so we had to repeatedly shovel the sidewalk over and over again. Rewrite: '7' THE WRITING SECTION 4. Working so aSSiduously hard left her tired, fatigued, and exhausted; she could barely stay awake and avoid falling asleep. Rewrite: 5. We considered his behavior rude, in the truest sense of the word. Rewrite: 6. The driver witnessed a fema le person as she parked a blue-colored veh icle, exited out of it, and proceeded to make her wayan foot in a northerly direction toward the blinking red light that was flashing on and off and on and off. Rewrite: 7. The American WaI of Independence is principally the most important historic event that grade school children in elementary schools have to learn about and study. Rewrite: 8. If you come to think about it, green vegetables ought to be a part of everyone's daily diet. Rewrite: 172 Improving Paragraphs POSSIBLE REWRITES THAT IMPROVE THE ORIGINAL SENTENCES Following are some suggested rewrites (though others are possible, too). The rationales show that many of the sentences displayed redundancy, or unnecessa ry repetition. I. Original: Our most favorite balloons were those that were red in color. Rewrite: Our favorite balloons were red. Or: We like the red balloons best. Rationale: "Favorite" means the one most liked, so "most favorite" is redundant. And because red is a color, the words "in color" are unnecessary. 2. Original: We put off until later in time the decision about whether or not the funny comedians would be appropriate and fitting for our eveni ng of after-dinner entertainment performers. Rewrite: We put off [or delayed] deciding whether the comedians would be appropriate for our after-dinner entertainment. Rationale: Firstofa\l, " 'aterin time" is redundant in thesameway"redincolor" and "ra iny weather" are. Second, unless they are not funny, we assume comedians are funny, so we don't have to say so. Third, "appropriate" and "fitting" are two words that say the same thing; we only need one. Finally. "entertainment performers" is also redundant, and because dinner is the evening meal. "after-dinner entertainment" already tells us that this is an evening event. 3. Original: Snow continued to keep on falling, so we had to repeatedly shovel the sidewalk over and over again. Rewrite: Snow kept on falling, so we had to shovel the sidewalk over and over. Or; Because it kept snowing, we had to shovel the sidewalk over and over. Rationale: "Continued to keep on" is redundant, as are "over and over again" and "repeatedly." 4. Original: Working so aSSiduously hard left her tired, fatigued, and exhausted; she could barely stay awake and avoid falling asleep. Rewrite: She was exhausted from working so hard, and she could hardly stay awake. Or; Because she worked herself into exhaustion, she could hardly stay awake. Rationale: "AsSiduously" means "working hard," so "aSSiduously working hard" is redundant. "Tired," "fatigued" and "exhausted " all mean the same thing, as do "stay awake" and "avoid falling asleep." 173 THE WRITING SECTION 5. Original: We considered his behavior rude. in the truest sense of the word. Rewrite: We considered h im rude. Rationa le: The word "behav ior" is implied by the rest of the sentence, and the expression "in the truest sense ofthe word" does not add any meaning to the sentence. Why would a writer use a word in an u nt rue sense? 6. Original: The driver witnessed a female person as she parked a blue-colored vehicle. exited out of it, and proceeded to make her wayan foot in a northerly direction toward the blinking red light that was fl ashing on and off and on and off. Rewrite: The driver saw a woman park a blue car, get out, and walk north toward the blinking red light. Rationale: "A fem ale person" is a woman. "Blue-colored," like "red in color," is redundant. "Exited" means "went out." "Proceeded to make her wayan foot" is a multiword version of "wa lked." "In a northerly direct ion" is more simply (and just as accurately) said by writing "north." "Blinking" is the same as "flashing on and off a nd on and off." It is true that, in another context, the expression "proceeded to ma ke her way on foot" might be appropriate. If the writer were calling attention to the distinction between one mode of travel, for example. by bicycle or car, and foot travel, the phrase might tell something important. But in th is simple sentence, there is no such need to make that d istinction . Don't try to be fancy when being simple will do. 7. Original: The American War ofIndependence is principally the most important historic event that grade school children in elementary schools have to learn about and study. Rewrite: The American War of Independence is the most important historic event that elementary students have to study. Rationale: "Pri ncipally" means the same as "the most important." Grade school and elementary school are the same, so there is no need to say it twice. The same is true of "learn about" and "study." 8 .. Original: If you come to think about it, green vegetables ought to be a part of everyone's daily diet. Rewrite: Everyone should eat green vegetables daily. Rationale: "If you come to think about it" is an empty expression, unnecessary for the meaning of the sentence. "Green vegetables ought to be a part of everyone's daily diet" is satisfactory. The other suggested answer, "Everyone shou ld eat green vegetables daily," uses a different subject and verb, so it offers another good possible rev ision. 174 Improving Pa ragraphs ADDING DESCRIPTIVE WORDS THAT ARE NOT REDUNDANT The previous exercise asked you to eliminate unnecessary words. words that are repetitive or words that add nothing to the sentence's meaning. If these sentences seem too simple, you can make them more interesting by adding descriptive details. For example. the first one could be revised in any of the following ways: • "W hen we spent a day at the circus, our favo rite balloons were red and starshaped." • "Our favorite balloons were red, but the kids in front of us liked the blue ones better." • "Red balloons decorated with silver sparkles caught the sunshine the best, so we decided they were our favorites." Now try improving the sentences by adding descriptive details. 1. Original: Our favorite balloons were red. Your rewrite: 2. Original: We did not go swimming because it rained. Your rewrite: 3. Orighlal: We put off deciding whether the comedians would be appropriate for our after-dinner entertainment. Your rewrite: 175 THE WRITING SECTION 4. Original: Snow kept on falling. so we had to shovel the sidewalk over and over. Your rewrite: 5. Original: She was exhausted from working so hard. and sh e could hardly stay awake. Your rewrite: 6. Original: We considered him rude. Your rewrite: 7. Original: The driver saw a woman park a blue car, get out, and walk north toward the blinking red light. Your rewrite: 176 Improving Paragraphs 8. Original: The American War of Independence is the most important historic event that elementary students have to study. Your rewrite: 9. Original: Everyone should eat green vegetables daily. Your rewrite: 10. Original: My neighbor, Tony, is a doctor in a nearby hospital. Your rewrite: Now that you've had some practice adding descriptive words, let's look at the sample questions from this sect ion of the SAT. 177 THE WRITING SECT ION Sam ple Q u estions Directions: The following passage is an early draft of an essay. Some parts of the passage need 10 be rewritten. Read the passage and select the best answers for the questions that follow. Some questions are about particular sentences or paris of sentences and ask you to improve sentence structure or word choice. Other questions ask you to consider organization and development. In choosing answers, follow the requirements of standard written English. Questions 1-6 are based on t he following passage. (I) My father has an exceptional talent. (2) The ability 10 understand people. (3) When I have a problem that I think no one else will unde rstand, I lake it to my father. (4) He listens intently, asks me some questions, and my feelings are seemingly known by him exactly. (5) Even my twin sister can talk to him more easi ly than to me. (6) Many people seem too busy to take the time to unde rstand one another. (7) My father, by all accounts, sees taking time to listen as essential to any relationship, whether it involves family, friendship, or work. (8) At work, my father's friends and work associates benefit from this talent. (9) His job requires him to attend social events and sometimes I go along. (10) I have watched him at dinner; his eyes are fixed on whoever is speaking, and he nods his head at every remark. (II) My father emerges from such a conversation with what I believe is a true sense of the speaker's meaning. (12) In the same way, we choose our friends. (13) My father's ability to listen affects his whole life. (14) His ability allows him to form strong relationships with his coworkers and earns him lasting friendships. (15) It allows him to have open conversations with his children. (16) Furthermore, it has strengthened his relationship with my mother. (17) Certainly, his tale nt is one that I hope to develop as 1 mature. I. Of the following, which is the best way to revise and combine sentences I and 2 (reproduced below) ? My father has an exceptional talent. The ability to rmderstand people. (A) My father has an exceptional talent and the ability to understand people. (B) My father has an exceptional talent that includes the ability to understand people. (e) My father has an exceptional talent: the ability to understand people. (D) My father has an exceptional talent, it is his ability to understand people. (E) Despite my father's exceptional talent, he still has the ability to understand people. 2. Of the following, which is the best way to phrase sentence 4 (reproduced below) ? He listens intently, asks me some questiol15, and my feelings are seemingly known by him exactly. (A) (As it is now) (B) Listening intently, he will ask me some questions and then my exact feelings are seemingly known to him. (C) As he listens to me and asks me some questions, he seems to be knowing exactly my feelings. (D) He listened to me and asked me some questions, seeming to know exactly how I felt. (E) He listens intently, asks me some questions, and then seems to know exactly how I feel. 178 Improving Paragraphs 3. In sentence 7, the phrase by all accounts is best replaced by (Al however (8) moreover (C) to my knowledge (D) like my sister (E) but nevertheless 4. Which of the following sentences should be omitted to improve the unity of the second paragraph? (A) Sentence 8 (B) Sentence 9 (C) Sentence 10 (D) Sentence II (E) Sentence 12 5. In context, which of the following is the best way to phrase the underlined portion of sentence 16 (reproduced below) ? Fllrthermore, it has strengthened his relationship with my mother. (A) (As it is now) (8) Further strengthening (C) But it strengthens (D) However, he is strengthening (E) Considering this, he strengthens 6. A strategy that the writer uses within the third paragraph is to (A) make false assumptions and use exaggeration (B) include difficult vocabulary (e) repeat certain words and sentence patterns (D) argue in a tone of defiance (E) turn aside (rom the main subject 179 THE WRITING SECTION Answers and Explanations I. Of the following, which is the best way to revise and combine sentences I and 2 (reproduced below)? My father has an exceptional talent. The ability to understand people. (A) My father has an exceptional talent and the ability to understand people. (B) My father has an exceptional talent that includes the ability to understand people. (C) My father has an exceptional talent: the abi lity to understand people. (D) My father has an exceptional talent, it is his ability to understand people. (E) Despite my father's exceptional talent, he still has the ability to understand people. ~epinMind Answer: Choice (C) is correct. Explanation: The passage shows that the father's exceptional talent is his ability to understand people. Because sentence 2 is a fragment, sentences make sure that the relationship I and 2 must be combined in a way that clearly indicates the correct relabetween them is clear. tionship between the father's talent and ability. The use of a colon to join sentences 1 and 2 corrects the error of the original and signifies that the father's talent is his ability to understand people. When you combine sentences, • Choice (A) is unsatisfactory because the passage suggests that the father's talent is his abi lity to understand people; his talent and his ability are not two separate things. • Choice (8) is unsatisfactory because, as the passage shows, the father's talent does not include his ability to understand people; it is his ability to understand people. • Choice (D) is unsatisfactory because it joins two independent thoughts with only a comma. • Choice (E) is unsatisfactory because it contrasts the father's talent with his ability, when in fact, as the passage shows, they are the same thing .. 2. Of the following, which is the best way to phrase sentence 4 (reproduced below)? He listens intently, asks me some Questiolls, and my feelings are seeminglv known by him exactly. . (A) (As it is now) (B) Listening intently, he will ask me some questions and then my exact feelings are seemingly known to him. (e) As he listens to me and asks me some questions, he seems to be knowing exactly my feelings. (D) He listened to me and asked me some questions, seeming to know exactly how I felt. (El He listens intently, asks me some questions, and then seems to know exactly how I feel. 180 Improving Paragraphs Answer: Choice (E) is correct. Explanation: Sentence 4 shou ld use a parallel const ruction of present-tense verbs to denote the series of events the father typically performs. This sentence properly follows sentence 3 by indicating, in a man ner consistent with p In Mind the rest of the paragraph, how the father typically responds to his Don't reject a choice because child 's problems. Ge - Choice (A) is unsatisfactory because the sentence shifts unnecessa rily from the active voice to the passive voice. the language is simple. Often the simplest expression of an idea is the clearest - and the best. - Choice (B) is unsatisfactory because it awkwardly shifts the subject of the sentence from the father (" he") to the chi ld 's feelings. - Choice (C) is unsatisfactory because it uses an improper verb form; "to know" is preferable to "to be knowing." - Choice (D) is unsatisfactory because the sentence switches to the past tense; the context suggests that these are habitual, ongoing act ions that require the present tense. 3. In sentence 7. the phrase by all accounts is best replaced by (A) however (B) moreover (e) to my knowledge (D) like my sister (E) but nevertheless Answer: The correct answer is choice (A). Explanation: Sentence 7 draws a contrast between the fathe r and the people described in sentence 6. With the inclu sion of the word "however," the sentence properly indicates that the father, unlike the busy people of sentence 6, is NOT too busy to spend time listening. - Choice (8) is unsatisfac tory because the word "moreover" suggests that the thought about to be expressed supports and is consistent with the previous thought - but instead. sentence 7 draws a contrast with sentence 6. Ge p In Mind The revised sentence must make sense in the context of the passage as 8 whole. - Choice (C) is unsatisfactory because the phrase "to my knowledge" is unnecessa ry; we know from the writer's use of the first person that these claims are a reflection of his or her knowledge. 181 THE WRITING SECTION • Choice (D) is unsatisfactory because the subject of the paragraph is the father. It would be inappropriate al thi s point in the paragraph to int roduce new inform ation about the sister. • Choice (E) is unsatisfactory because the word "but" is unnecessary. The word "nevertheless" by itself would be sufficient to express the idea. 4. Which oftne following sentences should be omitted to improve the unity of tne second paragraph? (Al Sentence 8 (B) Sentence 9 (el Sentence 10 (D) Sentence 11 (El Sentence 12 Answer: Choice (E) is correct. Explanation: Paragraph 2 conti nues the discussion of the father's abilit y to understand people by explaining how he uti lizes this talent at work. Sentence 12 stands out from the paragraph because it introduces a new idea: how we choose our friends. • Choice (A) is unsatisfactory because sentence 8 introduces an idea - how the father uses his talent at work - that is suppo rted in the follow ing sentences. • Choice (B) is unsatisfactory because sentence 9 properly follows sentence 8 by expla in ing one aspect of the father's job. ~PInMlnd A concluding remark covers the entire essay, not just one part of it. • Choice (C) is unsatisfactory because the dinner discussed in sentence 10 is clearly one of the social events introduced in sentence 9. • Choice (D) is unsatisfactory because the phrase "such a conversation" in sentence I I refers clearly to the previous sentence. 5. In context, which of the following is the best way to phrase the underlined port ion of sentence 16 (reproduced below)? Furthermore, it lias strengtlrened his relationsllip with my rnotlrer. (A) (B) (e) (0) (E) (As it is now) Further st rengthening But it strengthens However, he is strengthening Considering this, he strengthens Answer: Choice (A) is correct. Explanation: The idea expressed in sentence 16 offers further support for the idea specified in sentence 13 and supported in sentences 14 and IS. The language of the sentence shou ld indicate this. 182 Improving Paragraphs The word "Furt hermore" properly indicates that the information about the father's relationship with the mother offers further support for the statement made in sentence 13. • Choice (B) is unsatisfactory because it creates a sentence fragment; the result ing sentence has no subject. • Choice (C) is unsatisfactory because the word "But " indicates a contrast between the ideas expressed in sentences 15 and 16 where a contrast does not exist. • Choice (0) is unsatisfactory because the word "However" indicates, illogically, that the st rengt hening of the fat her's relationship wit h the mother is somehow in contrast with the strengthening of his relationships with children and friends. • Choice (E) is unsatisfactory because the phrase "C.onsidering this" makes no sense in context. The resulting sentence implies that the strengthening of the relation ship with the mother is separate from the father's ability to understand others, while the progression of support in the paragraph suggests the opposite. ~ Keep in Mind Adding material to an essay can be an excellent revision technique, as long as the new material is relevant and d evelops the ideas of the essay. 6. A st rategy that the writer uses within the third paragraph is to (A) make false assumptions and use exaggeration (B) include difficult \'ocabulary (C) repeat certain words and sentence patterns (D) argue in a tone of defiance (E) turn aside from the main subject Answer: Choice (C) is correct. Explanation: The writer makes the point that the fathe r's ability to understand people affects his whole life by specifying those particular areas of his life that have benefited. The writer emphasizes the point that the fa ther's abi lity has benefited him in relationships with many different people (friends, co-workers, children, spouse) by ut ilizing a parallel structure in sentences 14, IS and 16. The writer also repeats the words "abi lity" and "allows" and uses the same subject (the father's ability or talent) for each sentence in the paragraph. • Choice (A) is unsatisfactory because nothing about this paragraph is exaggerated or shown to be false. • Choice (B) is unsatisfactory because there is no evidence that vocabulary in the third paragraph is particularly difficult. • Choice (D) is unsatisfactory because the tone of this paragraph is not defiant. • Choice (E) is unsat isfactory because the pa ragraph continues the discussion of the main subject of the essay - the father's except iona l talent. 183 ;1Rl:1 ""':J' \!!: Recap 1. Read the es~ay through to determine its overall meaning before you look at the questions. 2. Read more slowly than you usually d o, to help you pay closer attention. 3. Make sure that your sentence revisions make sense in the context of the passage as a whole. 4. Don't reject a possible answer because the language is simple. Often, the simplest expression of an idea is the clearest and therefore the best answer. 5. Try all the suggestions before you decide on your answer. 6. Make sure that the relationship between the two sentences is clear when you combine sentences. 7. Remember that pronouns should always clearly refer back to a word or phrase. 8. Keep in mind that adding material to an essay can be an excellent revision technique, but the new material must be relevant and develop the ideas of the essay. 9. Use your test booklet to help you by marking each question that you don't answer. Then you can easily find it later. 184 Improving Paragraphs Practice Questions , Directions: The following passage is an early draft of an essay. Some parts of the passage need to be rewritten. Read the passage and select the best answers for the questions that follow. Some questions are about particular sentences or parIs of sentences and ask you to improve sentence structure or word choice. Other questions ask you to consider organization and development. In choosing answers, follow the requirements of standard written English. Questions 1-5 are based on the following passage. (I) I have just read an excellent book called "Having Our Say: The Delany Sisters' First 100 Years." (2) Usually I do not enjoy autobiographies. (3) r could hardly put this one down. (4) It is about Sadie Delany, who is 103 years old, and her "little" sister Bessie, she is 101. (5) The sisters grew up in North Carolina in times that were not easy for African Americans. (6) Around 1916 they moved to New York City and went to Columbia University at their father's urging. (7) He tells them, "You are college material. (8) And if you don't go, shame on you!" (9) Sadie became a teacher and Bessie a dentist. (10) The second Black woma n dentist ill New York. (1 1) They lived through an incredible amount of history. (12) For instance, Bessie participated in civil rig hts marches and protests in New York for decades, starting in the 1920s. (13) Imagine having people like Paul Robeson over to dinner! (14) One aspect of the book that I especially liked was its humor; though Sadie is not as irreverent as Bessie, both are full of wisecracks. (IS) The Delany sisters seem livelier than many twenty-year-olds. (1 6) They care deeply about what is going on around them - and they laugh at things whenever possible. I. What is the best way to deal with sentence 3 (reproduced below)? I could hardly pilI this one down. (A) Leave it as it is. (B) (C) (D) (E) Connect it to sentence 2 with the word "but". Place it before sentence 2. Change "this one" to "this a~tobiography". Omit it. 2. In context, which is the best version of "He tells below)? them~ in sentence 7 (reproduced He tells them, "You are college material. (A) (As it is now) (B) Their father tells them, (C) Th is is because he tells them, (D) He had told them, (E) His suggestion was: 3. Which of the following sentences is best to insert between sentences 12 and 13? (A) The two sisters also knew many famous figures personally. (B) Sadie usually did not march, but protested by other means. (C) Many young people seem to think this did not begin until the 19605. (D) The last hundred years have seen many changes in civil rights laws. (E) Paul Robeson was a promine nt Singer, actor, and political activist. 4. In context, what is the best way to deal with sentence 14? (A) Move it to the beginning of the first paragraph. (B) Move it to the beginning of the second paragraph. (C) Start a new sentence after "irreverent" and delete "though~. (D) Connect it to sentence 15 with a comma. (E) Follow it with an example. 185 THE WRITING SECTION 5. Which of the following, if placed after sentence 16, would be the most effective concluding sentence for the essay? (Al (B) (el (D) (El They eat healthy food and do yoga every day. Therefore, it is no small thing to survive past age toO. This book is a remarkable story made even bettcr by the way it is told. Finally, young people should definitely commu nicate with their elders. Much as ! enjoyed the rest of the book, the final chapter is my favorite. Questions 6-11 are based on the following passage. (1) Becoming the best is very difficult. (2) No matter if you are trying to become a bettcr athlete, student, or musician. (3) !fyou want to be the best, sacrifices must he made by you. (4) You lose a lot of time that you would otherwise have for just relaxing. (5) This time could also have been spent exercising outdoors. (6) You must also be willing to cut down on time spent with family and friends. (7) If your goal is to become a fine jazz pianist, you must be willing to work hard. (8) Many people think jazz musicians just sit down and play, this is a mistake. (9) Practicing demands many hours in a week. (10) Most of the exercises done are of repetition and become boring, but that is the price you must pay for success. (11) You must practice fingering techniques and le~rn about both classical and jazz harmonics and chords. (I2) The reason you need to know about these harmonies is that so much of jazz involves improvisation, making up new sequences of notes to play. (13) You are not just playing notes that a composer wrote but are almost like a composer yourself. (14) Sometimes you will feel discouraged. (15) When you can playa classic like Dizzy Gillespie's ~Manteca" the way it really should be played, the long hours and hard work seem worthwhile. 6. Of the following, which is the best way to write the underlined portion of sentences I and 2 (reproduced below)? Becoming the best is very difficult. No matter ifyou are trying to become a betler athlete, student, or musician. (A) (As it is now) (8) difficult, never mind if (e) difficult, whether (D) difficult. Regardless of whether (El difficult, whether or not (7. In context, which of the following is the best way to phrase the underlined portion of sentence 3 (reproduced below)? If you want to be the best, sacrifices must be made by you. (Al (As it is now) (B) one must sacrifice some things (el you must make sacrifices (D) one will have to make sacrifices (E) sacrifices are necessary to make 186 • Improving Paragraphs 8. Which of the following is the best way to revise and combine sentences 4 and 5 (reproduced below)? You fose a lot of time that you would otherwise have for just relaxing. This time could also have been spent exercising outdoors. (A) Time that could have been spent exercising outdoors or jusl to relax will be lost. (8) Spending time exercising outdoors or relaxation are things for which you will have less time. (C) Yo u will have much less time for exercising outdoors or for just relaxing. (D) Sacrificing outdoor exercise and just relaxing, because you will not have lime. (E) As examples of the things you will have to cut down on would be outdoor exercise or just relaxing. 