

Directions for Taking the Diagnostic Test

For each odd-numbered question (1, 3, 5, 7, etc.), choose the best answer. In the even-numbered questions (2, 4, 6, 8, etc.), you will be asked how you solved the preceding odd-numbered question. Make sure that you answer the even-numbered questions carefully, as your answers will determine whether or not you used the right strategy. Be completely honest in your answers to the even-numbered questions, since you do want an accurate assessment in order to be helped. *Note:* Only the odd-numbered questions are SAT-type questions that would appear on the actual exam. The even-numbered questions are for self-diagnosis purposes only.

EXAMPLE:

1. The value of $17 \times 98 + 17 \times 2 =$

- (A) 1,550
- (B) 1,600
- (C) 1,700
- (D) 1,800
- (E) 1,850

(The correct answer is Choice C.)

2. How did you get your answer?

- (A) I multiplied 17×98 and added that to 17×2 .
- (B) I approximated and found the closest match in the choices.
- (C) I factored 17 to get $17(98 + 2)$.
- (D) I guessed.
- (E) By none of the above methods.

- If you chose B, you probably approximated 98 by 100 and got 1,700.
- If you chose C, you factored out the 17 to get $17(98 + 2) = 17(100) = 1,700$. This was the best strategy to use.
- If you chose D, you probably didn't know how to solve the problem and just guessed.
- If you chose E, you did not use any of the methods above but used your own different method.

Note: In the even-numbered questions, you may have used a different approach from what will be described in the answer to that question. It is, however, a good idea to see if the alternate approach is described, as you may want to use that approach for solving other questions. Now turn to the next page to take the test.

In question 2:

- If you chose A, you did the problem the long way unless you used a calculator.

Strategy Diagnostic Test

Answer Sheet

SECTION 1 Verbal Ability	1	A	B	C	D	E	15	A	B	C	D	E	29	A	B	C	D	E	43	A	B	C	D	E
	2	A	B	C	D	E	16	A	B	C	D	E	30	A	B	C	D	E	44	A	B	C	D	E
	3	A	B	C	D	E	17	A	B	C	D	E	31	A	B	C	D	E	45	A	B	C	D	E
	4	A	B	C	D	E	18	A	B	C	D	E	32	A	B	C	D	E	46	A	B	C	D	E
	5	A	B