9. Of the following, which would be the best way to revise the underlined portion of sentence 8 (reproduced below)? Many people think jazz musicians just sit down and play, this is a mistake. (A) and, this is a mistake however (8) (C) (D) (E) this would be a mistake what a mistake that would be it is mistaken but they are mistaken 10. In context, which of the following is the best way to phrase sentence 10 (reproduced below)? Most of the exercises done are of repetition and become boring, but that is the price you must pay for success. (A) (As it is now) (B) The price you must pay consists mostly of repetitious and boring exercises for success. (C) Doing repe titious and boring exercises; this is the price of success. (D) Repetition and boredom are the inevitable res ult when having done most of the exercises. (E) Doing repetitious and boring exercises is the price you must pay for success. II . In context, which of the followi ng is the best way to phrase the underlined portion of sentence 11 (reproduced below)? You must practice tinzerirJ.i techniques and /earn about both classical and jazz harmonies and chords. (A) (6) (C) (D) (E) (As it is now) You must practice fingering techniques and learning One would practice techniq ues fo r fingering and learn Fingering techniques must be pract iced and learning There must be practice of finger ing techniques and you learn 187 THE WRITING SECTION Answer Key I. B 2. D 3. A 4. E 5. C 6. C 7. C 8. C 9. E 10. E 1 I. A Additional practice questions can be found in The Official SAT Online Course at www.colle geboard.comfsatonlinecourse. 188 CHAPTER 13 Practice for the Writing Section You can never practice too much. Th is chapter gives you additional practice in writing essays and answering questions. This chapter includes nine sample essays with scores ranging from 6 through 1. There are practice quest ions on improving sentences, ident ifying sentence errors and improving paragraphs. These are all in addition to the sample quest ions in Chapters 9,10.11 a nd 12. g Automated Score To receive a n automated score f or your response to this essay question, check out The Official SAT Online Course at www.collegeboard.com/ saten Ii neeau rse .com. Practice for the Essay The following is a typical essay prompt that you might find on the SAT. Follow the instructions and try writing an essay. Think carefu lly about the issue presented in the follow ing excerpt and the assignment below. Honesty is important. of cou rse. but deception can actually make it easier for people to get along. In a recent study. for example. one out of every four of the lies told by participants was told solely for the benefit of another person. In fact, most lies are harmless social untruths in wh ich people pretend to like someone or something more than they actually do ("Your muffins are the best!"). Adapted from Allison Kom et. "The Truth About Lying" Assignment: Is deception ever just ified? Plan and write an essay in which you develop your point of view on this issue. Support YOUT position with reasoning and examples taken from your reading. studies. experience, or observations. 189 THE WRITING SECTION Practice Questions: Improving Sentences The following sentences test correctness and effectiveness of expression. Part of each sentence or the entire sentence is underlined; beneath each sentence are five ways of phrasing the underlined material. Choice A repeats the original phrasing; the other four choices are different. If you think the original phrasing produces a better sentence than any of the alternatives, select choice A; if not, select one of the other choices. In making your selection, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, sentence construction, and punctuation. Your selection should result in the most effective sentence - dear and precise, without awkwardness or ambiguity. Example: Laura Ingalls Wilder published her first book and she was Sixty-five years old then. (Al (B) (C) (D) and she was Sixty-five years old then when she was sixty-five at age sixty-five years old upon the reaching of Sixty-five years (E) at the time when she was Sixty-five 1. To ensure that the bread will have the same consistency from batch to batch, il...i..UM. Quality control spedalist who checks small random samples of dough from each lot. (Al it is the quality control specialist who checks small random samples of dough from each lot (8) the quality control specialist checks small random samples of dough from each lot (C) small random samples of dough are checked from each lot by the quaHty control specialist (D) the quality control specialist checks samples of dough - small and randomly - from each lot (E) the quality control specialist is the one checking small random samples from each lot of dough 2. Although Central Park in Manhattan is better known than Prospect Park in Brooklyn, the designer of both parks, Frederick Law Olmsted, preferred Prospect Park. (A) Although Central Park in Manhattan is better known than Prospect Park in Brooklyn, the designer of both parks, Frederick Law Olmsted, preferred Prospect Park. (B) Central Park in Manhattan being better known than Prospect Park in Brooklyn, the deSigner of both, Frederick Law Olmsted, preferred the latter. (C) Although not as well known as Central Park, Frederick Law Olmsted, who designed both parks, preferred Prospect Park. ~ (D) The deSigner of both Central Park and Prospect Park was Frederick Law Olmsted, he preferred Prospect Park. (E) Although more people know about Manhattan's Central Park than Prospect Park in Brooklyn, Frederick Law Olmsted, having designed both, has preferred the latter. , 3. Growing up in a family where music was a daily part of life, Steve and Rick shared a determination to become singing duos known nationwide. (A) to become singing duos (8) to become a singing duo (Cl of becoming Singing duos (D) that they would become singing duos (E) ofbecoming a singing duo 190 Practice for the Writing Section 4. The bagpipe originated in ancient Sumer, many people assume tha t it was the Scottish Highlands. (Al many people assume t hat it was (B) many people assuming (C) not, as many people assume, in (D) not what many people assume (E) but many people assume it to be 5. Certain shipwrecks have a particular fascination for those people which have a belieOn finding the treasure in them. (A) which have a belief in finding the treasure in them (B) that belief there is treasure to be found in them (Cl who belie\·e they hold treasure and that they can find it (D) who believe that there is treasure 10 be found in them (El who believe about treasure to be found in them 6. Many of the instruments used in early operations of the United States Ar my Signal Corps were adaptations of eQuipment used by the Plains Indians. particularly that of the heliograph. (A) Corps were adaptations of equipment used by the Plains Indians, particularly that of the heliograph (B) Corps, there were adap tations of equipment used by the Plains Indians, particularly t he heliograph {Cl Corps, and in particular the heliograph, was an adaptation of equipme nt used by the Plains Indians (D) Corps, and in part icular the heliograph, were adaptations of equipment used by the Plains Indians (E) Corps being adaptations, the heliograph in particular, of those used by Plains Indians 7. Marie and Pierre Cu rie discovered rad ium but refused to patent the process they ysed nor otherwise profiling fro m the commercial exploitation of radium. (A) used nor otherwise profiting {Bl had used nor otherwise did they profit (C) have used or otherwise to have profited (D) used or otherwise profited (E) had used o r otherwise to profit 8. Many drivers violale t raffic laws knowingly and openly, in other respec ts they are law-abiding citizens. however. (A) Many drivers violate t raffic laws knowing ly and openly, in other respec ts they are law-abiding citizens, however. (B) Many drive rs who are otherwise law-abiding citizens violate traffic laws knowingly and openly. (Cl Many drive rs violate traffic laws knowingly and openly and arc otherwise lawabiding citizens. (D) Although otherwise law-abid ing citizens, many drivers, howeve r, violate t raffic laws knOW ingly and open ly. (E) Many drivers which violate traffic laws kn owingly and openl y are in other respects law-abiding citizens. 9. The primatologist has argued that sustai ned observation of a few animals provides better behavioral data tban does intermittent observation ofmany animals. (A) provides better behavioral da ta t han does intermittent observation of many ani mals (ll) provides beller behavioral da ta than Olany a nimals are observed intermittently (C) prOViding better behavioral data than does intermittent observation of ma ny animals (D) do provide better behavioral data than intermittent observation of many animals do (E) in cont rast to intermittent observation of many animals, provides better behavioral da ta 191 THE WRITING SECTION Practice Questions: Identifying Sentence Errors The following sentences test your ability to recognize grammar and usage errors. Each sentence contains either a single error or no error at all. No sentence contains more than onc error. The error, if there is one, is underlined and letlered. If the sentence contains an error, select the one underlined pari that must be changed to make the sentence correct. If the sentence is correct, select choice E. [n choosing answers, follow the requirements of standard written English. Example: The other delegates and him immediately ABC accepted the resolution drafted by the D neutral slales. No error ®. ©@@ E 10. One challenge that writer Eleanor Wong Telemaque faced was bow preserving her A ethnic identity while becomina more accessible to readers who are accustomed to B C D writers from other cultural backgrounds. No error E 11. Lions and tigers~ identical in size. h1l1 the tiger is the fiercer animal and the A B C lion the strotlaest. No errQr D 12. Ms. Jordan E ~ demonstrated her company's most popular product. a watch thaI A • flashes the lime in ~ numerals when pressjna a butto!}. No error C D E 13. In the 1920s. Dl!.I..dl critical approval was aiven to a group of English writers A B known as the Bloomsbury group. the most famous ofwhoOl was Virgin ia Woolf. C D No error E 14. Maude Adams, after her spectacular triumph as the original Peter Pan, went about A B beavy veiled and was accessible to only a handful of intimate friends. No error C D E 192 Practice for the Writing Section IS. All states ~ severe penalties 00 drivers who do not stop when he or she is A B C involved in accidents. No error o E 16. If one is interested in learning even more about Zora Neale Hurston, yoy should ABC 0 read Robert Hemenway's biography. No error E 17. !fhe had begun~, he might have succeeded in finishjng the extremely A B C 0 complex project before the deadline. No error E 18. In the early twentieth century, new thinking iiliQ.uj symbolism and the unconscious A ~ greatly inspired ~ the writings QfSigmund Freud and Carl Jung. No errQr BCD E 193 THE WRITING SECTION Practice Questions: Improving Paragraphs D ir~c lion s: The following passage is an ea rl y draft of an essay. Some parts of the passage need to be rewritten. Read the passage and select the best answers for the questions that follow. Some questions are about pa rticular sentences or parts of sentences and ask you to improve sentence structure or word choice. Other questions ask you to consider organization and development. In choosing answers, follow the requi rements of standard written English. Questions 19- 23 a re based on the following passage. (I) Living in a city in central Alaska, I have become accustomed to extreme weather cond itions, these are a parI of living in a remote, northern region. (2) To us Alaskans, a 70 mph wind is something that messes up our hair. (3) Temperatures of20 degrees Farenheit mean that we can take off our coats. (4) We are used 10 wi nter days with only 4 hours of sunlight, or summer baseball games that can sta rt at \0:30 PM without artificial lighting. (5) Adj usting to such conditions is not too difficult. (6) But, Alaska's remote location creates challe nging economic circumstances. (7) Alaska is tremendously rich in natural resources, such as lumber, oil, and fish. (S) We must import processed goods from the lower forty-eight states. (9) Most goods are shipped all the way to t he port of Anchorage; the cost is nearly triple that of sendi ng goods from New York to Seattle by rail. (10) The state of Alaska is the number one harvester of seafood in the United States. (I I) But processed seafood can be bought more inexpensively in the state of Washington because Alaska does not have enough fish processing plants of its own and so must ship a great deal of seafood to Seattle for processing. (12) Thus, the cost of long distance transportation drives up the price of the product. (13) One solution that Alaskans definitely should consider is having built more local processing facilities. (14) Afte r all, there is plenty of fish to keep them running. (15) Ultimately, th is solution can benefit Alaskans by providing jobs, lower prices, and healthycompetition. 19. In the context of the first paragraph, which of the following would be the best way to combine the underlined portions of sentences 5 and 6 (reproduced below)? Adjusting to su.ch condilions is not 100 difficult. Bul. Alaska's remote loco/ion creates clW/ICllgillg economic circumstances. (A) difficult, and Alaska's remote locat ion (B) difficul t, but Alaska's re mote location (el difficult: the remote location of Alaska (D) difficult; indeed, its remote location (E) difficult, and the remoteness of our location 20. Which of the follOWing would be the most logical insertion at the beginning of sentence 8? (A) In other words, (B) Not surprisingly, (C) Invariably, (D) Hence, (E) Unfortunately, 194 Practice for the Writing Section 2 1. In context, which oftne following sentences would best fit between sentences 10 and II? (A) Many years ago the fishing was better than it is today. (B) I do nol personally care for seafood. (el Fishing can he a dangerous business because of the squalls that can blow up sudden ly in this part of the world. (D) OUf coastal waters contain an abundance of king crab, salmon, and other sea creatures. (E) Some fish nelS drift out to sea. 22. In context, which of the following is thc best way to phrase the underlined portion of sentence 13 (reproduced below)? One solutio" /lull Alaskans definitely shOldd consider is IlRyjng built more Weed processing fad/ities. (A) (As it is now) (B) is building more local processing faci lities (e) is this: more local processing facilities should be built locally (D) is that more should be built locally (E) is that we should build mo re of them 23. The func tion of the third paragraph (sentences 13-15) is to (A) offer further evidence supporting the view presented in the first paragraph (sentences 1-6) (B) describe the result of problems listed in the second paragraph (sentences 7-12) (C) propose a way 10 remedy the situation described in the second paragraph (D) unify the essay by resolvi ng a contradic tion between the first and second paragraphs (E) end the essay with an ironic twist 195 - THE WRITING SECTION Answer Key The Essey To prepare for the essay section, it is helpful to review sample essays written by other students and the explanat ions of the scores they received, ranging from 6 to I. To receive a n a utomated score for you r respons e to this Although all of the sample essays were handwritten by students. essay quest ion, check out The they are shown typed here. in boxes. for ease of reading. However. we Official SAT Online Course at www.collegeboa rd.com/ are presenting one in handwriting to remind you that it is important satonli necourse. to write legibly and clea rly. The essays have been typed exactly as each student wrote his or her essay, without any correct ions to spelling, punc tuation, syntax or paragraph breaks. The following is a sample prompt: Q Automated Score Think carefully about the issue presented in the following excerpt and the assignment below. Honesty is important, of course, but deception can actually make it easier for people to get along. In a recent study, for example, one out of every four of the lies told by participants was told solely for the benefit of another person. In fac t, most lies are harmless social un truths in which people pretend to like someone or something more than they actually do ("Your muffins are the best!"). Adapted from Allison Komet, "The Truth About Lying" Assignment: Is deception ever justified? Plan and write an essay in which you develop your point of view on this issue. Support your position with reasoning and examples taken from your reading, studies, experience, or observations. 196 --- -------------------------------------Practice for the Writing Section Essay #1: This essay received Pan A (Wrltm 5ampIej , """) Mt + score of 6. lDoaon'lftieI!4IJ. &.11,")'0\1' , B J, Ti,..,.. ~ IF AMO ~ IPIU. COfIWIW On U\t . . . . . • ~. v.!h.... "'. , d ,,~ "" < J. ~ , .;." -, 1;~"1ut< L.;, ..." ~.H " U e , """ .. .If.. ; ,,,. II .f ~. """ ~ (~ r ~ ...H., -r '" ... ""~ J w'wt- -n-. -~' e~'; N\,tn, llo-.... ot- 11 ... ' U9=4 \ , " '" ,,.. I , .- Ge./lt:r. , IAA QC.."""Qt\ .I: ,,; s. I~ ce -t. Condnue on the reven;e side if necNSII (continued) 197 THE WRITING SECTION -">We g·/So ~,-n.. .. M Ds-GM.e'r MWa", ""~ E;h'1"'I'D I,l'& .k.Ca.dc!:.- of p« : (~. T. .§"'\ .!.r..Ie~ •• t:: f"" rt- -h-t IM--)", .Tt V.R[tt.. "'; I" """ 5· 1\ ~ L...• J pocn ..... -6 ; "Y-- til II 1_. • . • ..,., , t..; 1 1 I, ,... ".M \... .... ~ - I..z. ~ -.. ~ /6'" A stk=: """,.rIp., . ~ IA.$!S: ~U" . Jr;'J~rJR."" . ::~w ~ ~~ .~ -f-.e. ~.,...,. l.-w... k l$ eI.,~ Ca!!Il '" "or- t1""r.!o!.~ ~ lo~ a l' ,Ille "" --?i EM '":"""'a ". eeg. . ... ~ cH.c¢ IlI'l S~ +Yl v-l;-. ~,...:.-~ ~) o.,.c.e~~ \,.,.; """'-If- ~ Dg,ir-e' ... .A!II"~ ~~. i'btte:. ~ vll- I." a. >!." ~;J' ~ tdl4.O It! .(Dr ,s """- c...c.......t': k:,., 1fl.{(J. .1\ e. ....SS""""(3 ;< &.Id Th (fQ.tI'M /Ar;;dfo t. [tJ/oN.. _ r ...... -t"lurt t::l....... ~ J..r¥"'o/l MJJi- ~ I., . rJ k., "'- ,:e;e go+-:: ~""' uJIl.4""""j""rh +v Sleco/ cui :S. 9o-tk~. &-t Z~;Jt;1;:I:- ;~~V of ;~;,~ (.re., ~\'rk,~I.... d.g~ c.s~~ eA-L., _\. /, ' '""'- ~ .l~-M:§:i!!! ... ,\0.; ..... e.. fWdJ.a.C.,f:~,'lI if/lU'l4 f ~("ovlJ .:1fJr- 1- ..... ~. L ,,.. .... lc.c· :.,J S~li~ . OJ'€. N>rM.l' ~ c;. '}vJl- PA..tJ~ 11,. '" tU ~ ~ . '6~ ~ r ~i1 ' ~.~:::::~= "!-;; 'I~ ~ I~ -no'AU . +r. ..,....., '* 1> ""- ....t.. \M., ... 198 • Practice for the Writing Section Despil-e I-"ese ",,Av,,,,,I-,,,,es 1-0 I-em", I-"e h"I-", ,Aecepl-io" c"'" sl-i11 'De y",l-"ey I-e",,~. Foy i"sl-",,,ce , "Ow c"'" o"e e)Cpl",i" I-"e ,Ae",l-" o.p '" yel",l-ive 1-0 """ i" "oce,,1- c"il,A? Is il- . "sH-lle,A 1-0 lie 1-0 "i"" i" oy,Aey 1-0 yol-eel- "i"" {!Yo""' I-"e "",ys""ess o-P ye",li ? $"o,,1,,1. '" c"il,A le",y" ,'Do,,1- W",y? l.p o"e Bives c "il,Aye" s,,~ co",l-e,A veysio"s o.p I-"e h"I-", I-" e y """y .peel eve ~ye"'l-ey s"oc'" w"e" I-"ey ,Aiscovey I-"e .p",c\-s. Decepl-io" is o.pl-e" '" i",A, pyovl-ecl-ive ~ esl-"ye, 'D"l-h"l-" c"'" pyepl",ye '" c"il,A .pOY I-"e .p"I-"ye. l.p yeve",le,A y",,A,,,,,11 h"I-" o-P-Peys v",I"",'Dle "'owle,ABe . ...,"s o"e c"'' view ,Aec e Ho" '"s '" sweel- he",l-. II- is li"'e '" coo"'ie 1-"",1- s",l-is-lle s "",,~ey ",,,,A !jives i""""e,Ai",l-e ple",s"ye. owevey I-"e coo"'ie will 0,,1 c",,,se OOy "e",ll-" i" I-" e .p"I-"ye. $i""l1",yl ,Aece I-io" '" e",ys 1-0 'De '" . "sl-i-ll",'Dle ",,,,A so""el-i""es eve" CO"" ",ssio"",l-e 'D"I- Il- 0,,1 "ol,As .p"I-"ye yo'Dlel WHY ESSAY #2 RECEIVED A SCORE OF 6 In all ways, this well-organized and clea rly focu sed essay demonstrates clear and consistent mastery. The writer demonstrates outstanding critical thi nking by developing in sight fully the main idea "that decept ion does not offer the same long-term benefits as honesty does," wh ile also acknowledging and discussing the temptation to use decept ion "to escape immediate repercussions." Pa ragraphs 2 and 3 offer personal examples of instances when the use of deception led to unfortunate consequences. Paragraph 4 uses the example of protecting a ch ild 's innocence to describe a time when decept ion can be tempting. Th roughout this essay. the writer exhibits skillful use of language and demonstrates variety in sentence structure. Thus, this outstanding response scored a 6. 201 THE WRITING SECTION Essay #3: This essay received a score of 5. I" wovlJ. wheve hovvi·lk ",,,J. "e~",\-ive i"dJ.e"ts o>'l-e" OCCl.\v I-he ~e"ev",1 pl.\'blic is ot>l-e" J.ecieveJ.. So"'e 'believe I-he shielJ.i"~ Ov \-wis\-i,,~ ot' ceY\-",i" i">'ov",,,,\-io,, """y 'be 'be"e-i1d",1. How- evev, "'s show" I-hvol.\~h """jov hisl-ovie",1 eve"ts, J.ecepl-io" is "e ev ·l.\sl-i-i1",'ble. ellow ·ol.\v"",lis", ",,,J. I-he ce"sovshi 0>' >'",cts pvoves jl.\sl- I-his. I" I-he wee~s pveviol.\s 1-0 I-he Sp",,,ish-A,,,evic,,,,, w"'v i" I-he . I",I-e I gOOs, "'' ",vol.\si,,~ ",,,~ev ",~",i" sp",i" WO\$ vis,,,~ ",,,,0":JI-he pl.\blic. AJ.voc",l-es 0>' w\-v i"I-oo~ I-he '"",\-ev i"l-o I-heiv OW" h",,J.s ",,,J. I-hvol.\~h yellow jOl.\v"",lis"', c"'"l.\seJ. I-he w"'v 1-0 'bve",~ 01.\1-. e",vsl- ",,,J. Pl.\li\-z.ev I.\seJ. l-",i"l-eJ. i">'ov"'"Ho,, i" I-heiv "ewsp"'pevs ",ssl.\vi,,~ I-he pl.\'blie 1-1.,,,,,1- Sp",i" w"'s 'bvl.\l-",1 ",,,J. cYl.\el. Whe" I-he A"'evie",, ship, The I'\",i"e "'ysl-eviol.\sly Sl.\"~ i" H",v",,,,,, CI.\'b"" I-he "ewsp"'pevs >'l.\lly 'b1","'eJ. I-he Sp",,ish ot' "'l.\vJ.evi,,~ A"'evie",, solJ.ievs. A le\-\-ev "evev "'e",,1- >'ov I-he pl.\'b- lie wO\$ pl.\'blisheJ. ",,,J. I-he "ewsp"'pevs '"sisl-eJ. 1-1.,,,,,1- I-he le\-\-ev w"'s i"sl.\ll-i"~ I-\ckiley. Soo" I-he e"Hve pl.\'blic w"'s lieJ. 1-0 ",,,J. ",I",osl- evevyo"e e"col.\v",~eJ. w"v. The pl.\'blic w"'s ",,,,,,ipl.\l,,,l-eJ. ",,,J. J.ecieveJ.. ,hey weve hic~eJ. i"l-o w"'v, ",,,J. hisl-ovy h",s '" 1",vBe "I.\",'bev ot' J.e",l-hs which de",vly show how hl.\ely h",v",>'1.\1 J.ecep\-io" Dl.\vi,,~ c"'" 'be. I-he s",,,,e pevioJ. 0>' H",e, "'s A",evie",,s ye",vJ. >'ov i"'pevi",lisl'\ The Fillipi"o I"sl.\vec\-io" occl.\veJ.. As I-hol.\s",,,J.s ot' A",evic",, solJ.ievs 'bec"'e e"B"BeJ. i" ~ovill", w",v>,,,,,ve, '" I",v~ . "I.\",'bev ot' J.e",l-hs occl.\veJ.. B",c~ ho"'e, 0" V"il-eJ. SI-"-I-es soil, I-he A",evic,,, pl.\'blie wo"J.eveJ. ",'bOI.\I- I-he pvo~vess i" I-his >'ov~" I",,,J.. I-hey 202 weve lieJ. 1-0. Fe",v>'1.\1 1-1.,,,,,1- I-he -i1Bh\-i"B wOI.\IJ. Practice for the Writing Section 'oecolMe lA"poPlAl",. ilMpevi",lisl- polil-io"s 1-01.1. I-he PIA'olic 0-1' Bve",1...J.v",,,celMe,,\-s ",,,.I. "ew I-evvil-ov ",,,.I. eo Ie CO" lAeveJ.. s lMevic",,,s ",,,.I. filii i"os weve 'oei" 'ovlAl-",l1 sl"lA hl-eveJ. e",ch J.",y, ce "sovship ",,,,J. "I-.e eciel- vev",ileJ.. B I-he I-ilMe I-he \-vlAl-h w"'s lA"v",ileJ. I-he J."'IM"' e h",J. ",lve",J. bee" J.o"e. \"he \-vlAl-h cOlA1J. h",ve s",veJ. lives, veSOlAvces, ",,,.I. J.iB"iry -I'ov I-he ~, 'o1A1il- w"'s sheilJ.eJ. J.ece I-io" is "evev ",cce I-",'ole. E",ch evso" ve ",vJ.less 0-1' olil-ic",l Ov sod",l v",,,\ WHY ESSAY #3 RECEIVED A SCORE OF 5 This detailed e,ssay uses examples of events in history to develop effectively the point of view that "deception is never justifiable." The writer displays strong critical think ing by describing two separate instances when the American public was led deceptively into supporting a war. The second paragraph describes how the media distorted the truth, provoking Americans into backing the Spanish-American War. In paragraph 3, the writer explores the use of "censorsh ip and deciet" to ma intain American support during the "Fillipino Insurection." This respon se is focused, and the writer uses appropriate vocabula ry and displays a progression of ideas. Thus. the essay demonstrates reasonably consistent mastery and scored a 5. 203 THE WRITING SECTION Essay #4: This essay also received a score of 5. Decep\-tc", Cv \-he ",isvepvese"\-",\-ic,, c.p \-vv.e pV.vpcses, is '" .pcv", c.p '" lie. AI\-hcv.Bhliei,,~h\- pcse i",,,,eJ.i,,\-e be"e-l!\-s i" \-he Ic" +ev", i\- si", I cve",\-es vcblel'\S. Thv.s J.ece \-tc" c",,, "evev be jv.s\-i-l!eJ.. Thvcv.~hcv.\-li\-ev"\-v.ve, \-heve "ve """"y i"s\-",,ces c.p "e.p",vi- cv.s ch",v",c\-evs v.si"B J.ecep\-ic". Fcv e> h",vcc. The J.ece \-ive \-hi" s \-he wikhes \-ell """-,,,...,J. \-he J.vive hi", \-c J.c \-hi" s he wcv.lJ. "c\- cvJ.i"",vil J.c sv.ch "'s ~iII \-he v.c"",, ",,,J. """" v.c. ThvCv. . h \-his ",,,J. "v."'evcv.s c\-hev e> .pcl~\-",Ie, The I>cy whc CyieJ. Wcl.p, "y""evicv.sly J.eceiveJ. c\-hevs .pCY his cw" ",,,,v.se,,,e,,\-. Hcwevey, whe" he sevicv.sly "eeJ.s help ",,,J. c",IIs .pCY it; "c c"e will help hi", bec",v.se \-hey J.c "c\- believe hi",- His pyevicv.s J.ecep\-ic"s h",ve ",,,,J.e hi", Icse ",II cveJ.ibility i" \-he e yes c.p \-he \-ow"specple. H",J. he "c\- pyevicv.sly J.eceiveJ. \-he"" sv.yely \-hey wcv.lJ. help hi", "cw. This \-",Ie pyese,,\-s '" s\-vc"B "'ess",~e: J.ecep\-ic" c"'" c"ly c",V.se \-vcv.ble. v.yi" The W",\-ev ",\-e sc",,,J.,,,,1 i> """'0" c\-hey \-hi" s J.eceiveJ. \-he A"'eyic",, people. As """ elec\-eJ. o-P-l!ci",l, he w",S e> 204 Practice for the Writing Section ",isvepvese","eJ. ,",,-e ",c\-io"s o{' "-is people i" '-"'e W",~ev~,,,,,"e i"ciJ.e,,\-, ,,-e co",,,,it-t-eJ. '"'' ",c\- o{' J.ecep\-io". Al\-"-ol.\~"- \-,,-e ,"e" pov,vy vew",vJ.s o{' ,""-is ",ppe",leJ. C",,,J. i"covvec\-) w"y ,"001: '" "-I.\~e 01.\",". PI.\e ,"0 \-0 "-i",, ,'"-is w"'s ,",,-e e",sy \-,,-is J.ecept-io", Nb,o,,'s i""",~e "-it-, ",,,J. ,,-e e"eJ.eJ. I.\p vesi~"i,,~ ,",,-e pvesiJ.e"cy o{' ,",,-e V"i,"eJ. 'S,"",,"es. E-P-Pec\-ively, J.ecept-io" leJ. ,"0 ,",,-e J.ow"{',,,l1 o{' Ric"-"'vJ. Nb,o". '-"'is is w"-y I believe J.ecept-io" c"'' "evev bejl.\st-i-11eJ.. WHY ESSAY #4 RECEIVED A SCORE OF 5 This well-organized and foc used essay demonstrates reasonably consistent mastery. The writer develops effectively the point of view that "deception can never be justified" and demonstrates strong critica l thinking by providing three appropriate examples to support th is position: • In the second paragraph, the writer provides evidence from the play Macbeth to illustrate the idea that because deception is evil, it cannot be "justified as morally right." • Paragraph 3 uses the folktale TIle Boy Who Cried Wolf to show that deception leads to trouble. • Paragraph 4 describes how Richard Nixon's deception of the American people eventually led to his downfall . Th is response exh ibits facility in the use of language, demonst rates variety in sentence st ructure and is generally free of errors. Therefore, this essay is categori zed as effective and received a score of 5. 205 THE WRITING SECTION Essay #5: This essay received a score of 4. "E"J.s j\.\sti~y t\-.e ...e",,,s." This 9\.\ote si~"i.fies t\-.",t i" so..,e c",ses, J.ecept-io" is j\.\st-i.fieJ.. Decept-io" occ\.\S w\-.e" '" pevso,,'s t\-.e" "J.v.'''t~e ot I" sped",l c",ses, t\-'is e> '" .., \-.eM. 1 ot e> to be. Fov t\-.e "e> .., ..,o\.\t\-' w"'s '" lie. 1J.iJ.,,'t ~"ow "'\\ o~ \-.ev ~vie"J.s ~o.., 0\.\1siJ.e o~ sc\-.ool so 1 \-.M to lie w\-.e" s\-.e ",s~eJ. w\-. 1w",,,t~eJ. to 'oo..ow \-.ev "J.J.vess 'ooo~. "I lost ..,i"e ",,,,.I. 1w",,,t to co people ~o.., yo\.\v 'ooo~." S\-.e ve\\.\c",,,t-\y t\-.e ",~veeJ., ",,,,.I. ,,,It\-.o\.\~ ~elt '" p~\.\i\1; 1w"'s ",'ole to cve"te '" co..plete ~\.\est list. Th\.\vsJ.", "i \-.t 1c",\\e.l. \-.ev ",,,,.I. vete"J.eJ. 1w"'-S sic~. \\ J."'y FviJ.", i"ste",J. o~ oi" to sc\-'ool 1 \-.",.1. to et t\-.e c",~e "0 t\-.e 'o",\\oo"s ",,,,.I. ot\-.ev J.ecov",t-io"s. Theve w"'s w'" s\-.e co\.\IJ. \-.",ve s\.\spect-eJ. '" s\.\pvise p",vty i~ \-.ev best ~vie"J. w"'s sic~. The ..,i,,\.\te s\-.e s\-.e t\-.eve ",,,,.I. ~ov 206 i"to t\-.e vOO.., \-.ev 'oivt\-.J.",y< s\-.e st",vteJ. evevy J.eceptio" ~",ce ",,,,.I. e"J.s w",l~eJ. .,1,0 j\.\st-i~y cvyi,,~ S",w "'\\ t\-.e eople wit\-. joy. EvevY...lk- 0" bee" j\.\st-i~eJ. by t\-.e loo~ \-.ev i" \-.ev e es. So..,et-i..,es i" He t\-.e \-.",.1. t\-.e \-.'" ~i"ess ",,,,.I. t\-.e "e",,,s. Practice for the Writing Section WHY ESSAY #5 RECEIVED A SCORE OF 4 Th is generally focused essay demonstrates adequate mastery. The writer develops the point of view that "in some cases, deception is justified" by prov iding a personal, detailed example of an instance when the "ends do justify the means." By describing how the deception involved in planning a surprise party is justified by the ultimate happiness the friend fee ls because of the party, the writer demonstrates competent critical th inking. The support is adequate and genera lly organized, exhibiti ng some coherence and progression of ideas. This response displays some variety in sentence structu re and uses generally appropriate vocabulary. Thus, the essay is competent and scored a 4. 207 THE WRITING SECTION Essay #6: This essay also received a score of 4. The lise o-P J.eceptiol\ is I.\sl.\"l1y I-hol.\,hl- o-P "'s '" 'bM I-hil\B. BI.\I-I-heve ",ve ti",es whel\ J.eceptiol\ isjl.\sl-i-l1eJ.. 11\ I-he c",ses o-P HolJ.el\ C"'I.\-l1elJ. "'I\J. A'biB",il Wi\Ii",\'o\S I-heiv l.\Se o-P J.ecepl-iol\ is ",cce I-",'ble 'bec"'I.\se o-P I-he sil-I.\",tiol\s il\ which I-he ",ve pl",ceJ.. The ",,,,il\ ch",v",c\-ev o-P The C",I-chev il\ I-he R e 'b S",lil\~ev is olJ.el\ C"'I.\-l1elJ.. HolJ.el\ is '" J.e vesseJ. ch",v",c- I-ev I-h"'1\ el\J.s I.\~oil\B cv",z.y. 11\ I-he wee\:.el\J. I-h",1- I-he 'boo\:. I-",\:.es I",ce HolJ.el\ is co"sl-",,,t-I I.\si" J.ece tio". He vel-e"J.s 1-0 'be olJ.ev ",,,J. ",ove sl.\-l1stic",l-eJ. I-h",,, he ve",l1y is. This is '" vO vi",l-e -Pov hi", 'bec"'I.\se he is tv i" 1-0 -Peel ".cce l-eJ. il\ I-he veJ.-o"'i""",,t-I MI.\II- ",I-\'\os heve I-h",1- he I.\\-s hi\'o\SeI-P I-o ol. olJ.e" w",,,\-s 1-0 'be s",,",vl-ev ",,,J. 'bel-l-ev I-h"'1\ ",11 I-he people he ",ee\-s, so he ",c\-s I-h",1- w"'y. Eve" I-hol.\Bh HolJ.e" is I.\si"~ J.eceptio", he is I.\Si"B il- 1-0 -Peel 'bel-l-ev ",'bOI.\1- hi\'o\Sel-P whe" he is ",I- '" vev J.i-P-llcl.\11- ",vI- o-P his Ii-Pe. -PI-ev 'bei" '\:.ic\:.eJ. 01.\1- o-P -POl.\v schools, h",vi"B his 'bvol-hev J.ie, ",,,J. "01- h",vi "'"'1\ -Pvie"J.s olJ.e"s I.\se o-P J.ece tio" is vi. ht-l ·I.\sti-l1eJ.. A"ol-hev ch",v",c\-ev -Pvo", '" 'boo\:. I-h",1- I.\ses J.eceptio" is A'bi- ",iI Wi\Ii",\'o\S -Pvo", The CVl.\ci'ble. 'bi ",iI is '" Ov h",,, chilJ. who h",s sl-", eJ. wil-h """"' J.i-P-Peve,,1- -P",,,,ilies "ol\e o-P which h",ve li\:.eJ. hey. A'bi,,,,il is ",Iso i" love wil-h '" """"' "",,,,eJ. Joh" PvocI-ov who J.oes "01- love hey 'b",c\:.. 'bi ",iI I.\ses J.ece tiOl\ 1-0 "",,\:.e hey I-ow" o-P s",le", viii", e I-hi,,\:. she sees wil-ches. 'bi . ",il J.oes I-his I",v el 1-0 el- ",I-I-e"tio" -Pvo", I-he eo Ie who I\evev ",ve il1-0 hey, ",,,J. 1-0 Bel- 'b",c\:. ",I- Joh" PvocI-ov -Pov "01- 10vi"B hey. A'bi- ",iI vl.\i"s ol-hev eo les lives I-hvol.\ h J.ece I-iol\ 1-0 ",,,\:.e hevsei-P 208 Practice for the Writing Section -Peel 'oet+ev. Eve", I-ho"~h I-he .A.eeepl-io", is 'o",.A., il- is j"sH.fI",'ole i", 'oi "'ils sil-""Ho", 'oee",,se o-P I-he h",vsh li-Pe she h",s Iive.A.. As see", i", I-he eh",v",c\-evs Hol.A.e", (",,,.fIel.A. ",,,,,.A. A'oi~",i1 Wil- .A.eee Ho", is so"eH"'es ·"sH.fI",'ole. I", 'ool-h I-hese eh",v",eI-evs ese",,ses il- w"'s 'oee",,,s I-heiv lives weve 0", '" .A.ow",w",v.A. s iv",1 ",,,,,.A. I-hey weve j"sl- \-vyi"'~ 1-0 eli",'o 'o",e,", "p. 1i",1MS WHY ESSAY #6 RECEIVED A SCORE OF 4 This competent essay develops the point of view that "there are times when deception is justified." The writer demonstrates competent critical thinking by providing two adequate examples from literature when the characters' use ofdecept ion was justified "becaus their lives were on a downward spiral and they were just trying to climb back up." Evidence provided is generally organized and .focused, demonstrating some coherence and progression of ideas. This writer uses generally appropriate vocabulary and displays some variety in sentence structure. Conseq uently, this response demonstrates adequate mastery and scored a 4. 209 THE WRITING SECTION Essay #7: This essay received a score of 3. I believe I-h",1- .Aecepl-io" c"'" be jl.\5l-i-fleJ.; il- si",ply ",,,,I-I-evs wh",1- I-he civc"...sl-",,,ces. Cevl-",i"ly il- c",,,,,ol- h"vl-I-o co",pli",e,,1- '" -Pvie".A 0" his "ew h",ivc"l-, whe" pevso"",11y yo" -fI".A ilvevoll-i,,~. S"ch s"pev-flci",l .Aecepl-io"s occ"v i" evevy J.",y li{'e, ",,,.A c"'l.\5e "0 ve",l h",v"," B"I- i" I-he l",v~ev se"se, I {'eel .AecepI-io" c"'" be sep",v",l-eJ. il-"l-o-l-wo c"'"l-e~evies: I-hej"sl-i-fl",ble J.ecepl-io" I-h",1- o"e "1.\51- "se 1-0 B",i" "'.Av"'"I-",~e i" '" co"'pel-iI-ive -flel.A, ",,,,.A I-he "'li"sH-fI",ble J.ecepl-io" o"e "ses ",I- I-he el< e"se o{' ol-hevs {'ov his ov hey OW" evso""",l ",i". The biBBesl- "ews sl-ovy 1-0.A",y is I-h",1- o{' I-he):"vo" b",,,,"'v"pl-cy. Gv",,,l-e.A we J.o "01- el- ""ow ",11l-he {'",C\-S b,,1- il- is obvio"s I-h",1- .Aecepl-io" 1-00'" pl",ce.'" He",.As o{' I-he co",P"'y ""owi" I lieJ. 1-0 I-heiv sh",veholJ.evs e"co"v", i" I-he", 1-0 b "'ove sl-oc"', while I-he he....As I-he...selves ",,,,J.e "'illio"s by shov\selli" . I-he l""",,,el-i,, sl-oc.... -rho"s",,,.As o{' wov"'evs losl-I-heiv li{'e-s"'vi,,~s bec",,,se o{' I-he co",p",,,y's .Aecepl-io". "'There is ",lve....Ay eviJ.e"ce I-h",1- sevev",l ",e,,\-s weve eil-hev shve.AJ.eJ. ov coveveJ. " ",cco""I-i"~ .Aoc,,- ~ WHY ESSAY #7 RECEIVED A SCORE OF 3 This limited essay demonstrates developing mastery. The writer offers a point of view ("l feel deception can be separated into two categories: the justifiable decept ion that one must use to gain advantage in a competitive field. and the unjustifiable decep~ tion one uses at the expense of others for his or her own personal gain") but fails to provide adequate evidence to support this main idea. By compa ring a personal example of when deception is justified to the recent Enron scandal when deception caused harm to thousands of innocent people, the writer demonstrates some critical thin king. The writer displays a developing facility in the use of language. However, this response simply lacks the evidence to support the main idea or establish a progression of ideas. Therefore, the essay remains in the inadequate category and scored a 3. 210 Practice for the Writing Section Essay #8: This essay received a score of 2. I" I-v.e I",I-e seve"l-ee" v.",,,J.veJ.s, I-v.e A"'evic",,, colo"ies v.",J. e"l-eveJ. '" W"'V .pov i"J.epe"J.e"ce ",~",i"sl- I-v.e oppvessio" o.p ki" Geov . e III. Ge"ev",1 Geov e W",sv.i" 1-0" le",J.ev o.p I-v.e A"'evic",,, \-voops, e"'i'loyeJ. '" yo",,,~ """" 1-0 i"-llI\-v,,,l-e I-v.e Bvit-isv. Ii"es i" ovJ.ev 1-0 J.el-ev",i"e I-v.e.eiv ",v"is posit-io". l1 WHY ESSAY #8 RECEIVED A SCORE OF 2 This spa rse response demonstrates little mastery. The writer develops a point of view ("deception ca n someti mes be justified") that is seriously limited by providing only insufficient evidence to support this position. The response demonstrates weak critical thinking by offeri ng the appropriate but brief example of Washi ngton's use of secrecy to win "freedom and liberty" for the American people. Although this response is focused, the writer fails to provide sufficient support to demonstrate a progression of ideas. Thus, the essay is seriously limited and scored a 2. 211 THE WRITING SECTION Essay #9: This essay received a score of 1. Decept-io" c"'' sOlMet-ilMes 'be j",st-i-lleJ.. Evevyt-it.i,,~ is sOlMehlMes ",Iw",ys j",st-i-lleJ., eve" t-it.i"~s yo", wo",IJ.,,'t- t-it.i,,\< ",,,,hi yo", ve",ny 100\ o"e e"'"lMPle t-it.", t-it.- c"'lMe t-o lMi"J. w"'s it.ow o",v wovlJ. wov\ WHY ESSAY .9 RECEIVED A SCORE OF 1 This brief response demonstrates only very little mastery. Although there is a main idea present ("Deception can sometimes be justified"), the example of speeding offered as support is too unfocused to develop this point of view. Ideas Automated Score are d isorganized and unclear, resulting in a disjointed and incoherent To receive an automated score for your essay response online, check out The Official SAT Online Course at www.coUegeboard.com/ satonlinecourse. 212 essay. Furthermore, the response demonstrates severe fl aws in sentence struc ture. ("Like if someone was driving down the st reet and speeding." "Instead of putt ing him/her in jaiL") Consequent ly, this essay is fundamentally lacking and received a score of I. THE WRITING SECTION Answet Key Improving Sentences I. B 6. D 2. A 7. E 3. B 8. B 4. C 9. A 5. D Identifying Sentence Errors 10. A 15. C II. D 16. D 12. D 17. E 13. E 18. B 14. C Improving Paragraphs 19. B 22. B 20. E 23. C 2 1. D Additional practice questions can be found in The Official SAT Online Course at www.collegeboard.comlsatonlinecour••. 214 PART IV The Mathematics Section 215 CHAPTER 14 About the Mathematics Section Just about every part of your life requires math skills, and math skills will be especially important for success in college. The questions on the SAT emphasize mathematical reasoning and eva luate how well you can think through math problems. You will need to know some specific math concepts and math skills. The mathematics section evaluates how well you use these concepts and ski lls to solve real-life math problems. The mathematics section has the following questions: • 44 multiple-choice questions • 10 student-produced response questions, which require you to fill in a response The mathematics section has four categories of questions: 1. Number and

operations (reviewed in Chapter 15) 2. Algebra and functions (reviewed in Chapter 16) 3. Geometry and measurement (reviewed in Chapter 17) 4. Data analysis, statistics and probability (reviewed in Chapter 18) Mathematics Reference Information The SAT mathematics section includes reference information. You may find these facts and formu las helpful as you answer some of the test questions, but don't let the reference in formation give you a fa lse sense of sec urity. It won't tell you how to solve math problems. To do well on the mathematics section, you have to be comfortable working with these facts and formulas. If you get a lot of practice using them before the test, you will be a lot more relaxed using them during the test. 217 THE MATHEMATICS SECTION jG Dw~ ~h E}b~ _ " A - ". .. 1 8 C:2n r ~ ~ ~ -'" t A=w I A=-2bh . V=lwh a c 2 :::a 1 +b 1 V:: Jrr 2h 2>~x ,I:A. ,.12 ~[~ x..[3 s Special Right Triangles TIle number of degrees of arc in a circle is 360. TIle sum of the measures in degrees ofthc angles of a triangle is 180. Example: Multiple Choice If2x+2x+2x= 12,whatisthevalueof2x-l? (A) (B) (C) (D) (E) 2 3 4 5 6 A"swer: The correct answer is (B). Chapter 19 gives you ideas on answering specific kinds of multiple-choice questions. Example: Student-Produced Response Student-produced response questions are not multiple choice. Instead, you must figure out the correct answer and fill it in on the answer sheet. St udent-produced response question s (also ca lled grid-ill questions) are solved just like any other math problems. Here's the same question presented above, but as a grid-in question . lf2x .... 2x .... 2x = 12, what is the value of 2x - I ? Answer: The answer is still 3, but instead of fi ll ing in choice (A), (B), (C), (0) or (E), you have to write "3" at the top of the grid and fill in the circle contain ing "3" below. I(.)I~ , 3 • •· ·• • ,• ,• 0 ' , , • • • • •, •, 0) ,• 1* 218 '. II About the Mathematics Section Note: No question in tllis format has an answer that is negative, greater than 9999 or irrational because there is no way to grid this response. Specific ideas on completing student-produced response questions are presented in Chapter 20. Approaches to Mathematics Questions)- Familiarize yourself with tile directions ahead of time. Also, learn how to complete the grids for student-produced response questions (see Chapter 20).)- Ask yourself the following questions before you solve each problem: • What is the question asking? • What do I know?)- Limit your time on anyone question. All quest ions are worth the same number of points. If you need a lot of time to answer a question, go on to the next one. Later, you may have time to return to the question you skipped.)- Keep in mind that questions are arranged from easy to hard. Within any group of questions - for example, the multiple-choice questions - the easier ones come first and the questions become more difficult as you move a long. If you find that the questions of one type are becoming too difficult, quickly read through the rest of the questions in that group to see if you can answer others. Then go on to the next group of questions in that sect ion.)- Don't make mistakes because of carelessness. No matter how frustrated you are, don't pass over questions wit hout at least reading them, and be sure to consider all the choices in each question. If you're careless, you could choose the wrong answers even on easy questions. Take each question as it comes and avoid careless mista kes by making sure you do the fo llowing: • Answer the question asked. For example, if the question asks for the area of a shaded region, don't give the area of the unshaded region. • Check that your answer makes sense. For example, is a discount higher than the original price? Is the average age of a high school student 56 years old? In both cases, obViously not - so think about your answer instead of just calculating automatically. Check your work from the beginning. If you can, use a different method from the one you used 10 get the answer. If you use the same method. you may make the same mistake twice.)- Work out the problems in your test booklet. You will not receive credit for anything written in the booklet, but you will be able to check your work easily later: • Draw figures to help you think through problems that involve geometric shapes, segment lengths, dista nces, proportions, sizes and so on . 219 THE MATHEMATICS SECTION • Mark key information on graphs, and add information to drawings and diagrams, as you work through the questions. • Mark each question that you don't answer so that you can easily go back to it later.)- Eliminate choices. If you don't know the correct answer to a question, try eliminating wrong choices. It's sometimes easier to find the wrong answers than the correct one. On some questions, you can eliminate all the incorrect choices. Draw a line through each choice as you eliminate it until you have on ly the one correct answer left.)- Make an educated guess whenever you can eliminate at least one' tHlswer choice. On multiple-choice questions, if you ca n eliminate even one incorrect answer choice, you increase your chances of getting a question right. With each correct answer choice, you gain one point; if you leave the answer blank you get no points; if you r answer is wrong you lose only one-fourth of a point. (t))- Keep in mind that, on grid-in questions, you don't lose points for wrong answers. Make an educated guess if you don't know the answer.)- Always eIIter your answer by filling in the circles on the grid. One of the most important rules to remember about grid-in questions is that olllyanswers entered on the grid are scored. Your handwritten answer at the top of the grid isn't scored. However, writing your answer at the top of the grid may help you avoid gridding errors. Approaches to Finding the Right Answer If you absolutely can't figure out how to approach a problem, you may find it helpful, when appropriate, to try to answer the question either by substituting numbers or by trying each of the a nswer choices to determine the answer. Note that these approaches are quick fixes as you prepare to take the SAT and don't help you learn what you need to know to solve problems. Also, keep in mind that these approaches somet imes take considerable time. so keep track of your time and remember to pace yourself.)- Substitute numbers for variables. Some questions use variables (indicated by letters) to represent the values you are asked to consider. You can sometimes approach these problems by substituting numbers for the variables. For example, consider the follOWing question: 220 About the Mathematics Section Exa mple w+p o w+r In the triangle above, which of the following must he true? (A) p (C) p>r (D) p=O (E) r = 0 How to solve: Because the question involves p and r, try substituting a number for w. Then th ink about what you are given and what you know: • Suppose w = 3 . • Then the side opposite the angle measuring 70 0 has length 3 + r. • The side opposite the angle measuring 80 0 has length 3 + p. • Because 70 < 80, you know that 3 + r < 3 + P . • Sor)- Use each of the answer choices to help you solve a problem. Sometimes working through a question using the same format used in the answer choices will help you save time. For example. if the answer choices to a question are in the form of decimals, you may choose to do your work in decimals instead of fractions. This could save time because you won't have to convert you r answer to a decimal. Also, some questions can be answered by working backward from the answer choices. This approach is often useful when the question includes a condition that you ~can express in the form of a formu la - even a verbal one. (Keep in mind that this method can be time-consuming.) For example, look at the fol lowing multiple-choice question: Example If the product of three consecutive integers is equal to the middle integer, what is the LEAST of the three integers? (A) 2 (B) 1 (C) 0 (D) - I (E) - 2 221 THE MATHEMATICS SECTION How to solve: Use the answer choices to figure out which choice satisfies the conditions of the question: • Can the answer be (A)? If so, then it m ust be true that 2 x 3 x 4 ::: 3 (the middle integer). Clearly, this is not true. • Ask yourself the same question for the other choices. • When you get to choice (D), the consecutive integers ilre -I, 0 and L The product of these three integers is 0, which is the middle integer. • The correct answer is (D). Calculators Are Recommended You should bring a calculator to use on the mathematics section of the SAT. Every question on the PSAT/NMSQT and the SAT can be solved without a calculator; however, using a calculator on some questions may be helpfu l to students. A scient ific or graphing ca lcu lator is recommended . Using a calculator can help you avoid missing a question because of computation errors. Bring Your O w n Calculator You are expected to provide your own calculator. You may not use any of the following: • calculators that have QWERTY keypads (e.g., TI-92 Plus, Voyage 200) or have pen-input, stylus" or touch-screen capability • calcu lators that have wireless, Bluetooth, cellular, audio/video recording a nd playing, camera or any ot her cell phone-type feature • calc ulators that make noise or "talk," require a n electrical outlet or use paper tape • calculators that can access the Internet • ~The use of the stylus with the Sharp EL-9600 calculator will not be perm itted. The Sharp EL-9600 remains on the list of approved graphing calculators. What to Keep in Mind When Using Calculators on the SAT 1. Bring a calculator with you when you take the SAT, even if you're not sure that you will use it. Calculators will not be available at your test center. 2. Practice on the calculator you plan to use before the test so that you're used to it. 3. Remember that all questions on the test can be answered without a calculator. Complicated or tedious calculations won't be requi red. 222 About the Mathematics Section 4. Don't buy an expensive. sophisticated calculator just for the test. If you already have one. though, that's fine. 5. Don't try to use a calcu lator on every question. Before you start using the calculator, think through how you will solve each problem. Then decide whether to use the calculator. , 6. Use common sense. The calculator is meant to help you in problem solving, not to get in the way. 7. Do scratch work in the test booklet before you use your calculator so that you'll get your thoughts down on paper quickly. 8. Check that you r calculator is in good working order and that its batteries (if needed) are fresh. If you r calculator fails during the test, you'll need to complete the test without it. 223 ® .1-'1.11 ::t : l 00 • • Recap 1. Familiarize yourself (ahead of time) with the directions and the reference information that will be on the SAT and that is shown at the beginning of this chapter. 2. Study the concepts and skills in Chapters 15 to 18, which cover mathematics reviews. 3. Bring a calculator that you know how to use fresh batteries. ~ and don't forget 4. Keep in mind that questions a re arranged from easy to hard. 5. Pace yourself. Don't spend too much time on anyone question. 6. Before you solve each problem, ask yourself: What is the question asking? What do I know? 7. Make notes in your test booklet: • Draw figures to help you think through problems with geometric shapes, distances, proportions and so on. • Write out calculations to check later. • For questions that contain figures, note any measurements or values you calculate right on the figure in the test booklet. 8. Use the answer choices to your advantage - for example, look at the form of the answer choices if you can't figure out how to approach a problem. 9. Substitute real numbers for variables, to make the problem more concrete. 10. Make an educated guess when you can eliminate at least one incorrect answer choice in a multiple-choice question. 11. Remember that figures that accompany questions are drawn to scale unless otherwise noted. 12. However, if you're told that a figure is not drawn to scale, remember that lengths and angles may not be shown accurately. 13. Don't panic when you're faced with special symbols: read the definition carefully and use it as your instruction for working out the answer. 14. Take each solution one step at a time. Some seemingly difficult questions are really just a series of easy questions. 224 15. Keep in mind that the answer sheet will be scored by a computer, so you will receive credit only if you fill in the circles correctly on the student-produced response questions, (Although it 's not required, it's a good idea to write your answer in the boxes at the top of the column, t o help you fill in the circles correctly.) 16. Avoid careless mistakes. 17. Answer the question asked. 18. Check that your answer makes sense. 19. If you have time to check your work, t ry to rework your calculations differently from t h e way you first did them. 225 CHAPTER 15 Number and Operations Review Concepts You Need to Know Though you've been preparing for the mathematics section of the SAT all during your high school years, here's a chance to review what you know. For mathematics questions cover ing number and operations, you should be familia r with all of the following basic skills and concepts: • Properties of integers • Arithmetic word problems • Number lines • Squares and square roots • Fractions and rational numbers • Elementary number theory • Factors, multiples and remainders • Prime numbers • Ratios, proportions and percents • Sequences • Sets (u nion, intersection. elements) • Counting problems • Logical reasoning The SAT doesn't include • Tedious or long computations • Matrix operations 227 THE MATHEMATICS SECTION Properties of Integers You will need to know the fo llowing information for. some questions in the mathematics section: • Integers consist of the whole numbers and their negatives (including zero) . ...• -3, -2, - I, 0,1,2,3,4, ... • Integers extend infinitely in both negative and positive directions. The following are negative integers: -4, -3, -2,-1 The following a re positive integers: 1, 2, 3, 4 The integer zero (0) is neither positive nor negative. Odd Numbers ... ,-5,-3,-\, 1,3,5, ... Even Numbers ... , -4, -2, 0,2,4, ... The integer zero (0) is an even number. Consecutive Integers Integers that follow in sequence, where the difference between two successive integers is 1, are consecutive integers. Here are th ree examples of some consecutive integers: - 1,0,1,2,3 1001, 1002, 1003, 1004 -14, -13, -12,-11 The following is an expression representing consecutive integers: n, n + 1, n + 2, n + 3, ... , where n IS any integer. Addition of Integers even + even = even odd + odd = even odd + even = odd 228 Number and Operations Review Adding zero (0) to any number doesn't change the value: 8+0 = 8 -1+0= - 1 Multiplication of Integers even x even =even odd x odd = odd odd x even = even Multiplying any number by one (1) doesn't change the value: 3 x 1= 3 -lOxI =-1O Arithmetic Word Problems The SAT often has arithmetic word problems that do not require you to write down an algebraic equation or expression. Such questions test your ability to apply correct ly arithmetic operations in a problem situation. To solve these problems, you need to identify which quantities are being given, what is being asked for and which arithmetic operations must be applied to the given quantities to get the answer. Examples EXAMPLE 1 Ms. Griffen is making bags of Halloween treats. If she puts 3 treats in each bag, she will make 30 bags of treats and have no treats left over. If instead she puts 5 treats in each bag, how many bags of treats can she make? How to solve: If Ms. Griffen puts 3 treats in each bag, she makes 30 bags of treats. There are 30 x 3 = 90 treats in the bags and none left over. Therefore, Ms. Griffen has a lotal of 90 I reats. If Ms. Griffen puts 5 treats in each bag, she can make 90 + 5 = 18 bags of treats. EXAMPLE 2 Jorge bought 5 pencils from the store. He gave the cashier a five-dollar bill and got back $0.75 in change. Jorge saw that he had gotten too much change, and he gave $0.25 back to the cashier. What was the price, in dollars, of each pendl? How to solve: Jorge gave the cashier $5.00 for the 5 pencils, and he got $0.75 back. At this point, Jorge had 'paid $5.00 - 0.75 = $4.25. Then Jorge gave the cashier $0.25. 229 THE MATHEMATICS SECTION Therefore, Jorge paid a total of $4.25 + 0.25 = $4.50 for the 5 pencils. Each pencil cost $4.50 + 5 = $0.90. Number Lines A number line is used to graphically represent the relationships between numbers: integers, fractions or decimals. -6 -5 _4 -3 -2 -1 o , 3 4 5 (, • Numbers on a number line always increase as you move to the right, and tick marks are always equally spaced. • Negative numbers are always shown with a negative sign (-). For positive numbers, the plus sign (+) is usually not shown. • Number lines are drawn to scale. You will be expected to make reasonable approximations of positions between labeled points on the line. Number line questions generally require you to figure out the relationships among numbers placed on the line. Number line questions may ask: • Where a number should be placed in relation to other numbers; • The difference or product of two numbers; • The lengths and the ratios of the lengths of line segments represented on the number line. Example Here is an example of a number line question: A -, 8 c -1 . o a E F G , 3 4 On the number line above, the ratio of AC to AG is equal to the ratio of CD to which of the following? CA) AD (B) BD (C) CG (DI DF (EI EG How to solve: In this quest ion, the number line is used to determine lengths: AC =2, AG =6, CD =1 . Once you have these lengths, the quest ion becomes a ratio and proportion problem. 230 Number and Operations Review • The ratio of AC to AG is 2 to 6. • The ratio of AC to AG is equal to the ratio of CD to what? 2 I · 6=x · x=3 Now you have to go back to the number line to find which of the given segments has length 3. Because AD = 3, the answer is (A). r 0.425 0.430 The number line show n above is from a quest ion that appeared on the SAT. The question requires that you figure out the coord inate of point P. given that the tick marks are evenly spaced. The units of measure are thousandths. (The distance between adjacent tick marks is 0.001.) Point P has coordinate 0.428 on this number line. ~epinMind The dist ances between tick marks on II number line m ay not be m easured in w hole units. Squares and Square Roots Squares of Integers Although you ca n always figure them out with paper and pencil or with your calculator. it's helpful if you know or at least can recognize the squa res of integers between - 12 and 12. Here they are: , I 2 3 I 4 9 -I -2 -3 I 4 9 4 16 5 6 25 36 7 49 B 9 to 64 BI 100 121 144 II 12 -4 -5 - 6 -7 -B -9 -10 -II - 12 16 25 36 49 64 BI 100 121 144 You ca n see, for example, that S2 =2S and ..J64 =8. Your knowledge of common squares and square roots may speed up your solution to some math problems. The most common types of problems fo r which this knowledge will help you will be those involving: • Factoring andlor simpli fying expressions • Problems involving the Pythagorean theorem (a 1 + b1 = 2) • Areas of ci rcles or squares 231 THE MATHEMATICS SECTION Squares of Fractions Remember that if a positive fraction with a value less than 1 is squa red, t he result is always smaller than the original fraction: I(O Then n 2 < n Try it. What are the values of the following fractions? The answers arc ~ and 614' respectively. Each of these is less than the original fraction. 4 2 For example, "'9 < 3' Fractions and Rational Numbers You should know how to do basic operations with fractions: • Adding, subtracting. mu ltiplying and dividing frac tions • Reducing to lowest terms • Fi nding the least common denominator • Expressing a value as a mixed number (2t) and as an improper fraction (t) • Working with complex fractions - ones that have fractions in their numerators or denom inators You shou ld know that a rational number is a number that can be represented by a frac tion whose numerator and denominator are both integers (a nd the denom inator must be nonzero). The following are rational numbers: 1 2 15 "4 3 (or 3.) _ll 13 5 T (or 5) As you can see from the last example, every integer is a rational number. 232 Number and Operations Review Decimal Fraction Equivalen ts You may have to work with decimal frac tion equivalents. That is, you may have to be able to recognize common fract ions as decimals and vice versa. To change any fraction to a decima l, divide the numerator by the denominator. Although you can figure out the decimal equivalent of any fraction (a calculator will help here), you'll be doing yourself a favor if you know the following: Fraction 1 4 Decimal 0.25 2 3 3 3 4 0.3~ 0.5 0 .6~ 0.75 ! 1 "The bar notation indicates that the 3 and the 6 repeat infinitely. Reciprocals The reciprocal of a number is 1 divided by that number. For example, the reciprocal of 5 is Note that 5 x = l. The product of a number and its reciprocal is always I. t t. Here is another example: The reciprocal of to t is I divided by t, which is equal t. Note that you can find the reciprocal of any nonzero fraction by switching its numerator and denominator. How do you find the reciprocal of2t? Write it as an improper fract ion: 2t Now sw itch the numerator and denominator: the reciprocal of 2t is t. =~. You can also find the reciprocal of a negative number. For example, the reciprocal of -2 is _~ = -to Note that the reciprocal of a negative number is negative. The number zero (0) has no reciproca l. The number 1 is its own reciprocal. Also, the number - I is its own reciproca l. Place Value and Scientific Notation The number 123 can be written as 100 + 20 + 3 or as (I x IO l) + (2 X 10 1) + (3 x I). The digit I stand s for 1 times 100; the d igit 2 stands for 2 times lOj and the digit 3 stands for 3 times 1. We say these digits have the follOWing place values: I is in the hundreds place. 2 is in the tens place. 3 is in the units (ones) place. Every digit in a decimal number has a place value. The nex t places to the left of 123 are the thousands place, the ten-thousands place, the hundred-thousands place, the millions place and so on. Digits to the right of the decimal point also have place values. For example 0.56 =0.5 + 0.06 =(5 x 10- 1) + (6 x 10-2); the digit 5 is in the tenths place, and the digit 6 is in the hundredths place. 233 THE MATHEMATICS SECTION Sometimes, usi ng t he concept of place value ca n lei you write a very big or small number in a much shorter form. For example: 2,300,000,000,000 = 2.3 x lOll 0.0000000007 = 7 x to-IO Because such numbers often occur in scientific calculations, writi ng a number as t he product of a power of 10 and a number greater t ha n o r equal to 1 and less than 10 is called scientific notatiot!. Elementary Number Theory Factors, Multiples and Remainders On the SAT, you'll find questions that requi re you to understa nd and work with these three related concepts: factors. mu ltiples and remainders. FACTORS The factors of a number are positive integers t hat can be divided evenly into t he number - that is, without remainder. For instance, consider the number 24: The nu mbers 24, 12,8,6, 4,3,2 and I are all factors of the number 24. Each of these numbers can be d ivided even ly into 24 with no remainder. The term divisible by mea ns divisible by without any remainder or with a remainder of zero. For instance. 15 is divisible by 5 because 15 divided by 5 is 3 with a remainder ofO. But 15 is not divisible by 7 because 15 divided by 7 is 2 with a remainder of 1. Com mon fa cto rs: Common factors are factors that two (or more) numbers have in common. For instante, 3 is a common facto r of 12 and 18. The largest com mon factor of two (or more numbers) is called their greatest commotl factor (GCF). For example, 6 is the GCF of 12 a nd 18. MULTIPLES The multiples of any given number are those numbers that ca n be d ivided by that given number without a remainder. You can find the mu ltiples of a n umber by mu ltiplying it by 1, 2, 3, 4 and so on. For instance, 8, 16. 24, 32. 40 and 48 are some of t he mu ltiples of8. Notice that the multiples of 8 are also multiples of2 and 4 (factors of8). Remember, the mu ltiples of any nu mber wil l always be mult iples of all the factors of that number. For instance: • The numbers 30, 45, 60 and 75 are all m ultiples of the nu mber 15. • Two factors of 15 are the numbers 3 and 5. • That means that 30, 45, 60 and 75 are all multiples of 3 and 5. 234 Number and Operations Review Common multiples; Suppose you have two (or more) numbers. Any number that is a multiple of all the given numbers is called a common multiple. For instance, 48 and 96 are both common multiples of 8 and 12. The smallest multiple of two (or more) numbers js called their least common multiple (LCM). For example, 24 is the LCM of8 and 12. Examples EXAMPLE 1 What is the least positive integer divisible by the numbe rs 2, 3, 4 and 5? How to solve: • To find one example of a number that is divisible by several other numbers, multiply those numbers together. You could multiply 2 x 3 x 4 x 5 and the result would be divisible by all those factors. • But the question asks for the least positive number divisible by all four (in other words, the LCM of the four numbers). To find that, you have to eliminate any extra factors. • Any number divisible by 4 will also be divisible by 2, so you can eliminate 2 from your initial multiplication. If you multiply 3 x 4 x 5, you will get a smaller number than if you multiply 2 x 3 x 4 x 5, and the number will still be divisible by 2. • Because the remaining factors (3, 4 and 5) have no common factors, the result of 3 x 4 x 5 will give you the answer. So 3 x 4 x 5 = 60 is the least positive integer divisible by 2, 3, 4 and 5. EXAMPLE 2 Which of the follow ing cou ld be the remainders when four consecutive positive integers are each divided by 3? (A) (8) (C) (D) (E) 1,2,3,1 1,2,3,4 0, 1,2,3 0,1,2,0 0,2,3,0 How to soLve: Remember, the question asks only for the remainders. • When you divide any positive integer by 3, the remainder must be less than or equal to 2. • All the choices except (0) include remainders greater than 2, so (0) is the only possible correct choice. If the first and fourth of the consecutive integers are multiples of3, the remainders will be 0,1,2 and O. Exam ining only the rema inders of numbers is sometimes called modular arithmetic. 235 THE MATHEMATICS SECTION EXAMPLE 3 Does the equation 3x + 6y= 47 have a solution in which x and yare both positi"e integers? How to solve: Note that 3x + 6y = 3(x + 2y). Therefore, fo r any positive integers x and y. the sum 3x + 6y = 3(x + 2y} is a mUltiple of 3. But 47 is not a mu ltiple of 3. Therefore, no matter what posit ive integers you choose for x and y. the sum will not be 47. Thus. the equation 3x + 6y = 47 does not have a solution in which x and yare both posit ive integers. This question is an example of a Diophantine equation - that is, it is an equat ion with integer coefficients for which you arc seeking integer solutions. Prime Numbers A prime nu mber is a positive integer greater than 1 that has exactly two wholenumber factors - itself and the number l. The number I itself is not prime. The fi rst eight prime numbers are: 2,3,5,7, Il, 13, 17, 19 (Note that 2 is the on ly even prime number.) Prime factors: Prime fac tors are the factors of a number that are prime numbers. That is, the prime fac to rs of a number cannot be factored further. For example, the prime factors o f the number 24 are 2 and 3. 24=2x2x2x3 Ratios. Proportions and Percents A ratio expresses a mathematical relationsh ip between two quantit ies. Specifically, a ratio is a quot ient of those qua ntities. The following are all relationships that can be expressed as rat ios: • My serving of pizza is t of the whole pie. • There are twice as ma ny chocolate cookies as va nilla cookies in the cookie ja r. • My brother earns $5 for each $6 I earn . The preceding ratios can be expressed in several different ways. They can be stated in words: • The ratio of my serving of pizza to the whole pie is one to four. • The rat io of chocolate to vanilla cookies is two to one. • The ratio of my brot her's earnings to mine is five to six. 236 Number and Operations Review They can be expressed as fract ions: .I 4 2 'T .5 6 They can be expressed with a colon (:). as follows: • 1:4 · 2:1 · 5:6 Or they can be expressed using the word to: • I to 4 · 2 to I · 5 to 6 A percent (%) is a ratio in which the second quantity is 100: for example. I got 75 percent of all the questions right. (The ratio of questions I got right to all the questions . IS 75) 100. A proportion is an equation in which two ratios are set equal to each other. YOli may be asked to answer questions that require you to set up a proportion and solve it. Examples EXAMPLE 1 The .....eight of the tea in 100 identical tea bags is 8 ounces. What is the weight, in ounces, of the tea in 3 tea bags? How to solve: You solve this problem using a proportion, which is two ratios set equal to each other. Start by setting up two ratios. • The ratio of the tea in 3 tea bags to the tea in 100 tea bags is 3 to 100 (or I~O). • Lei x equal the weight, in ounces, of the tea in 3 tea bags. • The ratio of the weight of the tea in 3 tea bags to the weight of the tea in 100 tea bags is x ounces to 8 ounces (i). 237 THE MATHEMATICS SECTION The ratio of x ounces to 8 ounces is equal to the ratio o f 3 to 100: x_ 3 "8- 100 iOOx = 24 x = 120~ or 0.24 Therefore t he weight of the tea in 3 tea bags is 0.24 ounces. EXAMPLE 2 You may find questions that involve ratios in any of the following situations: • Lengths af line segments • Sizes of angles • Areas and perimeters • Rate/time/distance • Numbers on a number line You may be asked to combine ratios with other mathematical concepts. For instance: The ratio oftne length of a rectangular floor to its width is 3:2. If the length oftne floor is 12 meters, what is the perimeter of the floor, in meters? How to solve: The ratio of the length to the width of the rectangle is 3:2, so set that ratio equal to the ratio of the actual measures of the sides of the rectangle: l_ length 2 - width l=ll 2 x 3x= 24 x = 8 (the width) Now that you have the width of the rectangle. it is easy to find the perimeter: 2(length + width) = 2(12 + 8). The perimeter is 40 meters. Sequences A sequence is an ordered list of numbers. Some sequences follow a specific pattern. For example, the sequence 3,7, 11, 15, ... follows the pattern add 4. That is, each term in the sequence is 4 more than the one before it. The first term is 3, the second term is 7 and, in general, if n is a positive integer, 238 Number and Operations Review the nth term in this sequence is 3 + 4(n - I). The three dots (...) indicate that this sequence goes on forever. Not all sequences go on indefinitely. The sequence 2,4,6, ... ,22,24 contains even numbers only through 24, where the sequence ends. The mathematics section will include geometric sequences, which are sequences for which there is a constant ratio between consecutive terms. For example. 7,21,63, 189, ... is a geometric sequence in which the first term is 7 and the constant ratio is 3. Note thatl!. = 3 63 = 3 and 189 = 3 7 '21 63' For any positive integer n, the nth term of this sequence is 7 x 3"-1. These sequences have real-life applications. and there may be questions in the mathematics sect ion using geometric sequences in contexts such as population growth. Because the nth term of geometric sequences can be written using exponential notation. the growth of such sequences is somet imes called exponential growth. The mathematics section does not ask you to figure out the rule for determ ining the numbers in a sequence without giving the information in some way. For instance, in the preceding example. if you were given that the nth term of the sequence was 7 X 3"-1 , you may be asked to determine that each term after the first was 3 times the term before it. On the other hand, if you were given that the first term in the sequence was 7 and that each term after the first was 3 times the term before it, you might be asked to find that the nth term of the sequence was 7 x 3"-1 . Number sequence questions might ask you for the following: • The sum of certain terms in a sequence • The average of certain terms in a sequence • The value of a specific term in a sequence Sets (Union. Intersection. Elements) A set is a collection of things. and the th ings are called elements or members of the set. Questions in the mathematics section might ask about the union of two sets (Le .• the set consisting of the elements that a re in either set or both sets) or the intersection of two sets (i.e.• the set consisting of the common elements). For example, if set A = /2, 4, 6, 8, lO} and set B = {8, 10, 12, 14} then the union of sets A and B would be {2, 4, 6, 8,10, 12, 14} and the intersection of sets A and B would be {8, to}. 239 THE MATHEMATICS SECTION Counting Problems Counting problems involve figuring out how many ways you can select or arrange members of groups, such as letters of the alphabet, numbers or menu selections. Fundamental Counting Principle The fundamental counting principle is the principle by which you figure out how many possibilities there are for selecting members of different groups: If one event can happen in n ways, and a second, independent event can happen in m ways, the total ways in which the two events can happen is n times m. For example: On a res taurant menu, there are three appetizers and four main courses. How many different dinners can be ordered if each dinner consists of one appet izer and one main course? • The first event is the choice of appetizer, and there are three choices available. • The second event is the choice of main course, and there are four main courses. • The total number of different dinners is therefore 3 x 4 = 12. This idea can be extended to more than two events. If you had two choices for beverage added to your choices for appetizer and main course, you would multiply the total by 2: 2x3x4=24 If you also had three choices for dessert, you would multiply by 3: 3x2x3x4=72 Permutations and Combinations If)'ou select member after member from the same group, the number of possible choices will decrease by 1 for each choice. Some counting problems involve permutations. A permutation of a set is a reordering of the elements in the set. A security system uses a four-letter password, but no letter can be used more than once. How many possible passwords are there? • For the first letter, there are 26 possible choices - one for each letter of the alphabet. • Because you cannot reuse any letters, there are only 2S choices for the second letter (26 minus the letler used in the first letter of the password). 240 Number and Operations Review • There are only 24 choices for the third leiter, and only 23 choices for the fourth. The total number of passwords will be 26)(2S)(24)(23. If the order in which the members are chosen makes no difference, the counting problem involves combinations. For example: There are 12 st udents in the school theater class. Two students will be responsible for finding the props needed for the skit the class is performing. How many different pairs of students can be chosen to find the props? • The first student chosen can be any of the 12 students. • The second student chosen can be any of the 11 remain ing students. • Suppose Amy and Juan are in the class. There are two ways Amy and Juan could be chosen: Amy first and Juan second, or Juan first and Amy second. • To get the answer, you first multiply 12 by 11 to get the number of ways of choosing a pair of students, and then you divide by 2 because each pa ir of students can be chosen in two different ways. The answer is 66. Logical Reasoning Some mathematics questions emphasize logical thinking. You have to figure out how to draw conclusions from a set of facts. Exsmple Here's an example: c In the figure above, ci rcular region A represents the set of all numbers of the form 21n, circular region 8 represents the set of all numbers of the form ,,1 and circular region C represents the set of all numbers of the form 10k, where In, nand k are positive integers. Which of the following numbers belongs in the set represented by the shaded region? (A) (8) (C) (D) 2 4 JO 2S (E) 100 How to solve: Answering this question correctly depends on understanding the logic of the figure. 241 THE MATHEMATICS SECTION • The question is asking about the shaded region. • The shaded region is part of all of the ci rdes. • Therefore. any numbers in the shaded region have to obey the rules for all the circles: The ru le for A: The numbers must be of the form 2m, which means that they must all be even numbers. And the rule for B: The numbers must be of the form /1 2 , which mea ns that they must all be perfect squares. And the rule for C: The numbers must also be of the form 10 k , which means they have to be some whole-number power of 10 (10, 100. 1.000, 10,000, etc.). • When you realize that the numbers in the shaded area must obey all the individual ru les, yOli have figured out the logic of the question, and the answer is easy. The only choice that obeys all the rules is 100. The answer is (E). 242 CHAPTER 16 Algebra and Functions Review Concepts You Need to Know Many mathematics questions require a knowledge of algebra. This chapter gives you some further practice. You have to manipulate and solve a simple equation for an unknown. simplify and evaluate algebraic expressions, and use algebraic concepts in problem-solving situations. For the mathematics questions covering algebra and functions content, you should be familia r with all of the following basic skills and topics: • Operations on algebraic expressions • Factoring • Exponents • Evaluating expressions with exponents and roots • Solving equations • Determining if an equation has a solution • Solving for one variable in terms of another • Solving equations involving radical expressions • Absolute value • Direct translation into mathematical expressions • Inequalities • Systems of linear equations and inequalities • Solving quadratic equations by factoring • Rational equations and inequalities • Direct and inverse variation 243 THE MATHEMATICS SECTION • Word problems • Functions • Function notation and evaluation • Domain and range • Using new definitions • Functions as models • Linear functions: their equations and graphs • Quadratic functions: their equations and graphs • Qualitative behavior of graphs and functions Translations and their effects on graphs of functions The SAT does not include: • Complex numbers • Logarithms • Trigonometry Operations on Algebraic Expressions You will need to be able to apply the basic operations of arithmetic - addition, subtraction, multiplication and division - to algebraic expressions. For example: 4x+5x=9x IOz-3y-(-2z)+2y= 12z-y (x+3)(x-2)=x'+x-6 l ~? = 5x Factoring The types of factoring included on the mathematics sect ion are: • Difference of two squares: a 2 _ b2 = (a + b)(a - b) • Finding common factors, as in: r + 2x =x(x+ 2) 2x+4y=2(x+2y) • Factoring quadratics: x' - 3x- 4 = (x- 4)(x+ I) r 244 + 2x + I = (x + 1)(x + 1) = (x + 1)2 Algebra and Functions Review You are not likely to find a question instructing you to "factor the following expression." However, you may see questions that ask you to evaluate or compare expressions that require factOring. Exponents Definitions 1.1 P P • 'r 'r:: (vx)~ x -l>=vx"= "nd Three Points to Remember I. When multiplying expressions with the same base, add the exponents: a 2 • a 5 = (a . a)(a . a . a . a . a) = a' Th is rule also holds for exponents that are not positive integers: t5 • r 2 = (t· t· t . t· t) . (t· t)= t 3 2. When dividing expressions with the same base, subtract exponents: / r.r.r.r.r , = '-'-'-'-'''--'--'-'- = r 2 r r· r· r 3. When a number raised to an exponent is raised to a second exponent, multiply the exponents: (a mt = amI! 245 TH E MATHEMATICS SECTION Evaluating Expressions with Exponents and Roots , You will need to know how to evaluate expressions involving exponents and roots. For instance: If y ::: 8, what is y1" ? 2 lr.:; J~ y 3=VS- = v 64=4 , Here is an example afhow to work the reverse problem. If x T = 64, what is the value of x? , , By the rules of exponents, xi = (X l)! = 64. , Taking the cube root of both sides of this equation, you find x T ::: 4. Squaring both sides, you get x = 16. Solving Equations Most of the equations that you will need to solve are linear equations. Equations that are not linear can usually be solved by factOring or by inspection. Working with " Unsolvable" Equations At first, some equations may look like they can't be solved. You will find that although you can't solve the equation, you can answer the question. For instance: If a + b = S. what is the value of2a + 2b? You can't solve the equation a + b = 5 for either a or b . But you can answer the question: • The question doesn't ask for the value of a or b . It asks for the value of the entire quantity 2a + 2b . • 2a + 2b can be factored: 2a + 2h = 2(a + b) a+b=5 You a re asked what 2 times a + b is. That's 2(a + b) = 2 x 5 = 10. Solving for One Variable in Terms of Another You may be asked to solve for one variable in terms of another. Again. you're not always going to be able to find a specific, numerical value for all of the variables. For example: If3x+ y= z, what isx in termsofyand z? 246 Algebra and Functions Review You aren't asked to find a numerical value for x. You are asked to manipulate the expression so that you ca n isolate x (put it by itself) on one side of the equation. That equation will tell you what x is in terms of the other variables: · 3x+y=z • Subtract y from each side of the equation. 3x=z-y • Divide both sides by 3 to get x. '-=1' x =-----yThen x in terms of y and z is ~. Solving Equations Involving Radical Expressions The expression 5..& is a radical expression because it involves a root; in particular, the square root of x. The equation S..Jx + 14 = 29 is a radical equation because it involves a radical expression. You can solve this equation: 5'" + 14 = 29 5'" = 15 "'= 3 x=9 ~epinMind Be careful when solving radical equations such as .. [X 5 . There is one solution to this equation: 25. (However, there are two solutions to the equation x2 25 : 5 and -5.) = = Absolute Value Being familiar with both the concept and notation of absolute value will be helpful to you when solving the mathematics questions. The absolute value of a number is its distance from zero on the number line. The absolute va lue of the number w is denoted Iwi. For example, 16.51 = 6.5 and 1-321 = 32. You can think of the absolute value of a number as the "size" of the number, disregardi ng whether it is positive or negative. You may be asked to work with expressions and solve equations that involve absolute value. For example, you can solve the equation 17 - II = 10 by thinking of it as either: 7-t=1O or i -(7 - t) = 10 r I 247 THE MATHEMATICS SECTION In the first case: 7-t=1O -t= 3 r =-3 In the second case: -(7-1}=1O -7 + t = 10 t = 17 $0,t=-30rt= 17. Direct Translation into Mathematical Expressions Many word problems requ ire you to translate the verbal description of a mathemat icai fact or relationship into mathematical terms. Always read the word problem ca refully a nd double-check that you have translated it exactly. For example: ~eplnMind Be especially careful with sub- traction and division because the order of these ope rations is important. 5 - 3 is not the same as 3 - 5 . Addition and multiplication are commutative, but subtraction and division are not! "3 times the quantity 4x + 6" translates to 3(4x + 6). "A number y decreased by 60" translates to y - 60 . "S iess than a number k" translates to k - 5 . "x less than 5" translates to 5 - x . "20 d"ddb IVI e yn ",20 15--;:;- , "20 divided into a number y" is [0 . See the "Keep in M ind" ideas in the Word Problems section of this chapter. Inequalities An inequality is a statement that one quantity is greater than or less than a nother. Inequalities are shown using four symbols: • Greater than : > 5 >3, 1 > -2 • Greater than or equa l to: 2= 7 32=2, 4+5 2= 9 0 -7 • Less than: < • Less than or equal to: S 8- 4 248 5 s: 5, "2 s 2.5 Algebra and Functions Review Most of the time, you can work with si mple inequalities in exact ly the same way you work with equalities. Consider the following: 2x+I>11 If th is were an equation. it would be pretty easy to solve: 2x + I = II 2x = ll -l 2x = 10 x=5 ~ePinMlnd Remember that multiplying or dividing both sides of an inequality by a negative number reverses the direction of the inequality: If - x < 3,thenx >-3. ¥ou can use a similar process to solve inequalities: 2x+I > 11 2x> I I - I 2x > 10 x>5 Systems of Linear Equations and Inequalities ¥ou may be asked to solve systems of two or more linear equations or inequalities. For example: For what values of a and b are the following equat ions both true? a + 2b = I -3a-8b= 1 You can solve this system of equations by el iminating one of the variables. Say you decide to eliminate h. Multiply both sides of the fi rst equation by 4: 4a+8b =4 - 3a-8b = 1 Adding the Iwo equations gives: -3a- J =4-4a a=5 Substituting a = 5 into the original equation gives 5 + 2b = I . ¥ou ca n solve this equation to find b = -2 . The answer is that the fi rst two equations are true if a = 5 and b = -2 . 249 THE MATHEMATICS SECTION Solving Quadratic Equations by Factoring You may be asked to solve quadrat ic equations that can be factored. (You will not be expected to know the quadratic formula.) For instance: For what values of x is r - lOx + 20 = -4 ? Add 4 to both sides of the equation to get a standard quadratic equation: x! - lOx + 24 = O. Now factor: r - lOx+24=D (x - 4)(x - 6) = 0 Therefore, either x - 4 = 0 or x - 6 = O. The values x =4 and x = 6 satisfy the original equation. Rational Equations and Inequalities A rational algebraic expression is the quotient of two expressions. An example is 3y+ 5 y-2 You may be asked to solve equations or inequalities involving such expressions. For example: For what value of x is the following equation true? x-I 3=2x+3 Multiplying both sides by 2x + 3 gives 3(2x+3)=x-l 6x+9=x - l 5x =-10 x = -2 Direct and Inverse Variation The quantities x and yare directly proportional if y = kx for some constant k. For example: x and yare directly proportional. When the value x is 10. Y is equal to -5. Ifx= 3, what isy? Because x and y are directly proportional, y = kx for some constant k. You know y is -5 when x is 10; you can use th is to find k. y= kx -5 = k(lO) k= -t So, the equation is y = -tx . When x = 3, you get y = (-t)(3) = -~. 250 Algebra and Functions Review The quantities x and yare inversely proportional if y =! for some constant k . For x example: If xy = 4. show that x and yare inversely proportional. Divide both sides of the equation xy = 4 by x: y=ix Therefore. x and yare inversely proportional, with k = 4 . Word Problems Some mathematics questions are presented as word problems. They requ ire you to apply math skills to everyday situations. With word problems you have to: • Read and interpret what is being asked. • Determine what information you are given. • Determine what information you need to know. • Decide what mathematica l skills or formulas you need to apply to find the answer. • Work out the answer. • Double-check to make su re the answer makes sense. When checking word problems. don't substitute your answer into your equations, because they may be wrong. Instead, check word problems by checking your answer with the original words. Translate as You Read As you read word problems. translate the words illto mathematical expressions and equations: • When you read "Jane has three dollars more than Tom," translate to J = T + 3 . • When you read "the average (arithmetic mean) of the weights of three children . IS 80 pounds," translate to a+b+c 3 = 80 . • When you read "Jane buys one clown fish and two guppies for $3." translate to c+2g=3. When you've finished reading the problem, you will have already translated it into mathematical expressions and equations. Table 16.1 will help you with some of the more common phrases and mathematical translations: 251 THE MATHEMATICS SECTION Table 16.1 Mathematical Expressions Worda Symbol Translation 15, was, has: The number of days Jane worked is the number of days Tom worked. J=T More than, older than, farther than, greater than, sum of: + Addi tion Jane has 2 more dollars than Tom. + J=2+ TorJ=T+2 Tom ran 10 mil es farther than Jane. T=10+JorT=J+10 The sum of two integers is 36. Lass than, difference, younger then, fewer; Subtraction Tom has 5 fewer marbles than twice the number Jane has. T = 2J - 5 (Don't make the ~5 - 2J" mistake!) The difference between Tom's height and Jane's height is 22 centimeters. Multiplication 20% otTom's socks are red. Jane ata % R=.2)(T %of the candy. For. per: Jane won 3 games for every 2 thatTom won. ratio Division + J:::: 3 T 2 50 miles per hour 50 miles/hour 2 bleeps per revolution 2 bleeps/revolution Examples Figuring out these problems takes more than just knOWing all of the formulas. You have to th ink about what sk ills and tools you will apply to the questions in order to reason your way through to the correct answer. EXAMPLE 1 'The price of a sweater went up 20% since last year. If last year's price was x, what is this year's price in terms of x? How to solve: • Last year's price,=, 100% of x • This year's price is 100% of x plus 20% of x . x+20% ·x=x+O.2x'=' 1.2x 252 Algebra and Functions Review EXAMPLE 2 One year ago, an average restaurant meal cost $12. Today, the average restaurant meal costs $15. By what percent has the cost of the average restaurant meal increased? How to solve: You can figu re percent increase by taking the difference in prices first and then expressing it as a percentage of the original price: $15 - $12 = $3 d ifference What percentage of the original price is $3? 3 x TI = 100 12x = 300 x= 2S The cost increased by 25%. Or you can figure what percent the new price is of the old price: IS is what percent of 12? 15=(1~0)12 15 TI = x 100 x= 125 Therefore, IS is 125 percent of 12. This tells you what percent the current price ($ 15) is of the old price ($12). But the question asks for the percent increase, so you have to subtract 100 percent from 125 percent. 125% - 100% = 25% increase EXAMPLE 3 The average height (arithmetic mean) of 4 members of a 6-person volleyball team is 175 cm. What does the average height in centimeters of the other 2 players have to be if the average height of the entire team equals 180 cm? How to solve: Start with the formula for the average: Sum of values Number of values = average Use what you know to find out the sum of the heights of the 4 members whose average is 175 cm. Sum of heights 4 175 Sum of heights = 4(175) = 700 253 THE MATHEMATICS SECTION The average of all 6 players is 180 em. Average 0 f6 payers 1 'h . h sum of 4 players' heights + sum 0£2 players' heights clg Is ::: 6 180 = 700 + sum of 2 players' heights 6 1080 ::: 700 + sum of 2 players' heights 1080 - 700::: sum 0£2 players' heights 380::: sum 0(2 players' heights What is the average of the heights of the 2 players? sum Average::: number of players Average = 3~O = 190 em EXAMPLE 4 A car traveling at an average rale of 55 kilometers per hour made a trip in 6 houTs. Ifit had traveled at an average rale 0(50 kilometers per hour, the trip would have taken how many /til/lUtes longer? How to solve: • How long was the trip? Distance ::: rate x time Distance ::: S5 kph x 6 hours Distance ::: 330 km • How long does the 330-kilometer tr ip take if the car is traveli ng at SO ki lometers per hour? ' _ d istance T Ime rate , 330km Tlme= 50 kph Time = 6~ hours • What does the question ask? The difference ill minutes between the two trips, Difference = ~ hour Difference = x minutes 3 x 5= 60 = 180 x = 36 minutes 5x 254 Algebra and Functions Review Examples The test may include quest ions that involve quantit ies that are directly proportional to each other and quantities that are inversely proportional to each other. Look at the next two examples: EXAMPLE 1 The number of juice packs that Rambling Pines Day Camp buys each day is directly proportional to the number of children at the camp that day. If the camp bought 150 juice boxes yesterday for 60 children. how many juice boxes will they buy today for 52 children? Howto solve: If two quantities x and yare directly proportional (another way to say this is that one varies d irect ly wit h the other), then there is a constant k for which y = kx. In this case, the number of juice boxes varies directly with the number of children. There are 150 juice boxes when there are 60 children: ISO = k(60) (j.ep in Mind You can solve for k to get 5 k=Z What does the question ask? How many juice boxes for 52 child ren? 5 Recall that two quantities x and yare inversely proportional if there is a nonzero constant k for which y::: !. k x 52 = '2 x 52 = 5 x 26 = 130 The camp will buy 130 juice boxes for 52 children. EXAMPLE 2 If c and d are inversely proportional and c = 10 when d:::: 6, what is d when c = 30? How to solve: The quantities c and d are inversely proport iona l, so , d=! for some constant k. Because c :::: 10 when d = 6, you get k 6=\0and so k = 60. You now can find d when c =30 : 60 d =30 =2 So d= 2 when c= 30. 255 THE MATHEMATICS SECTION Functions Function Notation Bnd Evaluation A function can be thought of as a rule or formula thai tells how to associate the elements in o ne set (the domain) with the elements in another set (the range), For example. the squaring function can be thought of as the rule "take the square of x" or as the rule;c. You should be familiar w ith function notation. The squari ng function can be written in funct ion notation asJ(x) = x?-. Function notation lets you write complicated funct ions much more easily. For example, you ca n write that the funct ion g is defined by g(x) = J" + ~. Then g(2) = 32 + -t = 9t· Domain and Range • The domain of a function is the set of all the va lues for which the function is defined . • The range of a function is the set of all values that are the output, or result, of applying the function. EXAMPLE What are the domain and range of j(x) = I +.fX ? How to solve: The domain of I is the set of all values of x for which the formula I + ...Jx' is defined. This formula makes sense if x is zero or a positive number. But if x is negative, I is not defined, the square root of a negative number is not a real number. Therefore, the domain ofI(x) = I + -.fX is all nonnegative numbers x . What is the range off? In other words, what is the set of all possible values of fix) = ~ + -JX ? A square root is always nonnegative, so every value ofI must be at least 1. The question now remains: Is every number r 2: 1 equal to 1(5) for some 5 ? Let's try a va lue, say r = 9. /(5)=I+is=9 is =8 5 = 64 You can see that for any r;:: I, you can find 5 such that r = f(5) : f(5) = I +is =r -.JS =r- I 5=(r-l)2 So, the range oflis all numbers greater than or equal to I. 256 Algebra and Functions Review y 8 7 6 range 5 4 3 y =/(x)_ I 2 -< -s -4 -3 -2 - 10 2 3 4 S 6 +-IX 7 , - 1 domain -2 -3 -4 -s -< -7 Using New Definitions For functions. especially those involving more than one variable. a special symbol is sometimes introduced and defined. §) so you won't conThese symbols generally have unusual looking signs (-tT, fuse them with standard mathematical symbols. The key to these questions is to make su re that you read the definit ion carefully. A typical special symbol quest ion might look something like this: *, w x z y Let ~--1'--~ = wy - xz where w, x, y and z are integers. What is the value of ~--1I--c7' 4 257 THE MATHEMATICS SECTION To answer this question, substitute the numbers according to the definition: • Substitute 2 for W, 3 for x, 4 for z and 1 for y. 3 " E------1f----7 = (2)(1) - (3)(4) = -10 Some questions will ask you to apply the definition of the symbol to more complicated situations. For instance: • You may be asked to compare two values, each of which requi res the use of the symbol. • You may be asked to evaluate an expression that involves mult iplying, dividing, adding, squaring or subtracting terms that involve the symbol. • You may be asked to solve an equation that involves the use of the symbol. Functions as Models Functions can be used as models of real-life situations. Here is an example: The temperature in City X is W(t) degrees Fahrenheit t hours after sundown at 5:00 p.m. The function Wet) is given by W(,) = 0.1 (400 - 40, + f) for 0 < 12 You can draw a graph of this fUnction: I: ~ 3 20 o 1C E 10 ~ o 258 2 3 4 7 6 Time (hours) 5 8 9 10 II 12 Algebra and Functions Review Linear Functions: Their Equations and Graphs You may be asked to answer quest ions involving linear equations and their graphs. Therefore. you will need to understand the concepts of slope and intercepts: y = mx + b. where m and b are constants, is a linear function. and the graph of y = mx + b in the xy-plane is a line with slope m a nd y-intercept b. For example: y p e In the figu re above. points A. Band C lie on a vertical line segment that intersects line at B and line pat C. OA = 1. DE = I, BA = I and BC = 2 . What are the coordinates of the point D where lines and p intersect? e The slope of e e is ~~ = 1 . Because e passes through the origin, its equation is y=x. You can find the slope of p in a few ways. For instance, it is ~~ = 2 . The y-intercept of pis 1. and so the equation of pis y = 2x + 1 . From the equations of lines dinates (-1. - 1). eand p, you can see their intersection at D has coor- Quadratic Functions: Their Equations and Graphs You may be asked to answer questions involving quadratic equations and their graphs. You will need to be able to identify some of the basic features of the graph of a quadratic equation. such as its highest or lowest point, its zeros and its direction. 259 THE MATHEMATICS SECTION For example, which of t he following is the graph of y = -x?- - 1 ? (A) (8) (C) (D) (E) \ ) I \ Because the square of any number is nonnegat ive, -:xl - 1 must always be a negative number. This eliminates all choices except (8) and (E). The largest value of y must occur when x = O. This eliminates (E). The correct answer is (6). Qualitative Behavior of Graphs Bnd Functions You will need to understand how the properties of a function and its graph are related. For example, the zeros of the function f are given by the points where the graph of f(x) in the xy-plane intersects the x-axis. Or you could be asked a question such as the followin g: The graphs of y = j(x) and y = 2 are shown below. (Note th at the domai n of the fun ction f is the interval from x = -3 to x = 4 .) For how many va lues of x doesf(x) = 2? 26 0 Algebra and Functions Review ,• , , • -,~-,h~~TT~~r ' -6 -S ~ -3-2-1 0 2)4S67 -, -, -, The value offix) equals 2 exactly when the graph of y = fix) has height 2. This graph has height 2 at the points where it intersects the line y = 2 . The figure shows that there are three points of intersection, so you know thatj(x) = 2 for three values of x . Translations and Their EHects on Graphs of Functions You may be asked question s on the 'effects of simple translations on the graph of a function. For example, if you are given the graph ofg(x), you should be able to identify the graph of g(x + 3) . For example: The graph of y = j(x) is shown below. , ,• , , ,• , , -,~-.-:.-,~~~~c-, ,~,,".~,'-T,-;,- ·· -' -, '0 -- -, -, -, -, -' -, '" -,-- • 261 THE MATHEMATICS SECTION Which of the following could be the graph of y = l(x - 1) ? (A) .... -S .... (B) ·' l -'O ., ... (e) ~ .... -3 _/ -'0., I I l • , 6 1 .... -S ... -J _I " 0 ., ., -, ' I I • , • 1 -'0-, ' I I • , • 1 -, ., " "-, ., " ~ (D) (E) • • -6 -S .... -J _I -'0-, -, • -, I I J • , • 1 - , ...J _I ~ -, The graph of y = l(x - 1) is the graph of y = fix) sh ifted 1 unit to the right. The correct choice is (E). You can also check the values of the functions at specific points. The original graph shows that!(3} = O. Therefore, the graph of y = l(x - 1) m ust contain the poi nt (4,0). Only the graphs in (C) and (E) contain (4,0). Butj(O) = 1 . Therefore, the graph of y = I(x - I) must contai n the point (1, 1); the graph in (C) doesn't contain (1, I), so the correct answer is (E). 262 .... Geometry and Measurement Review ",.. , Concepts You Need to Know For the mathematics questions covering geometry and measurement concepts, you should be familiar with all of the following basic ski lls, topics and formulas: • Geometric notation • Points and lines • Angles in the plane • Triangles (including special triangles) • Equilateral triangles • Isosceles triangles • Right triangles and the Pythagorean theorem • 30°_60°_90° triangles • 45°_45°_90° triangles • 3-4-5 triangles • Congruent triangles • Similar triangles • The triangle inequality • Quadrilaterals • Parallelograms • Rectangles • Squares • Areas and perimeters • Areas of squares and rectangles • Perimeters of squares and rectangles • Area of triangles • Area of parallelograms 263 THE MATHEMATI CS SECTION • Other polygons • Angles in a polygon • Perimeter • Area • Circles • Diameter • Radius • Me • Tangent to a circle • Circumference • A rea • Solid geometry • Solid fi gu res and volumes • Surface area • Geometric perception • Coord inate geomet ry • Slopes, paraUellines and perpendicular lines • The m idpoint formula • The dista nce formula • Transformations The SAT doesn't include: • Formal geomet ric proofs • Trigonometry • Radian measure 264 Geometry and Measurement Review Geometric Notation You will need to be able to recognize and use geometric notation for points and li nes, line segments, rays, angles and t heir measures, and lengths. e)' 6 m 5 E 4 p M 2 8 -6 - 5 -4 - 3 -2 2 3 4 5 6 x -2 -3 -4 -5 -6 In the figure above. the xy-coordinate plane has origin O. The values of x on the horizonta l x-ax is increase as you move to the right, and the values of yon the vertical y-axis increase as you move up. Line contains point P, which has coordinates e (- 2, 3), and point E, which has coord inates (0, 5). Line m passes through the origin 0(0,0) and the point Q (I, I). Unes and mare parallel - they never meet. This is written ell m. You will also need to know the mean ing of the follOWing notation: e el PE the line containing the points Pand E (this is the same as line PE the line segm ent with endpoints P and E PE the length of the line segment PE (you can write PE '" 2.J2) fiE the ray starting at P and extending infinitely in the direction of E EP the ray starting at E and extending infinitely in the direction of P L ODC the angle formed by 00 and OC mL ODC the measure of L ODe (you can write mL DOC ", 90°) flOaC the triangle with vertices 0 , C and 8PMD the quadrilateral with vertices 8, P, M and 8P .l PM the relation that 8Pis perpendicular to PM (you should also recognize that the small square within L BPM means this is a right angle) a a 265 THE MATHEMATICS SECTION Points and Lines There is a unique line that contains any two distinct points. Therefore, in the following diagram, line eis the only line that contains both point A and point B . ---------c.~---------~.c_-------- A B e The midpoint of a line segment is the point that div ides it into two segments of equal length. The diagram below shows the midpoint M of line segment AB . • A • e • B M Because M is the midpoint of AB, you know that AM = MB. You will also need to understand how to add the lengths afline segments along the same line. For example. in the following diagram, PR = PQ + QR = 2 + 3 = 5 . • • P 2 Q 3 e • R You may also be given the lengths afline segments along a common line and be asked a question that requires you to find the order of points along the line. Example Points E, Fand G all lie on line m, with E to the left of F. EF"" 10, FG "" 8 and EG:> FG. What is EG? How to solve: You can start to solve the problem by drawing the foJlowing d iagram ofEandFonm. r-- 10 E 266 -----1 • F m Geometry and Measurement Review The diagram uses the given information that E is to the left of F and that EF = 10 . Now the question is where to place point G on m. You a re given that FG = 8, but is G to the left or to the right of F? Try putt ing G to the left of F. Using FG =8, you get the following diagram. f - - IO- - j • • • F E2G S m In the diagram, EG = 2 . But you are given that EG must be greater than FG, and in the diagram, EG < FG. Therefore, G cannot be to the left of F . This means G must be to the right of F, as shown below. s--1 f - - IO • I E F • G m 1-1- - - IS - - - I Now EG > FG, as required. Therefore, this diagram shows the correct order of points E, F, and G along line m, and EG = 18 . Angles in the Plane In order to work th rough some of the mathematics questions, you will need to know the basic facts about the angles formed in a plane by lines, line segments and rays . • Vertical angles and supplementary angles. Two opposite angles formed by two intersecting lines a re called vertical angles. 65" x· 115' Vertical angles have the sa me measure. In the figu re above.y = 115 and x = 65. Note that any pa ir of angles next to each other in the figure have measures that add up to 180°. (This is the measure of a straight angle, the angle formed by a straight line.) Two angles whose measures have a sum of 180° are called supplementary angles. 267 THE MATHEMATICS SECTION • Para lie/lines. When a line intersects a pair of parallel lines. the eight angles formed are related in several ways . a . bO CO dO e .r 8· hO e m The measures of corresponding angles are equa l; fo r example, a and e arc equal, as arc d and h. Also. several pairs of angles each add up to a straight angle; for example, d +f = ISO and a + g = 180. Finally, alternate interior angles have equal measures; in the fi gure, c and! are equal, as arc d and e . • Righi angles, perpendicular lines, and complementary angles. A right angle is an angle wit h a measure of90", If two lines intersect and one of the four angles formed is a right angle, the lines are perpendicular. In this case, a ll four angles that are formed a re right angles. Two angles whose measures have a sum of 90° are called complementary angles. Triangles (Including Special Triangles) The sum of the measures of the angles in any triangle is 180°. Equilateral Triangles The three sides of an equilateral triangle (a, b, c) are equa l in length. The three angles are also equal, and they each measure 60° (x = y = z = 60). C 268 Geometry and Measurement Review Isosceles Triangles An isosceles triangle is a triangle with two sides of equal length (m = n). The angles opposite the equal sides are also equal (x = y). Right Triangles and the Pythagorean Theorem A right triangle is a triangle with a right angle. {Note that the other two angles in a right triangle are complementary angles.} You can get a lot of information from figures that contain right triangles. This information frequently involves the Pythagorean theorem: The square of the length of the hypotenuse of a right triangle is equal to the sum of the squares of the lengths of the other two sides. B c a C A b The hypotenuse is the longest side of the triangle and is opposite the right angle. The other two sides are usually referred to as legs. In the figure above: • AB is the hypotenuse with length c . • BC and AC a re the two legs, with lengths a and b, respectively. • The Pythagorean theorem leads to the equation: 2 a +b 2 =r • If you know the lengths of any two sides, you can use the Pythagorean theorem to find the length of the third side. 269 THE MATHEMATICS SECTION The lengths of the sides of a 30°-60°-90° triangle are in the ratio of 1:..[3 : 2. as shown in the figure: • Short leg = x • Long leg = x..J3 • Hypotenuse = 2x B o x-i3 2x A 60" C x If you know the lengths of anyone side, you can find the lengths of the other two sides. For instance, if you know the length of the short leg is 1, then the length of the hypotenuse is 2. and the Pythagorean theorem gives you the length of the longer leg: c2=a 2 +b 2 c=2,b=I 22 =a Z + 1 4=a 2 + 1 3 = a2 ,f3 = a The lengths of the sides of a 45°_45 0 _90° triangle are in the ratio of 1:1:..J2. as shown in the figure below. To verify this ratio when the equal sides are of length 1. apply the Pythagorean theorem to find the length of the hypotenuse: B xfi x 45 " AL.:!"-------'-1C c=a +b 2 a = I, b = 1 2= 2 }2+ 12 2=1+1 c=2 ,= fi 270 Geometry and Measurement Review 3-4-5 Tr;snglss The sides of a 3-4-5 right triangle are in the ratio of 3:45. For example, in the figure below, if x = 2, the sides of the triangle have lengths 6, 8 and 10. It is easy to use the Pythagorean theorem to verify this: ov1: A~C 4x 2=a 2 +b 2 102 = 62 +8 2 100 = 36+64 100 = 100 Congruent Triangles Congruent triangles are triangles that have the same size and shape. , A E B y' , s s x· D ~x,-·___--,-___-"Z~' F t { c In the figure, each side of MBC has the same length as the corresponding side of llDEF. AB=D£=r BC=EF=s CA = FD = t Each angle of MBC is also equal to its corresponding angle in llDEF . Two triangles a re congruent if a ny of the following is true: • Each pair of correspond ing sides has the same length. • Two pairs of corresponding sides each have the same length, and the angles fo rmed by these sides have the same measure. • One pair of corresponding sides has the same length, and two pairs of corresponding angles each have the same measure. 271 THE MATHEMATICS SECTION Similar Triangles Similar triangles have the same shape. Each corresponding pa ir of angles has the same measure. B y' 16 E 10 x· sA, DL----.iF z· A L-~------b~------~C 7 In the figure, rnLA = mLD, rnLB = mLE and mLC = mLF. An important fact about similar tria ngles is that the ratio of the lengths of any pair of correspondi ng sides is the sa me. (In other words. the lengths of corresponding sides are in propor6 tion.) For example, in the figure 18 = ISO. We can also find b in the figure: 16 b 8="7 Sb = 112 b = 14 Two triangles are similar if • Two pairs of corresponding angles have the same measure . • One pair of corresponding angles has the same measure, and the pairs of correspondi ng sides that for m those angles have lengths that a re in the same ratio. The Triangle Inequality The triangle inequa lity is an important fact about triangles. It states that the sum of the lengths of any two sides of a triangle is greater than the length of the thi rd side. E 9 DL-------,,-------'F 13 In the figure. forexampie, 9 + 13> DE . Therefore. you know DE must be less than 22. 272 Geometry and M easurement Review Quadrilaterals In some special quadrilaterals - parallelograms. rectangles and squares - there are relat ionships among the angles and sides that can help you solve geometry problems. Par allelograms In a pa rallelogram, the opposite angles are of equal measure and the opposite sides are of equal length. Angles A and C are equal, and angles Band D are equal. AB = CD and AD = BC. Rectangles A rectangle is a special case of a parallelogram. In rectangles, all the angles are right angles. Squares A square is a special case of a rectangle in which the lengths of all the sides are equal. Notice that if you know the length of any side of a square. you also know the length of a diagonal. A diagonal makes two 45 0 _45 0 _90 0 triangles with the sides of the square. You can figure out the lengths of the sides from the length of a d iagonal or the length of a diagona l from the length of a side. 8[2J: A , 0 273 THE MATHEMATICS SECTION ~eplnMlnd Areas and Perimeters Remember the reference infor- mation . Fonmulas for areas of common figures are given in the reference material that is printed in the test booklet. Areas of Rectangles and Squares The formula for the a rea of any rectangle is: Area = length x width B e r----"----, C • A'-------'0 Because all sides of a square a re equal. the length and width are often both referred to as the length of a side. s. So, the area of a square can be written as: Area = s- Perimeters of Rectangles and Squares The perimeter of a polygon is the sum of the lengths of its sides. Because the opposite sides of rectangles are equa l, the fo rmula for the perimeter of a rectangle is: Perimeter of a rectangle = 2{length + width) = 2(C + w) The same is true for any parallelogram. For a squa re, it's even easier. Because all four sides of a squa re are equal, the perimeter of a square is: Perimeter of a square Area of Triangles The area of a triangle is: 274 =4{length of any side) =4$ Geometry and Measurement Review • b is the base. &-ep In Mind • h is the height, a perpend icu lar segment drawn from a vertex of the triangle to the base. Arsa of Parallelograms To find the area of a parallelogram, you drop a perpendicular - segment BE in the figu re shown below. Th is makes a right triangle ABE . If you take this triangle away from the pa rallelogram and add it to the ot her side (6.DCF), you have a rectangle with the same area as the original parallelogram. The area of the rectangle is length x width. The width of this rectangle is the same as the height of the para llelogram, so the formula for the area of a para llelogram is: You can start with anv verte Kof the triangle. The side opposite the vertex you choose becomes the base and the perpendicular line from that vertex to the seg· ment becomes the he ight. For instance, the area of the triangle in the figure could be calculated using point A as the vertex instead of point B. Area == length x height B,, -__-C~"~g'~h____ C ij heighl !! • U~E~-------!; D 'O F Other Polygons Occasionally, a question will ask you to work with polygons other than triangles and quadr ilaterals. A regular polygon is a polygon whose sides all have the same length and whose angles all have the same measure. Here are a few other things to remember about other polygons. Angles in a Polygon You can fig ure out the tota l nu mber of degrees in the interior angles of most polygons by divid ing the polygon into triangles: • From any vertex, d ivide the polygon into as many nonoverlapping triangles as possible. Use only straight lines. Make sure that all the space inside the polygon is divided into tria ngles. • Count the tria ngles. In th is figure, there are four tria ngles. 275 THE MATHEMATICS SECTION • There is a total of 180" in the angles of each triangle. so multiply the number of triangles by 180. The product will be the sum of the angles in the polygon (720" in the hexagon shown below). ':--. '. ", .. . Sid •• . '" " ·· Interior Angle Sum 3 4 5 540 0 6 720" n 180(n - 2) Example ~B~~ __________________~C \''2". A~~-------------~~Z~'YD In the figure shown above. lengths AB, BD and CD are all 3-./2 units. Angles A and C are

both 45". What is the perimeter of ABeD? What is the area of ABeD? How to solve: You are asked for the perimeter and the area of the figure. For the perimeter you will need to know the lengths of Be and AD. For the area you will also need to know the heights of f}.ABD and t.BCD. PERIMETER • You are given the lengths of3line segments, all of which arc the same: 3-12. • You are given two angles, both of which have the same measure: 45°. • t.ABD is a triangle with two equa l sides. 276 Geometry and Measurement Review • 6.BCD is a triangle with two equal sides. • Therefore, they are both isosceles triangles. • The measure of angle C is 45°, so y = 45, because angles opposite equal sides are equaL • In the same way, you can show that z = 45. • Both triangles are 45°_45°_90° triangles. • You can figure out the lengths of AD and BC by the Pythagorean theorem: AD' = (3-./2)' + (3-./2)' = 36, so AD = 6 • Do the same for the length of BC to find that BC = 6 . • You can now add up the lengths of the sides to gel the perimeter: 2(6 + 3-./2) = 12 + 6-./2. AREA • ABCD is a parallelogram. You know thiS because both sets of opposite sides are equal: AB = CD and AD = Be. • That means that you ca n use the formula for the area of a pa rallelogram: area = length x height. • To find the height, drop a perpendicular from B . • That creates another 45°_45°_90° triangle whose hypotenuse is AB. • The ratio of the sides of a 45°_45°_90° triangle is l:l:..J2 . • From that ratio, you know the height of the figure is 3. • With the height, you can then ca lculate the area: 3 x 6 = 18. If you label everything you figure out as you go along, you will end up with a figure that looks like the one below. 6 277 THE MATHEMATICS SECTION Circles Diameter The diameter of a circle is a line segment that passes through the center and has its endpoints on the circle. All diameters of the same circle have equal lengths. Radius The radius of a circle is a line segment extending from the center of the circle to a point on the circle. In the figure shown below, DB and OA are radii. All radii of the same ci rcle have equal lengths, and 'the radius is half the diameter. In the figure, DB = OA. A C Arc An arc is a part of a circle. In the figure above, the points on the circle from A to B form an arc. An arc can be measured in degrees or in units oflength. If you form an angle by drawing radii from the ends of the arc to the center of the circle, the number of degrees in the arc (arc AB in the figure) equals the number of degrees in the angle formed by the two radii at the center of the circle (LAOB), called the central angle. Tangent to a Circle A tangent,!? a circle is a line that intersects the circle at exactly one point. In the figure, line AC is a tangent. A tangent to a circle is ahvays perpendicu lar to the radius that contains the one point of the line that touches the circle. In this case, OA.l AC. Circumference The circumference is the d istance around a circle, and it is equal to diameter, d (or Jr times twice the radius. r). Circumference = ltd Circumference = 2Jrr 278 1r times the Geometry and Measurement Review If the diameter is 16. the circumference is 16Jr. If the radius is 3. the circumference is 2(3)Jr, or 6Jr. d , Area The area of a circle is equal to Jrtimes the square of the radius. Area = Jr, 2 Example In the figure shown below, A is the center of a circle whose area is 2511'. B and Care points on the circle. The measure of angle ACB is 45°. What is the length of line segment Be? B How to solve: • Point A is the center of the circle. • That makes both AB and AC radii, which means that they have equal length. • Because AB = AC, MBC is an isosceles triangle. The angle opposite AB has a measure of 45°. • That means the angle opposite the other equal side is also 45°. • The remaining angle is 90°. • The area of the circle is 25Jr. • The formula for the area of a circle is Jrr 2 • You can use that fo rmula to figure out the length of the radius, r. • That length, r. is also the length of the legs of the triangle whose hypotenuse (BC) has the length you are trying to figure out. 279 L - - _ _ _ _ _ _ _ _ _ THE MATHEMATICS SECTION • , A L-;''''~ C What is the value of r ? Area = 25n = 25 rrr trr =" S=r • , A ,--;,:.",--' , 1c Figuring out the final an swer to the problem is a simple matter of working through the Pythagorean theorem or remembering that the ratio of the sides of 45°_45°_90 triangles is 1:1:'-'2. The answer is s..J2. Solid Geometry Solid Figures and Volumes You may be asked questions about the basic Iypes of solids: cubes. rectangular solids. prisms. cylinders, cones, spheres and pyramid s. You will be given the for mulas for the volume of a recta ngula r solid and a right ci rcular cylinder in the Reference Information box in the SAT. You a re not expected to memori ze complicated formu las involving solids, but you may be asked questions that require logic and applying you r knowledge in new ways. Cubes and rectangular solids. The simplest type of solid is a cube. Every edge of a cube has the same length. If the edge length of a cube is 5, then the volume of the cube i s~. 280 Geometry and Measurement Revi ew I""'1----+-[,,"""---" ,, ,, , ~"----------,,----"'--"'" , Note that the dashed lines indicate edges of the cubes that a re hidden from your view. Remember, on the SAT, you will be told if a figure does not lie in a plane. Just because you see a dashed line in a figure does not mean it is a solid. In a rectangular solid. the length, width and height may be different. f--/-----{I h II- L--"_----" The volume is given by the formu la V = Cwh . Prisms and cylinders. A rectangular solid is one example of a right prism, which is a solid in wh ich two congruent polygons are joined by rectangular faces that are perpendicular to the polygons. The congruent polygons are called the bases of the prism, and the length of an edge joining the polygons is called the height, even if the prism is not standing on its base. T height A prism may be named after its polygonal base: for example, triangular prism, hex- agonal prism. 281 THE MATHEMATICS SECTION The volume of a prism is given by the product of its height and the area of its base. You should also be familiar with a right circular cylinder, a solid in which two congruen! ci rcles are joined by a curved surface that meets the circles at a right angle. , h In the figure. r is the radius of the circular base, and h is the height of the cylinder. (As with a prism, this length is called the height and the circles are called the bases, no matter how the cyli nder is o riented.) The volume of a right circular cylinder is given by the for mula V;:; nrh ; note t hat this is the same as the a rea of the base times the height. Spheres, cOll es and pyramids. You might see spheres, cones or pyramids in a question. ~ ' " :i, . _, -r" " . " Sphere Cone '. Pyramid A sphere is the solid analogue of a circle. All radii of a sphere are equal. A circular cone has a circular base, which is connected by a curved surface to its vertex. If the line from the vertex of the circular cone to the center of its base is perpendicu lar to the base, then the cone is called a right circular cone. A pyramid has a base that is a polygon, which is connected by tria ngu lar faces to its vertex. If the base is a regular polygon and the triangu lar faces are all congruent isosceles triangles, then the pyramid is called a regular pyramid. 282 Geometry and Measurement Review Surface Area If you make cuts in a sol id that allow you to open it up to form a plane figure, the result is called a net of the solid. A solid may have many different nets. The figure below shows one net for a cube. x x x x Sometimes, you can find the surface area of a solid by working with one of its nets. For example, from the net of the cube with edge length x, you can see its su rface consists of six squares, each with side x. The surface area of the cube is the sum of the areas of these six squares, which is 6r. Geometric Perception The SAT may ask you quest ions that require you to visualize a plane figure or a solid from different views or orientations. These are questions in geometric perception. For example: B A Blue c The wire frame above is made of three wires permanently joined together: a red wire. a blue wire and a green wire. Three beads, labeled. A, Band C, are attached to the frame so that each of them can move all around the frame. However, none of the beads 283 THE MATHEMATICS SECTION can be taken off the frame, nor can they be moved past one anot her. Which of the following configurations cannot be reached by sliding the beads around the frame or changing the position of the frame? (A) (B) Green Red--. c Green ___ R,d B c A A B Blue Blue (D) R,d Green Red--. A B B A Blue Blue c (E) Blue ___ R,d c A B Green The configuration in (A) can be reached by sliding each bead clockw ise to the next wire piece. The configurat ion in (C) can be reached by sliding each bead counterclockwise to the next wire piece and then flipping the frame over. The configuration in (D) is reached simply by sliding bead A clockw ise to the green wire. The configurat ion in (E) comes from turning the wire frame a th ird of a revolution clockwise. The configuration in (8) cannot be reached no matter how you slide the beads or rotate and flip the frame. The correct answer is (B). 284 Geometry and Measurement Review Coordinate Geometry Slopes, Parallel Lines and Perpendicular Lines Some of the geometry questions on the test will involve points, lines and figures in the coord inate plane. For example, you may be given the equat ion y = ~ x + 2 and be asked which of five lines in the coordinate plane has a graph parallel to the graph of that equation. Two of the choices m ight look like th is: y y and Because the line that is the graph of y = i x + 2 has slope t, you would choose the second of the choices above because the slope of the line in that figu re is ~. Lines in the xy-plane are parallel exactly when their slopes are equal. You sho uld also know the following fact about slopes: Two lines are perpendicula r when the product of thei r slopes is - I. For exa mple, look at the fi gu re below: y e 4 -2 In -3 -4 285 THE MATHEMATICS SECTIO N Line eis the graph of y = 2x . It has slope 2 and passes through P (I, 2) . Line m is the graph of the equation y = - ~ x . It has slope The product of the slopes of lines -+ and passes through Q (-2, 1) . eand m is -1. Therefore, it should be true that lines eand m are perpendicular. Triangles aBO and PAD are congruent, so x = w. ¥ou know z + w = 90, so you can conclude that z + x = 90 . That implies LQOP is a right angle. So lines and m are indeed perpendicular. e The Midpoint Formula You might also be asked to find the midpoint afline segments in the coordinate plane. If AB has endpoints A (3,4) and B (7, 8), then th~ midpoint of AB has coordinates (3;7, 4;8)=(5,6) The midpoint (x"" y"J is simply the average of the x's and average of the y's: Xl +Xl Yl = x'" 2 + Y2 2 = Ym The Distance Formula In the coordinate plane, the Pythagorean theorem can be used to find the d istance between any two points. For example, you can find the distance between A (I, 2) and B (4, 6), as indicated in the figure below: y 8 7 B (4.6) 6 , 4 3 2 - - , -4 -3 -2 -I 0 -I -2 -3 -4 -, - -7 288 A (1.2) C (4,2) Geometry and Measurement Review Clearly, MBC is a right triangle, AC = 3, and CB theorem: = 4 , Applying the Pythagorean AB2 = 32 + 4 2 'AB 2 = 25 AB=5 In genera l, if (XI' YI) and (X2' ' 2) are two points in the coordinate plane, the distance between them is given by the formula: d = ..J(x 2 - XI)2 + (Y2 _ YI)2 Transformations Understanding the concepts of simple geometric transformations - translations, rotations and reflections - will help you work through some of the mathematics questions, A translation moves a shape without any rotation or reflection, For example, the square on the left has been translated 2 units up (that is, in the positive y-d irection) to get the square on the right. , , 8 8 , , 7 , • • l , 7 , l , --c-~c-~~~~~~~+~~~o~. --6 ~~ -4 -3 -2 - \ 0 1 2 3 4 ~ 6 7 _I -, -l L-.J -- -, -4 -l -, - 10 -I -, -l -4 -, -, -- -- -7 D -7 287 THE MATHEMATICS SECTION Rotating an object means turning it around a point. For example, when the dock face on the left is rotated 90° counterclockwise, the result is the dock face on the right: 12 • • 6 To reflect an object means to produce its mirror image with respect to a line. which is called the line of reflection. The figure below shows a triangle reflected A mirror image is produced on the other side of the line. across the line e. e If you reflect a figure twice across the same line. you get back the original figure. Look at the figure below to review the concept of symmetry: no < i) The dashed line m divides the hexagon into two halves. If the left half is reflected ac ross line m, the result is the right half - and vice versa. In other words, if you 288 Geometry and Measurement Review reflect the hexagon across line m, the result is the sa me hexagon. The hexagon is said to be symmetrica l about the line m, and m is called a line of symmetry for the hexagon. A geometric figure may have more than one line of symmetry (for example, a recta ngle), or it may have no lines of symmetry. There is another type of symmet ry. Look at the rectangle below, with poi nt P at its center: •p If you rotate the rectangle 180 0 (clockwise or cou nterclockwise) around P, then the result is the same rectangle. The rectangle is said to be symmetric around the point P, and P is ca lled a point of symmetry for the rectangle. Note that symmetry about a line and symmetry about a point are different properties. A given figure may have either type of symmetry and not the other, or it may have both types of symmetry (for example, a circle) or neither type. 289 CHAPTER 18 Data Analysis Statistics and Probability Review • I Concepts You Need to Know For the mathematics questions covering data analysis. statistics and probability concepts, you should be familiar with all of the following basic skills and topics: • Data interpretation • Statistics • Arithmetic mean • Median • • • • Mode Weighted average Average of algebraic expressions Using averages to find missing numbers • Elementary probabil ity • Geometric probability The SAT doesn't include • Computation of standard deviation Data Interpretation Your primary task in these questions is to interpret information in graphs, tables or charts. and then compare quantities, recognize trends and changes in the data, or perform calculations based on the information you have found. You should be able to understand information presented in a table or in various types of graphs. 291 THE MATHEMATICS SECTION Circle Graphs (Pie Charts) MUNICIPAL EXPENSES FOR THE TOWN OF WESTON IN 2004 ,... Police Schools Depanmenl 23 % S~W Removal 6% NO Dcpanmcn~ 12% Sanitation Depanment 15% Waler Supply Other Exp"nses 18% 6% The pie chart above shows the percentages of its total expenditures that Weston spends on va rious types of expenses. Suppose you are given that Weston's total expenses in 2004 were $10 million, and Y,ou are asked for the amount of money spent on the police department and fire department combined. You can see that together these two categories account for 23% + 12% = 35% of the town's expenses. Therefore, Weston spends 35% 0($10 million = $3.5 million on the police and fire departments combined. Line Graphs Information can be displayed in a line graph. Below is an example of a double line graph that shows the high and low temperatures in Weston for the first seven days of February. 45 40 High • Low E 20 ~E ~ 15 10 Feb. I Feb. 2 Feb.3 Feb.4 Feb. 5 Feb.6 Feb. 7 Date 292 Data Analysis. Statistics and Probability Review From the graph you ca n see, for example, that on February 5 the high was 25 degrees Fah renheit a nd the low was to degrees Farenheit. So you also know that the difference between the high a nd low temperatures on that day was 15 degrees Fahrenheit. Bar Graphs Bar graphs can also be used to present data. The bar graph below shows the amount of snow that fell each day in Weston for the first seven days of February. For example, you can see that no snow fell on February 2 and that 6 inches of snow fell the next day. 8 7 r5 r- 3 r- 2 rI 0 I Feb, Feb. Feb. Feb. Feb. Feb. Feb. 1234567 Date Pictographs A pictograph presents data using pictorial symbols. For example, the pictograph below shows the number of snowpeople built each day in Weston during the fi rst seven days of February. For example, you can see that 40 snowpeople were built on February 7 and that about 25 were built the day before. Dale Number of Snowpeop\e February I February 2 February 3 February 4 February 5 February 6 February 7 [j = \0 snowpcople 293 THE MATHE MAnes SECTION There is another type of graph you may see on the SAT: a scatterplot. Scatterplots will be discussed a little later in this chapter. The questions you are asked may require you to do more than read the data pre- sented in a graph or chart. A question on a graph like the one shown below m ight require you to identify specific pieces of information (data), compare d ata from dif- ferent parts of the graph and manipulate the data. ,, _ COMI'AR!$O,' l OF MONTHLY PROFITS When working with data interpretation questions, you have to: • Look at the graph , table or chart to make sure you understand it. Make sure you know what type of information is being displayed. • Read the labels. • Make sure you know the units. • Make SUfe you understand what is happening to the data as you move through the table, graph or chart. • Read the question carefully. Examples The graph below shows profits over time. The greater the profits, the higher the point on the vertical axis will be. (Each tick mark on the vertical axis is another $1,000.) As you move to the right along the horizontal axis, months are passing. ,, _ COMPA RISON OF MONTlhY PROFITS :g • "0 ~ ,, ., .1 ~I '- ~,"+~-4--r-~~ '" ~~ f ~ s 1. In what month or months did each company make the greatest profit? How to solve: Follow the line labeled Company X to its highest point. Then check the month at the bottom of the graph. Follow the same procedure for Company Y. 294 Data Analysis. Statistics and Probability Review For Company X, the greatest profit was made in April. For Company Y, the greatest profit was made in May. 2. Between which two consecutive months did each company show the greatest increase in profit? How to solve: The increase (or decrease) in profit is shown by the steepness, or slope. of the graph. For Company X, it's easy to see that the biggest jump occurred between March and April. For Compa ny Y, you have to be a little more careful. The biggest increase in profits occurred between January and February. You know this because the slope of the line connect ing January and February is the steepest. The increase between January and February is about $},500, which is greater than the increase for any other pair of consecutive months. 3. In what month did the profits of the two companies show the greatest difference? How to solve: To figure th is out, you have to compare one company to the other, month by month. The month in which the points are farthest apa rt is the one in which there is the greatest difference between the two companies. The distance between the two graph points is greatest in April. CO'IPARISO:O: OFMO~THLY PROFITS if • ~ , ,• .,, " , ~ 0 ~ , :? i 0 ,- --. /-"• ., " }j' , 0: ~ ,> ~ • 4. If the rate of increase or decrease for each company conti nues for the next six months at the same rate shown between AprH and May, which compa ny would have higher profits at the end of that time? How to solve: This question is asking you to look at the graph and project changes into the future. To project changes, extend the lines between April and May for each company. The lines cross pretty qUickly - well before six more months have passed. So the answer is that Company Y would have higher profit in six months if the rales of change from month to month stay the same as they were between April and May. 295 THE MATHEMATICS SECTION J~ . CQ.'1 PAR ISON Of M01 :-", : . ~\ J :, i/ 1 ,. • ,• i f ". . '" " ~ , 0 < , > ~ f , z From graph to table. The same information presented in the profit chart could be presented in a profit table, which might look something like this: PROFIT (IN DOLLARS) Jan Fab Company X 2,000 2,750 1,500 4,000 3,750 Company Y 1,000 2,500 1,500 2,500 3,000 May W it h a table it's a little harder to make the comparisons and see the trends. But the table is much more precise. The graph does not show the exact numbers the way the table does. Scatterplots. One way of presenting data graphically is a scatterpoit. A scatterplot compa res two characteristics of the same group of people or things. For example, the scatterplot below plots the years of experience against the weekly salaries for each of20 sa lespeople who work at Company X . . '" • • • 900 'i': 'a 850 5 800 0 • • • • ~ 1:0 • ~ 750 .!' ~ ~ • 700 • • 650 • 296 600 • 0 2 3 4 5 Years of Experience 6 D ata Ana lysis, Statistics and Probability Review From the scatter plot, you can see m.any things. For example: • There are 20 sa lespeople: 4 with one yea r of experience, 3 with two years, 4 with three years, 2 with four years, 3 with five years and 4 with six years. • The median level of experience is 3 years. There are three modes for experience level: 1 yea r, 3 years and 6 years. • Salary tends to increase with experience. • Th ree people make $700 a week and 3 others make $850 a week. These are the two modes for salary level. • The middle two salaries are $775 and $800. Therefore, the median of the salaries is $787.50. If you do not know what a med ian or a mode is, you can lea rn about them in the nex t section. Statistics Arithmetic Mean Arith metic mean is what is usually thought of when talking about averages. If you want to know the arithmetic mean of a list of values, the formu la is: The sum of a list of values The number of values in the list For exa mple, if there a re th ree children, aged 6, 7 and 11, the arithmetic mean of thei r ages is: 6 + 7 + 11 = 24 3 3 or 8 years. Median The media n is the middle value of a list when the numbers a re in order. To fi nd the media n, place the values in ascending (or descend ing) order and select the middle value. For insta nce, what is the median of the fo llowing values? 200,2,667, 19,4,309,44,6, 1 • Place the values in ascend ing order: 1,2,4,6, 19,44,200,309,667 • Select the value in the middle. • There are nine values listed. The middle value is the fifth . • The med ian of these va lues is 19. 297 THE MATHEMATICS SECTION THE MEDIAN OF A LIST WITH AN EVEN NUMBER OF VALUES When the number of values in a list is an even number, the median is the average (arithmetic mean) of the two middle values when the numbers are placed in order. For example, the median of 3,7, 10,20 is 7+10_ 2 -85 . Mode The mode of a list of values is the value or values that appear the greatest number of times. Consider the following list: I. 5. 5. 7. 89. 4. 100.276.89.4.89. 1.8 • The number 89 appears three times, which is more times than any other number appears . • The mode of this list is 89. MULTIPLE MODES It is possible to have more than one mode in a list of numbers: 1.5.5.7.276.4. 10004.89.4.276. 1.8 In the list above. there are four modes: 1,4,5 and 276. Weighted Average A weighted average is the average of two or more groups that do not all have the same number of members. For instance: Fifteen members of a class had an average (arith metic mean) SAT math score of 500. The remaining 10 members of the class had an average of 550. What is the average score of the entire class? You can't simply take the average of 500 and 550, because there are more students ~ w ith SODs than with 550s. The correct average has to be weighted ~ep in Mind toward the group with the 'greater number. To find a weighted average, multiply each individual average by A calculator may help you find the answer to this question its weighting factor. The weighting fac tor is the number of values that more quickly. correspond to a pa rticular average. In this problem. you multiply each average by the number of students that corresponds to that average. Then you divide by the total number of students involved: (500 x 15);5(550 x 10) = 520 Thus the average score for the entire class is 520. 298 D~ ta Ana lysis, Statistics and Probability Review Average of Algebraic Expression s Algebraic expressions can be averaged in the same way as any other values: What is the average (arithmetic mean) of 3x + 1 and x - 3 ? There are two expressions, 3x + 1 and x - 3, to be averaged. Find the sum of the expressions and divide by the number of expressions: (3x + 1) + (x - 3) _ 4x - 2 _ 2 -1 2 2 - x Using Averages to Find M issing Numbers You can use simple algebra in the basic average formula to find missing values when the average is given: • The basic average formula is: The sum of a list of values The number of values in the list = average • If you have the average and the number of values, you can figure out the sum of the values: Average x number of values = sum of values Example Try putting this knowledge to work w ith a typical question on averages: The average (arithmetic mean) of a list of 10 numbers is 15. If one of the numbers is removed, the average of the remaining numbers is 14. What is the number that was removed? How to solve: • You know the average a nd the number of values in the list, so you can fi gure out the sum of all the values in the list. • The difference between the sum before you remove the number and after you remove the number will give you the value of the ·number you removed. • The sum of all the values when you start out is the average times the number of values: 10 x 15 = 150. • The sum of the va lues after you remove a number is 9 x 14 = 126. • The d iffe rence between the sums is 150 - 126 = 24. • You only removed one number, so that number is 24. 299 THE MATHEMATICS SECTION Probability Some questions in the mathematics section will involve elementary probability. You may be asked, for example, to find the probability of choosing an even number at random from the set: {6, 13, 5, 7, 2, 9} Because there are 6 numbers in the set and 2 of them are even, the probability of choosing an even number at random is 2 out of 6, or = Remember: The probability of an event is a number between 0 and 1, inclusive. If an event is certain, it has probability 1. If an event is impossible (Le., it cannot occur), it has probability o. i t· Independent/Dependent Events You may be asked to find the probabil ity that two (or more) events will both occur. To answer such a question, you need to understand the difference between independent and dependent events. Two events are independent if the outcome of either event has no effect on the other. For example, if you toss a penny, it has probability t on tossing a nickel, it has probability t of landing heads. If you t of la nding heads. Neither event affects the probability of the other. To find the probability of two or more independent events occurring together. you multiply together the probabilities of the individual events. For example, in the previous situation, the probability of the penny landing heads and the nickel land'hd,lll lllg ea slslxI="4' Two events need not be independent. For example, if you toss a fair coin, the probability that it lands tails is and the probability it lands heads is But these are not independent events - if the coin lands heads, it cannot land tails at the same time! If the outcome of one event affects the probability of another event, the events are called dependen t events. You must use logical reasoning to help figu re out probabilities involving dependent events. t t. Here's an example: O n Monday, Anderson High School's basketball team will play the team from Baker High School. On Wednesday, Baker's team will play the team from Cole High School. On Friday, Cole will play Anderson. In each game, either team has a 50 percent chance of winn ing. (a) What is the probability that Anderson will win both its games? (b) What is the probability that Baker will lose both its games? (c) What is the probability that Anderson will win both its games and Baker will lose both its games? 300 Data Analysis, Statistics and Probability Review How to solve: (a) The probability that the team from Anderson High School will win on Monday against Baker is t. The probability they will win on Friday against t. These two games are independent events. abi lity that Anderson will win both games is therefore t x! = t. Cole's team is also The prob- (b) The probability that Baker will lose its game against Anderson on Monday is the same as the probability that Anderson will win: !. The probabi lity that Baker will lose on Wednesday against Cole is also t. These two games are independent events. The probability that Baker will lose both games is thereforetxt=t(c) In (a), you found that the probability that Anderson will win both games t. In (b), you found that the probability that Baker will lose both games is t- Can you multiply t by t to find the probability that Anderson will win is both its games and Baker wiJllose both its games? The answer is no. Because Anderson plays Baker on Monday, the event that Anderson wins both its games and the event that Baker loses bOth its games are dependent events. You must analyze the situat ion logically to answer (c). If Anderson wi ns both its games, that means that Anderson defeats Baker on Monday and Anderson defeats Cole on Friday. So you already know Baker has lost one of its games. For Baker to lose both its games, Cole must defeat Baker on Wednesday. So the results of the three games must be as follows: Monday: Anderson wins its game with Baker. Wednesday: Cole wins its game with Baker. Friday: Anderson wins its game with Cole. The results of these games are independent events. Each outcome has probability t of occurring, so the probability that the three games will have the . above resu lts IS I I I I '2 x '2 x '2 = S· Therefore the answer to (c) is that the probabili ty Anderson will win both its games and Baker will lose both its games is k. 301 THE MATHEMATICS SECTION Geometric Probability Some probability questions in the mathematics section may involve geometric figures. For example, you may be given a figu re like this o and be told that the large circle has radius 8 and the small circle has radius 2. If a point is chosen at random from the large circle, what is the probabil ity that the poi nt chosen will be in t he small ci rcle? • The area of the large circle is 64n. • The area of the sma ll circle is 4n. Area of the small circle 41C 4 1 Area of the large circle = 64n = 64 = 16 So the probability of choosing a point from the small circle is 302 l~ . CHAPTER 19 Multiple-Choice Questions The SAT mathematics section includes 44 multiple-choice questions and covers the content you reviewed in Chapters 15 to 18: number and operations; algebra and functions; geometry and measurement; and data analysis. statistics and probability. You may find a calculator helpful on some problems, but none of the problems requires the use of one. While you're doing the sample questions in this chapter. practice using the calculator you plan to take to the test. It is important that you be familiar with your own calculator and know when it can be helpful to you. Approaches to Multiple-Choice Questions)to- Ask yourself the following questions before you solve each problem: I. What is the quest ion ask ing? 2. What do I know?)- Ollce you've answered the preceding questions, do the following: • Answer the question asked. • Check that your answer makes sense. • Check your work from the beginning. If you can, use a different method from the one you used to get the answer. If you use the same method, you may make the same mistake again . ... Work the problems in your test booklet. You will not receive credit for anything written in the booklet, but you will be able to check your work if you have time. Here are some suggestions on how to use your test booklet: • Draw figures to help you think through problems that involve geometric shapes, segment lengths, distances, proportions, sizes and so on. 303 THE MATHEMATICS SECTION • Mark key information on graphs and add information to drawings and diagrams as you work through the problems. • Mark each question that you don't answer so that you can easily go back to it later. • When you're working on a question, draw a line through each choice you eliminate.)- Substitute numbers. Some questions use variables (indicated by letters) to represent the values you are asked to consider. You can 'm ake the problem more concrete by substituting numbers for the variables. • Use common sense when picking numbers to substitute. • Substitute numbers that are easy to work with.)- Substitute in the answer choices. Sometimes you can nnd the correct answer by working backward. Try substituting in the answer choices to see which one works. When substituting in the answer choices, start with choice (C). If the choices are numbers, they are usually listed in order from lowest to highest value or highest to lowest. If (C) turns out to be too h igh, you may not have to tryout the larger numbers, and if (C) is too low, you don't have to tryout the smaller numbers. However, keep in mind that this method may be time-consuming, and it may be quicker and easier to just work through the problem from the beginning.)- Make an educated guess when you can eliminate at least one answer choice. On multiple-choice questions, if you can eliminate even one incorrect answer choice, you increase your chances of getting a question right. With each correct answer, you gain one point; if you leave the answer blank, you do not receive any points; but if your answer is wrong, you lose only one-fourth of a point. (!) 304 Multiple-Choice Questions Sample Questions Directions: For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork. Notes 1. The use of a calculator is permitted. 2. All numbers used are real numbers. 3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figu res lie in a plane unless otherwise indicated. 4. Unless otherwise specified. the domain of any function/is assumed to be the set of all real numbersx for whichf(x) is a real number. iGD·~~'G'·~~~~ 1 -§ "'C.2..-r ....'' j "'- t.. "'. bh y .. twll y ...,'~ c' _a'+b' Spoci.ol RllbtTrianJlOl ~ The numb I. 1. 2 (A) 2x3456 3'4'5y'6'7 = X 7y (B) 3x 7y (C) ~'xy (D) 6x (E) !x. 27 7 8x 305 THE MATHEMATICS SECTION x 2. If"] =:r, the value of x can be which of the following? I. -"'3I II. 0 III. (A) (B) (e) (D) (E) 3 Ionly II only III only II and III only I, II, and III 3. All numbers divisible by both 4 and 15 are also divisible by which of the following? (A) (S) (C) 6 8 18 (D) 24 CE) 45 4. If United States imports increased 20 percent and exports decreased 10 percent during a certain year, the ratio of imports to exports at the end of the year was how many times the ratio at the beginning of the year? CA) (S) 12 If 4 3 II (C) 8 (D) l2 CE) 2 306 Multiple-Choice Questions ',m 5. The figure above shows how a rectangular piece of paper is rolled into the shape of a cylinder. If it is assumed that the 4·centimeter sides of the rectangle meet with no overlap, what is the area, in square centimeters, of the base of the cylinder? (A) 16Jr (8) 9Jf (C) 4Jr (D) (E) 9 Jr 4 Tr 6. The odometer of a new automobile functions improperly and registers only 2 miles for every 3 miles driven. If the odometer ind icates 48 miles, how many miles has the automobile actually been driven? (A) 144 (B) 72 (C) 64 (D) 32 (E) 24 307 THE MATHEMATICS SECTION s , R ~ 7 L-------'r Figure not drawn to scale. 7. If the perimeter of /J.RSTabove is 3 limes the length of RS, then RT == (A) (B) (0) 3 5 8 9 (E) 10 (e) 8. A, B, C and D are points on a line. with D the midpoint of Be. The lengths of AB, ACand BCare 10,2 and 12, respectively. What is the length of AD? 308 (A) 2 (B) (C) (0) (E) 4 6 10 12 Multiple-Choice Questions y ;;;-c;;;t~~~~~";;;-> x (0,0) (5, 0) 9. What is the area of the triangle in the figure above? (A) (8) (C) (D) (E) 4.0 7.5 8.0 8.5 \5.0 10. A={3, 6, 9} B= {S, 7, 9} C= 17,8, 9J If three different numbers are selected, one from each of the sets shown above, what is the greatest sum that these three numbers could have? (A) (8) (C) (D) (E) 22 23 24 25 27 11. Let the symbol@representthenumberofdifferentpairsof positive integers whose product is x. For example,@=3,becausethereare3differentpairsof positive integers whose product is 16: 16 x 1,8 x 2 and 4 x 4. What does@equal? (AI (B) (C) (D) (E) 5 6 8 10 12 309 THE MATHEMATICS SECTION 12. Several people are standing in a straight line. Starting at one end of the line, Bill is counted as the 5th person, and starting at the other end, he is counted as the 12th person. How many people are in the line? (A) 15 (B) 16 (C) 17 (0) IS (E) 19 Answer: The correct answer is (B). ~eplnMlnd Problems like this one focus on your ability to reason logically. There's nothing wrong with drawing a fjgure using dots to Explanation: You can answer this question by careful reasoning, or you can draw it out and count. Either way. be careful that you don't leave Bill out or count him twice. WHAT DO YOU KNOW? represent the people in line. Just make sure that you follow the instructions carefully when you draw your figure. • Bill is the 5th person from one end of the line. • Bill is the 12th person from the other end. USING LOGICTO SOLVE THE PROBLEM • If Bill is the 5th person from one end of the line, there are 4 people (not counting Bill) between him and that end of the line. • If Bill is the 12th person from the other end of the line, there are II people (not count ing Bill) between him and that end of the line. • The sum of 4 people between Bill and one end plus II people between Bill and the other end equals 15 people. Then you have to add in Bill. So, there are 16 people in line. 326 Multiple-Choice Questions EXPENDITURES BY COMPANY Y CatearIeo 13. In the graph above, the total expenditures by Company Y were $1,000,000. If each of the following pic charts represents the total expenditures of Company Y, in which of the charts does the shaded region best represent the expenditures other than shipping and energy? (A) ~ (B) (0) e e (E) • (C) Answer: The correct answer is (D). Explanation: In this question you have to interpret information from one type of graph (ba r graph) and translate that information into anot her type of graph (pie chart). Questions that involve interpreting data presented on graphs or in tables wi ll be common on the SAT. 0ep in Mind If you are presented with a math question that shows the grid lines of a graph, you may rely on the accuracy of those lines. WHAT IS THE QUESTION ASKING? The question asks you to identify the pie chart that shows all of Company V's expenses other than shipping and energy. That "Miscellaneous" category is important. It's easy to overlook. WHAT DO YOU KNOW? All you need to know to answer the question is the amount of money spent on shippi ng and energy and the tota l expenses for the company. • You are given the total expenses: $1,000,000. (You also could have figured that total from the graph by adding all the expenses from the individual categories.) • The graph shows you that the expenditures for sh ipping and energy amount to $250,000. 327 THE MATHEMATICS SECTION TRANSLATING THE INFORMATION • The question really asks you to identify approximately what fraction of the total costs did not go for shipping and energy. Although the question does not ask this specifically, the pie charts in the answer choices show fractions of the whole, so that's the way you will have to express the information you have. • Shipping and energy expenses amount to 5250,000 of the $1,000,000 of total expenses. " d $250,000 I f h I • Sh IpplOg an energy cost $1,000,000 or '4 0 t e tota . • That means the answer is (8) because the pie chart in (8) shows about total, right? No, this answer is wrong. t of the • Remember, the question asks which pie chart "best represents expend itu res other than shipping and energy," 1 3 • If"4 goes for shlppmg and energy, that leaves 4" fo r other thmgs. y • Q(k, 7) OP(!. I) -;Orr----'"--"----~ x 14. In the figure above, the slope of the line through points P and Q is value of k? i. What is the (A) 4 (8) 5 (C) 6 (D) 7 (E) 8 Answer: The correct answer is (8). Explanation: Your ability to answer this quest ion depends on knOWing and bei ng able to apply the definition of slope. The slope of a line in the xy-coordinate plane is: The change in y between any two points on the line The change in x between the same points on the line The question asks for the value of k, which is the x coordinate of point Q. 328 Multiple-Choice Questions WHAT DO YOU KNOW1 • The slope of the line that goes through P and Q is t. • That means for every 3 units that y changes. x will change 2 units. • The coordinates of P are (I. I). &ee • The coordinates of Q are (k, 7). • The change in the value of y between P and Q is 6 units (7 - I = 6). APPLY WHAT YOU KNOW • y changes 6 units between the two points. • That means that x will change 4 units, since for every 3 units that y changes. x changes 2 units. • The x coordinate of point P is I. ~ p In MInd Re membe r to check that your answer fits t he conditions of ·the problem. • If k '" 5, then point Q lias coordinates (5, 7). • Is the s lope of the line through the points P (1 ,1) a nd Q (5, 7) equal to t1 7- 1 Yes'5_ 1 6 3 ="4 ="2. I • The x coordinate of point Q will be I + 4 = 5. 15. In the xy-plane. point R (2. 3) and point S (5, 6) are two vertices of triangle RST. If the sum of the slopes of the sides of the triangle is 1. which of the following angles could be a right angle? I. II. III. LR LS LT (A) None (8) Tonly (e) ITT on ly (0) Tand II only (E) I, II, and III Answer: The correct answer is (A). _ 6-3 3 Explanation: Given the coordinates of points Rand S, the slope of RS is 5 _ 2 ="3 = l. If LR is a right angle. then RS and RT would be perpendicular. The slope of RT would be -I because the slopes of RT and RS wou ld have to be negative reciprocals of each other. Because it is given that the sum of the slopes of RS, ST and RT is I, the slope of ST would have to be 1. Then RS and ST would have the same slope, which means that they would be parallel. or that points R, Sand T would be collinear. Neither of these is possible if RST is a triangle. Similarly. if LS is a right angle. then the slope of ST would be -1. Because the sum of the slopes of RS. ST and RT is I, the slope of RT would have to be l. Then RS and RT would have the same slope. which means that they would be parallel, or that points R, Sand T would be collinear. Neither of these is possible if RST is a triangle. 329 THE MATHEMATICS SECTION &ee If L T is a right angle, let the slope of RTbe k. The slope of ST would p In Mind -i. Because the sum of the slopes of the three sides ofTriRST ST RT will k- t or k t . k k= have to be In questions with three Roman numeral choices, consider each of I, II and III separately. • Consider each as a separate true-false question. • After you have decided which are true and which are false, you can answer the question . angle is 1, the sum of the slopes of =0 and Solving this equation for = yields be zero, so that :t I . In either case, the ,result is that one of the two sides would again be paralie l to RS, or pOints R, Sand T would be collinear. Neither of these is possible if RST is a triangle. 16. For pumpkin carving, Mr. Sephera will not use pumpkins that weigh less than 2 pounds or more than 10 pounds. If x represe nts the weight of a pumpkin, in pounds, he will llQ1 use, which of the following inequalities represents all possible values of x? (A) Ix - 21> IO (B) IX-41>6 (C) Ix-51>5 (0) Ix- 6 1>4 (E) Ix- 10 1> 4 Answer: The correct answer is (D). Explanation: If x represents the weight of the pumpkins Mr. Sephera will not use, then x < 2 or x > 10. This is represented graphically as follows: , , 2 : 6 10 . Because 6 is midway between 2 and 10, each point

of a grid-in problem, be carefu l to check your work. Without answers to choose from, you may make ca reless mistakes. That's why it is a good idea to use a calculator for this section. Practicing with the Grid Before the test, practice completing the grids. You don't have to write your answer in the boxes above the grid , but it's a good idea to do so to avoid errors. Rem ember that only the answers you put in the grid will be scored. Be careful to mark no more th an one circle in any column because answer sheets are m achine scored and you will receive credit only if t he circles are filled in correctly. 343 THE MATHEMATICS SECTION Positive Numbers and Zero Only The grid can only hold four places and can accommodate only positive numbers and zero. It is not possible to grid a negative number of any type. If you obtain a negative answer for a student-produced response question, you will know that you have made a mistake. Rework the problem: Place Answer in Any Column Don't worry about which column to use when you begin writing the answer. As long as the answer is gridded completely, you will receive credit. For example, 156 can be gridded as shown below; both answers are correct. 1 5 6 ~ or 5 6 ~ ~ 1(.) 0 0 '" • •'",, ,,• •,, ,• , , •, • •• • • • • ~~ 0 . ®® ' 0 @0 '~ @0 0 ' ®® 00 @@ ®® @@ • • I~ . ® ®. 0fll ®. ®® • ~ r• • Integers You can grid onc-, Iwo-, three- or four-digit positive integers or zero as follows. 2 4 3 Ir:> f. • I~ \ I~ , , , I~, ,• • ' 0 •, • • • ~ • (i) • • • • • • 2 2 ';; 7 7 If. If.< .f£'" I~0 I~® '"®~ •• ~ 00 ~ il5 il5 ® il5 ® 0 0 0 0 ~ ® ® ® ® ® ® 6 9 1 :;; '" f.< ~ 0 8 7 510 1i:IlGl Ir:> I", ~ • • If.< ,, ~, ,, Ir. I~ , 1)1 , • • • • III , • I~ o 0 0 0 If.< :;; b '"0 •0 ~® ® 0. ~ 0 00 I• • •II I'i '. :l; ,' • ill , , ~ . • :i; ' • I~ • • I~ ~ ~' ~ ® ~ ~ il5 ® ~ ~ ®® 0 ® Decimals and Fractions The grids include decimal points (.) and fraction lines (I) so that you can enter answers both in decima l and fraction form. You can grid your answer as a decimal or a fraction. 344 Student-Produced Response Questions Decimal Points If the answer is O. grid it in column 2, 3 or 4. Zero has been omitted from column 1 to encourage you to grid the most accurate values for rounded answers. For example, an answer of tcould also be gridded as .125 but not as 0.12, which is less accu rate. No Mixed Numbers You can grid both proper and improper fractions. However, if your answer is a mixed number, convert it to an improper fraction or to a decimal. For example. if you get the answer 2t. grid ~I or 2.75, as shown. The fraction line appears in the first shaded row of circles. If you grid 2t. the scoring machine will read the answer as 2i. which is wrong. 2 3 /1 4 , I~ I ", .". 1'" • • 0/ll :~ , , Ol . ' , 00 ®® @@ 00 ~0 '0 '(~: • • Repeating Decimals If the answer you are gridd ing is a repeating decimal, you must grid the most accurate possible decimal. The easiest way to follow the rule for repeating decimals is to completely fill the grid with the answer. If you obtain a decimal answer with more digits than the grid can accommodate. it may be either rounded or truncated. but it must fill the entire grid. For example, if you obtain an answer such as 0.6666 ... , you should record your result as .666 or .667. A less accurate va lue such as .66 or .67 will be scored as incorrect. 345 THE MATHEMATICS SECTION 9/11 = .8181 8 I. I~ 1/6=.166 2/3 =.66 111617 51. 5 ·' ,,, ~~ 1(.' ~I ~ 1(. 1 8 , l?i , 1%1 ' 1*1* s ~ . I~ . 'I~ • 'I~ , • 2 l,eJ o~ • CD I• .166 will also be .666 will also be correct. B ill, correct. But. .6, .7,.66 or .67 .16or .l1will not be COIttCt. Important Remember, only the answer entered on the grid, and not the answer handwritten at the top of the grid, is scored. You must decide whether to first write your answer in at the top of the grid and then transfer it to the grid, or to transfer your answer directly from notes in your test booklet or in your head to the grid. You might practice both approaches IL..!' 'I~ ~ 4 1 ~4 ~~~~ ®~,~ : ® • ® .81 or .82 will not be correct 0 ~ ~ : 1& 2 3 , Ij 51/2=5.5 (NOT a repeating decimal.) w ill not be. Multiple Answers Some of the student-produced response q uestions may have more than one correct answer. These questions may say somethi ng like, "What is one possible value of x?" Th is wordi ng indicates that there may be more than one value of x that is correct. Under these circum stances, simply choose one of the possible answers to grid on YOUf answer sheet. There Is No Penalty for Wrong Answers a nd see which one wolts best for you. You want to make sure you enter your answer cOlTectly. While it might be more time-cons uming to first write your answer in at the top of the grid, you may find this approach helps you avoid errors. 346 On student-produced response questions, unlike multiple-choice questions, no points are subtracted for wrong answers. Feel comforta ble gridding whatever answer you get without fear that it may subtract from your fi nal score if it is wrong. Student-Produced Response Questions Sample Questions For Student-Produced Response questions 1- 9, use the grids at the bottom of the answer sheet page. Write answer in boxes. An~wcr: - 112 7/ I 2 .I~ Ii' _ • • • (irid in ..... ",.ult. Frnct;"n O{l Ei!he r line ,i linn 2 0 1-.Jij2;1i~5~ - i~ rome!. 20 Dt:.::imal poim 0 . 0 10 @@ • 00 00 00 0@ CD CD @0 00 (0)(0) . 0 00 00 0@ • • • • • Mar\: Answer: 201 AMwe.: 2.5 more than ORC drde in any column. • Because the answer sheet w;lI be machinescored, you will rt JSQtt; You may ~!an your answers in any rulumn . 'pIla permiuing. CoI~mm not needed should be leO '~{~~J§~~:~" an answer your ",",ult a~. k.... H 1OS.66 ur .67 will "' sron;d lOS inco, ...,t. Ae ~ are: • Somc prohlems may ha,·. more than one COITeC! an,w~r. In such cases. grid only one anSwer. • Noquestinn ha.< a RCgati,·. answer. • Mixed nUn1hcrs i uch as 3 ~ rnu" be gri d J5 or 7/2. Ilf 1ii.1~1 ~ is gridded. il win bo: interp"'ted as 31 , T' not 3 2,) l. In a restaurant where the sales tax on a $4.00 lunch is $0.24, what will be the sales tax due, in dollars, on a $15.00 dinner? (Disregard the $ sign when gridding your answer. For example, if the answer is $1.37, mark 1.37 on the grid.) 347 THE MATHEMATICS SECTION 2. A team has won 60 percent of the 20 games it has played so far this season. If the team plays a 10la1 0(50 games all season and wins 80 percent of the remaining games, how many games will the team win for the entire season? 3. If n is a two-digit number that can be expressed as the product of two consecutive even integers, what is one possible value of n? 4. [{the ratio of a to b iS~, what is the ratio of2a to b? 5. [{the population of a town doubles every 10 years, the population in the year X + 100 will be how many limes the population in the year X ? 348 Student-Produced Response Questions Number of Donuts Total Price $0.40 Box of 6 $ 1.89 Box of 12 $ 3.59 6. According to the information in the table above, what would be the least amount of money needed, in dollars, to purchase exactly 21 donuts? (Disregard the S sign when gridding your answer. For example, if the answer is $1.37, mark 1.37 on the grid.) P , -----'l --/'''----\----, N2Ri Figure not drawn to scale. 7. In the figure above, line m is parallel to line If x = y. what is the value of x? eand is perpendicu lar to line p. 8. Iff =Y and 2y =y, what is the value of x? 349 THE MATHEMATICS SECTION y B 9. The figu re above shows the graph of y = k ~ABC is 64, what is the value of k ? 350 r, where k is a constant. If the area of •c ~ III ' c 0 a. ~ .'' • • U £.. c G0eeeeeeee ,ye. eeeeeeeee • • ~ .'' 0 , ooeeeee@E>@@ . eeeeeeee '" M • - .. ~eeeee • - • .. ' .. @eee 8C· 0eeeeeeee C· eeeeeeee " eeeeeee ooeeeeeee :>C. ooeeeeee@ -G eeeeeee@ , 0eeeeeeee o_~ o_~~ .1 .; N @0@@G@@ ee8@G@@ sx· :>C. eeeeeeeee@ G eeeeooe@ - 10@@e08 C· 8e@0@@ "l(.,X.. X...)@@ .... ~~-. :9\.. olf o X -)(N'If .. eee8e@8@@ - .. oci "' C· • 9G .. N c· eeeeeeee@ , . eeeeeeee@ , . eeeeeooee C· 0080eeeee C·3eeeeeeeee , . eeeeeeeee , . oeeeeeeeee . eeeeeeeee to .. SX· C· (=:[~8@@6@@ oeeeE)@@E)ee Gee0E)@eee - " . . --, -@ ~ THE MATHEMATICS SECTION Answers and Explanations I. In a restaurant where the sales tax on a $4.00 lunch is SO.24, wha t will be the sa les tax due, in dolta rs, on a $15.00 din ner? (Disregard the $ sign whe n gridding you r answer. For example, jfthe answer is $1.37, mark 1. 37 on the grid.) ~epinMind Answer: The correct answer is .90 or .9. Do not grid zeros before the decimal point. For example, don 't try to grid 0.90; just grid .90 or .9. The question asks for the number of dollars, so 90 for 90 cents would be wrong. Explmwtion: One way to solve this problem is to determine the tax on each $1.00 and then multiply this amount by 15 to get the tax on $15.00. The tax on a $4.00 lunch is $0.24. Then the tax on $l.00 would be i this amount, which is $0.06. So the tax on $15.00 wou ld be $15 x .06 = $0.90. 2. A team has wo n 60 percent of the 20 games it has played so far this season. If the team plays a total of 50 games all season and wi ns 80 percent of the remain ing games. how many games will the team win for t he entire season? ~.PlnMind Answer: The correct answer is 36. When working problems, especially student-produced respons e problems, it is a good idea to check your answers if you have time. For e xample: Games Games Woo Played 12_60% of20 So far: 20 24_80%of30 Remaining: 30 Tota l: 50 3. You don't have to use a table, but you should find some way to check that your answer fits the informatio n in the problem. Explanation: Express the information in mathematical terms: How many games has the team won so far? 60% of 20 games = 60 100 x 20 = .6 x 20 = 12 games How ma ny ga mes will the team win the rest of the season? The total number of games left is 50 - 20 = 30. The tea m will win 80 percent of 30 games during the rest of the season. 80 100 x 30 = .8 x 30 = 24 games The total number of wins is: 12 + 24 = 36. Grid in 36. 3. lf II is a two-digit number that can be expressed as the produc t of two consecutive even integers. what is one possible value of II ? Answer: There are three acceptable correct answers: 24, 48 and 80. You have to find only one. Explanatioll: Although there are several values fo r n that will work, you have to find only onc. 352 Student-Produced Response Questions FOLLOW THE INSTRUCTIONS {;epInMInd is the product of two consecutive even integers. In other words, the question tells you to mu ltiply consecutive even integers. • Tl • Tl is also a two-digit number. Some questions have more than one correct answer. You can grid anyone of the correct answers and get full credit. TRY SOME VALUES Start with two small consecutive even integers. 2 and 4. • 8 is not a two-digit number, so n can not be 8. Try the next two consecutive even integers, 4 and 6. · 4x6=24 • 24 is a two-digit number. • 24 is the product of two consecutive even integers. Therefore, 24 is an acceptable value for Tl. Grid in 24. OTHER CORRECT ANSWERS The other possible values are 48 (6 x 8) and 80 (8 x 10). You can grid in anyone of these three values and get credit for answering the question correctly. 4. If the ra tio of 11 10 b is f. wha l is the ratio of21l to b ? 4 A nswer: The correct answer is 13 ,4.66 or 4.67. Explanation: This question requires that you know how to work with ratios. EXPRESS THE RATIO a The ratio of a to b can be written as Ii . The ratio of a to b iS~, which can be expressed as ~ = ~. a 7 If1J = 3' then Grid in the answer Ii as 14/3. a (7)= '3' 14 21J= 23 Here are some facts you should know about gridding: 14 can- not be gridded as The grid- 4l 4i re ading system cannot tell the difference between How ever, if you change and ~2 . 14 t o a decimal, either 4.66 or 4.67 is an acceptable answer. 353 THE MATHEMATICS SECTION 5. If the population of a town doubles every 10 years, the population in the year X + 100 will be how many times the population in the year X? A nswer: The correct answer is 1024. Explana tiorl; Express the population growth in mathematical terms. Each time the population doubles, multiply it by 2. Let p represent the population in year X . • In 10 yea rs, the population increases from p to 2p. • In 10 more years, it increases to 2(2p). • In 10 more years, it increases to 2!2(2p)], and so on for 100 years. This repeated doubling can be expressed by using powers of 2: • Another way to express 2(2) is 22 , • So a populat ion of2(2p) =' (2 2)p. • In 10 more years, the population is 2(2 1)p. or (2 3)p. • In 10 more years, the population is 2(2 3)p. or (2 4)p. etc. HOW MANY GROWTH CYCLES ARE THERE? • The population doubles (is raised to another power of 2) every 10 years. • This goes on for 100 years. 100 • So there are 10 = 10 cycles. • The population increases to 2LO times what it was in year X . FIGURE OUT THE ANSWER ~ Keep In MInd A calculator can help speed up getting the answer to some questions. You ca n multiply ten 2s, but this invites error. You may want to use you r calculator to find 210. Some calculators have an exponent key that allows you to find y directly. If your calculator does not have this feature, you can still quickly get the value of 210 on your calculator as follows. 2'= 2x 2x 2 x 2 x2 =32 Grid in the answer, 1024. 354 StudentwProduced Response Questions Number of Donuts Tot a l Price $ 0.40 Box of 6 $ 1.89 Box of 12 $ 3.59 6. According to the information in the table above, what would be the least amount of money needed, in dollars, to purchase exactly 21 donuts? (Disregard the S sign whe n gridding your answer. For example, if the answer is S1.37, mark 1.37 on the grid.) Answer: The correct answer is 56.68. Explanation: WHAT DO YOU KNOW1 • You can save money by purchasing donuts by the box. A box of 6 donuts costs 51.89, but 6 ind ividual donuts cost $2.40. • You can save more money by purchasing the larger box. A box of 12 donuts costs $3.59, but 2 boxes of 6 donuts cost 2($1.89) = $3.78 . • The question says you have to buy exactly 21 donuts. USE YOUR HEAD You want to buy as few ind ividual donuts as you can. You want to buy as many donuts in large boxes as you can. You cannot buy 2 boxes of 12 because that wou ld put you over the 21 donut limit. So start with 1 box of 12 donuts. w • Ma rk down 12 donuts, so you ca n keep track as you add more donuts. • Ma rk down 53.59, so you ca n keep track as you spend more money. You have 12 donuts, so there are 9 left to buy. You can save money by buying a box of 6 donuts. (1.e p In MInd When you're working out an answer, jot down your calculations in the space provided in your test booklet. • Add 6 to your donut total. • Add $1.89 to you r money total. You now have 18 donuts, which mea ns you will have to buy 3 ind ividual donut s. • Add 3 to your donut total. You now have exactly 21 donuts. • Add 3 x $.40 = $1.20 to your money total. • Add up the dollar figures: $3.59 + $1.89 + $1.20 = $6.68. Grid in 6.68. Remember to disregard the $ sign. No te: Do not grid 668 without the decimal mark - it will be interpreted as 355 THE MATHEMATICS SECTION $668! p , ----';1'---. --1'-'---1--- 1 ~ Figure not d rawn \0 scale. 7. In the figure above, li ne m is parallel to line f and is perpendicu lar 10 line p. If x = y, what is the value of x? {;ePlnMInd Write relevsnt facts (angles. lengths of sides) on the figure as you pick up more informa- tion. look for special properties Answer : The correct answer is 45. Explanation: This question requires that you use you r knowledge of li nes, angles and triangles to calculate values for parts of the fig ure that are not labeled. As you work on the question, remember: that may help you answer a question. If it is about angles. look for special properties of angles. If it is about areas, look for special properties of areas. Special properties that help you translate between different kinds of measurements can be especially useful . For example: • If you know two sides of a triangle are of equal length, then you know that the meaSUTes of the angles opposite • It's helpfu l to label pa rts of the fig ure as you work. • Use what you know about parallel lines, vertical a ngles, a nd special types of triangles and their properties. WHAT DO YOU KNOW? • Lines eand m are pa rallel . • Line p is perpendicu la r to line m. those two sides are equal. • If you know two s8gments are radii of the same circle, you know that they are of equal length. WHAT CAN YOU FIGURE OUT FROM THE FIGURE? You ca n use the pa rallel lines in the figu re to label another angle that has Illeasure XO because correspondi ng angles are congruent. P , ------';1F---. --1"-+--- 1 Because line p is perpendicu la r to line m, Therefore, XO + yO= 90°. You are told that x = y . 2x = 90 x = 4S Grid the answer, 45. Disregard the degree symbol (0). 356 Student-Produced Response Questions 8. If; '" y and 2y '" y, what is the value of x ? Answer: The correct answer is O. Explanation: Th is is another question that takes some reasoni ng in addition to some simple mathematical manipulation. LOOK AT THE EQUATIONS The second equation may look a little unusua l to you: 2y=y ~epinMind If 2y = y, then y = O. Therefore: 2y= 0 To grid zero, just enter 0 in a s ingle column (any column where o appearsl . leave the other three columns blank. x=O Grid in the answer, O. y B ____A~-o~~C~-x o 9. The figure above shows the graph of y == k 6ABC is 64, what is the value of k? r, where k is a constant. If the area of Answer: The co rrect answer is 16. I Explanation: The area of 6ABC is equal to "2(AC)(OB), which is equivalent to (OC)(OB) because the parabola is symmetric about the y-axis and ±AC = OC . So you know that (OC)(OB) = 64 . Because the length of OB can be determined from the y-intercepl of the graph of y = k - r, it fo llows that OB = k . Similarly. the length of OC can be determ ined from the x-intercepts of the parabola. To fin d the x-intercepts, set y = k - :xl = 0 . Solving this equatio n for x gives the two intercepts x = ~...fk, which correspond to the y-coordinates of the pOint A (-...fk, 0) and the point C (...fk, 0). Therefore, OC = ...fk, and you can now substitute into the equation (OC)(OB) = 64 to get that " , (.Jk)(k) = 64. But since (.JkHk) = klk = kl, it follows that kl = 64, and you can now solve, this equation for k by ra ising both sides to the two-thirds power. Therefore, k = (64)' = [%"4)' = 4' = 16. 357 ~~ ~:i~ ~:f~~ r-~----------. ~ Recap 1. Remember that only the answer entered on the grid is scored; the answer that is handwritten on the top of the grid is not scored. 2. Don't grid zeros before the decimal pOint. 3. Take each question one step at a time because some questions that seem difficult are just a series of easy questions. 4 . Think about what you need to know in order to answer a question. 5. Make sure you answer the question that has been asked. 6. Double-check your answers, especially on grid-in questions, if you have time. 7 . Remember that some questions have more than one correct answer; you can grid any of the correct answers and get full , credit. 8. State an answer as a decimal or a decimal: You can grid or .5. 1 1 Zas '2 3 9 . Write mixed numbers as improper fractions. For example, 1"5 is 8 "5. The grid-reading system cannot distinguish bet ween 3 13 1"5 and 5' 10. Grid as much of a repeating decimal as will fit in the grid. You may need to round a repeating decimal, but round only the last digit: grid .66. ~ as~, .666 or .667. Do not grid the value ~ as .67 or 11. Use a calculator to help speed up getting an answer. 12. Jot down your calculations in your test booklet. 13. Write relevant facts (about angles, lengths of sides, etc.) on figures as you pick up more information. 14. Look for special properties that may help you answer questions. 15. Grid zero by entering 0 in a single column (any column where 0 appears) . 358 Student-Produced Response Questions Practice Questions - Student-Produced Response Questions For Student-Produced Response questions 1-8, use the grids at the bottom of the answer sheet page. \!Irit~:::'"''r=·t';t:~~~ijJ·--: ::o". .'" Answer: 201 Either ,ition IS correct. An,we" 2.5 2 0 " line Grid in =ult. Not~: Y011 ma)" stan yOllr answers in any column. 'I'" blank . • Mark no more than one circle in any eolumn. • Becau.o;e tile answer sheel will be machine· ~d. yuu will r • Some prQbkms m"y 1>/"" mOre than one com:ct anSwer. In such cases. grid OIlly one anSwer, • I)e(:lmul A."',,'ers: [fyou obtain a decimal answer with mQrc digilS than tloe grid can acc'QnuIloomc. it may be either rounded or truncated. but it mUlt lillthe entirc grid. For eumple. if you obtain an allSWer such as 0.6660 .... you should record your ~uI13' ,66/\ or .667. A Ieo." Mc-cursl~ value su~h a~.66 or .67 "ill be scorW lIS inCOf'ffl:t. o Accepta~le way. TO grid j are: 2 /3 • No question has a ""&atiYe ,,"Swe •. • Mi~ed uumbers loch 3, 3 ~ ,nuS! be ~dded as 3.~ or 7/2. (If D~ ~l~ is gridded. it will be b b b o 0 bb7 0 000 0000 G)@G) 0000 • I. In 2 weeks, 550 cartons of juice were sold in Ihe school cafeleria. At Ihis rate, how many cartons of juice would one expecl to be sold in 5 weeks? 2. For what integer value of x is 3x + 5 > 11 and x - 3 < 1 359 THE MATHEMATICS SECTION 3. The number 0.008 is equivalent to the ratio of 8 to what number? x 4 y 1 9 36 3 4. If Y is directly proportional to the square foot of x, what is the missing value of y in the table above? o 5. In the figure above, if 0 is the center of the circle, what is the value of x ? 6. The average (arithmetic mean) of 4 numbers is greater than 7 and less than 11. What is one possible number that could be the sum of these 4 numbers? 360 Student-Produced Response Questions 7. A line twith a slope oft passes through the points (0, value of y? t) and (4,y) . What is the ..J>?-r=2t-x 8. If x and t are positive numbers that satisfy the equation above, what is the value of -=-, I . 361 THE MATHEMATICS SECTION ,--------, I I. 2 3 , ~ 1(;) >:< 0 ~ I~ :~ -as •- 0- 0 00 1 '0 '0 ®® 0~' 0 0' ® ® ~ , I~ ~• • o0~'. 0' 0 o . ~r. ® ® 7. , . ~ ~(15 0~ ® ® 00' 000- - - 00 -0 !-0 0 -0 0' '0 '0 0~ 0 ' ® ® 8 , , ,. 0. k I~ 0 , 0 0- 0 0 ~~ ~ ~ ~~ 00 0~ ® ® 0 ~~ 0 ~ --00 • 0 •'~• ® ® 6 Id8 00 01~ ® ® , , 00 ~0 362 -0 0~ 0 ' '0 0 0 0 0 5 0 00 1*1(1) 0 ®® 0 4. (;) . ,. I~ b 0 ~ ~0 -0 0 0 0 0 .fl..:, , . ,. 1(;) I~i~ '~ 0 '0 0 -0 ~ ~~ 0 00 0 0 ~~ 0 ~0 0 '0 . 0 0 0 0 0 0 0 0 0 0 0 , I~b Cl : 00 I~ I~ -0 0~ 0 ' '0 00 0 -0 0~ - 0 ' -0 00 ' 0 0~ 0 ' ~0 '0 THE MATHEMATICS SECTION Answer Key I. 1375 2. 3 3. 1000 4. 312 or 1.5 5. 55 6. 28 8 . 5/4 or 1.25 • Additional practice questions can be found in The Official SAT Online Course at www.collegeboard.comlaatonlinecourse . 364 CHAPTER 21 Practice for the Mathematics Section The questions in Ihis chapter give you a chance to practice the approaches you've learned so far. Use the approaches on the questions in this chapter before you take the practice tests in the last section of this book. This chapter will give you practice on different types of math questions that are on the SAT. 365 THE MATHEMATICS SECTION Multiple-Choice Questions This section contains two types of questions. For questions 1- 12, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork. Notes 1. The use of a calculator is permitted. 2. All numbers used are real numbers. 3. Figures that accompany problems in Ihis lest aTe intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem Ihal the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated. 4. Unless otherwise specified, the domain of any function/is assumed to be the set of all real numbers x for whichflxl is a real number. IGD·6~·8·~~ ... .!; § { A_V 1 A .lw C_2M b .. I A ," }:M V_M V_VI~ c'."l+b f The IIUI1Iber of dec-s of an:: in I tirde is 360. rnea5urt$ in degrees oflhc ....1es of. tnansJe is 180. to: The sum of~ CABLE TELEVI SION SUBSCRIBERS IN TOWN T BY REGION Ion Region M RcgionN Region 0 Region P = 1.000 subscribe rs OJ OJ OJ OJ OJ OJ OJ OJ OJ OJ OJ I. If the four regions shown in the graph above are the only regions in Town T, the total of which two regions accounts for exactly 70 percent of all cable television subscribers in Town T? (Al (8) (C) (D) (El 366 Regions M and N Regions M and 0 Regions Nand 0 Regions Nand P Regions 0 and P Practice for the Mathematics Section 2. If xl: k, where x and k aTe integers, which of the following could be the value of k? (A) 3 (6) 6 (e) 9 (0) 12 (E) 15 3. For which of the follow ing graphs oft doesj(x) '" j(-x) for all values of x shown? (A) y 2 -2 - I (C) f 01 -I Y 2 y (B) f 2 x 2 -2 - 10 x y (D) f f x - 2 _I 0 -I (E) 1 2 -I 1 2 x y 2 -2-10 -I 2 fx 4. A class has twice as many boys as girls. The students in the class stand in one line, with a girl at the front of the line. Which of the following must be true? (A) (B) (C) (D) (E) The last person in line is a girl. The last person in line is a boy. There are more girls than boys in the class. There are at least two girls standing next to each other. There are at least two boys standing next to each other. 367 THE MATHEMATICS SECTI ON 5. Wh ich orlbe following is an equation oflhe line that has a y-inlerccpt of2 and an x-intercept of3? (A) -2x+3yo:=4 (B) -2x+3y=6 (C) 2x+3y=4 (D) 2x+3y",6 (El 3x+2y=6 6. In a certain game, each orS players received a score between 0 and 100, inclusive. If their average (arithmetic mcan) score was 80. what is the greatest possible number oflhe 5 players who could have received a score orSO? CAl None (8) One (C) 1\"'0 (D) Three (E) Four 7. On the staircase shown above, both the depth and the height of each step are s, and each step forms a right angle. What is the value of t in terms of s? (A) lOs (B) 14s (C) 7s..fi (D) 7,.,fj (El 368 2S1 Practice for the Mathematics Section y 8. The figure above shows a portion of the gra ph of the function f If fix + 5) = fix) for all values of x, thenf(x) = 0 for how many different values of x between 0 and 12? (A) Eight (B) Nine (C) Ten (D) Eleven (E) l\ve\ve 9. The sum offour consecutive odd integers w, x,y and z is 24. What is the median of the set {w, x,y, z, 24j? (A) (B) (C) (D) (E) 3 5 7 9 24 I (369 THE MATHEMATICS SECTION x fix) g(x) 0 5 2 1 0 4 2 2 3 3 4 1 4 1 5 5 3 0 10. According to the table above, if k '" j(3), what is the value of g(k) ? (A) 1 (B) 2 (C) 3 (D) 4 (E) 5 k classes with n students in each class. If a total of p pencils are distributed equally among these students, how many pencils are there for each student? 11. In a certain school, there are (A) Lk, (B) k, p , (C) kp (D) np k (E) npk 370 Practice for the Mathematics Section 12. In the figure above, the four circles have the same center and their radii are 1,2,3 and 4, respectively. What is the ratio of the area of the small shaded ring to the area of the large shaded ring? (A) 1;2 (B) 1:4 (C) ' " (D) 3:7 (E) 5;7 37' THE MATHEMATICS SECTION Student-Produced Response Questions For Student-Produced Response questions 1-8, use the grids al the bollom of the answer sheet page. '"Write .,,":.:. . . ·(I*~~~H-::'' ' lioc Qrid in ",sul l. ~ You onay sian your answers in ony col um n•• pare pc'nniuing. Colurnns lIOI "ecdr(l .,hoo ld be le ft blank. • Becllu!.e ,,,,,= aM,'"''" !.heel will be machi ... • • ,Mart no tnI'N"e than ODe circle in any oolumn. scortd, you .. ill ~>'t ertdit only irt~ circle . l~~~~~~~~~~'~""~~'~: III _'" nUfli i n rorn • Although flnt O"eI.!uiml. il is ""J!MCilc, I(IJI of the columns 00 help you fill in !he c;n:1e. K Acctplahlc 2 • Some problems may h.we nlOf'C than one t:Ofre '''''''''Cr. • No qllUli J.' or 7/ 2. (If ~,,~ . cd Inlerpn:1 U i. gri 31) 1) 2'I'l0l 2" 1\ will be ''''1'" , • • (!) ~~ . ", • 1 • • (!)@@ ·0 1. A store has 660 books in stock. If 30 percent of these books are on sale, how many books are.!!2.t on sale? 372 Practice for the Mathematics Section einches I.. in'hes '----------' N2k;. Figure not drawn to scale. 2. The perimeter of the rectangle above is p inches and the area of the rectangle is 36 square inches. If and ware integers. what is one possible value of p ? e 3. Ifx+~=2.whatisthevalueofr+~? 4. If{of f is subtracted from 2. what is the resulling value? 5. Tim wrote a seven-digit phone number on a piece of paper. He later tore the paper aCcidentally and the last two digits were 1051. What is the maximum number of arrangements of two digits. using the digits 0 through 9. that he could use in attempting to reconstruct the correct phone number? 373 THE MATHEMATICS SECTION 6. If the slope of the line that passes through the points (a, 0) and (I, -2) is l, what is the value of a ? 2 7. One adult and to children are in an elevator. If the adult's weight is 4 times the average (arithmetic mean) weight of the children, then the adult's weight is what fraction of the total weight of the 11 people in the elevator? y e (0 ,4) (- 5,0) ~~~~ O~-----+x 8. The fi gure above shows line C in the xy-coordinate plane. Line m (not shown) is obtained by horizontally tra nslating each point on line 2 units to the left. If the equation of m is y = + k, what is the value of k? tx 374 e Practice for the Mathematics Section 3 2. Idr. 18 '-' .(j) I~ I~ • • 0 '-' , '0 0 0 • •® ® •' 0 ® 0 ® ~~ ® '31 :, ;b o0~• ~I~ ®® ®® @@ 00 ®® ®® 0 ®® ®® @® 0~ 0 ' ®® 00 00 ® ® 0 0 0 , ,---, 4 '-' IGl Ir. Ir.< ~ ® ~ 0 'i ~ 0~ . . I~, : Ii 6 ,----, 8 18 b ct I~ I~ ~~~ ~~~~ 0 0 0 0 0 ~0 0® ~ ~ 7 8 '-' 8, 18 b I~ I~ ~ 0 ~ 0~ ®00 ~ 0 0 0 ~ 0 ® i b 18 8, '-', 0) I~ 0) 0) 0 0 0 ® 0 0 0 ® 0 ® 0 ® 0 0 0 0 0 ® 0 ® 0 0 ® 0 0 ® 0 ~ 0 ~ I 375 THE MATHEMATICS SECTION Answer Key Multiple-Choice Questions l.A 2. C 3. C 4. E 5.0 6. C 7. C 8. B 9. C 10. E 11. A 12. 0 Student-Produced Response Questions (Grid-ins) l. 462 2. 24.26,30,40 or 74 3. 2 4.5/3, 1.66or 1.67 5. 100 6. 5 7. 2/7, .285 or .286 8. 28/5 or 5.6 Additional practice questions can be found In The Official SAT Online Course at www.coliegeboard.comJsatonlinecours• . 376 PART V 10 Official Practice Tests with Answer Keys 377 10 COMPLETE PRACTICE TESTS WITH ANSWER KEYS Taking the Practice Tests Part V offers 10 practice tests for the SAT. Each version includes only 9 of the 10 sections in the actual test. The variable sections have been omitted. You'll get the most Qut of the practice tests if you take them under conditions that are as close as possible to those of the real test: • Leave you rself3 hours and 20 minutes to complete each sample test. (The actua l test is 3 hours and 45 minutes. The omitted variable section is 25 minutes.) • Sit at a desk or table cleared of any other papers or books. Items such as dictionaries, books, or notes won', be allowed when you take the actua l SAT. • For the math quest ions, use the calculator that you plan to use on the test. • Set a timer or use a watch or dock to time you rself on each section. • Tear out or make a copy of the 8-page practice answer sheet located just before each practice test and fill it in just as you will on the day of the actual test. • When you complete a practice test. use the corresponding answer key, scoring instructions, scoring worksheet. and conversion tables to determine your score ranges. Q After you complete each test: • Use this book to its full potential! Get exclusive access answer explanat ions. free practice score reports and free sample student essays to help you score your essay in the Book Owners' Area at www.collegeboard.com/satstudyguide. • Want more practice? 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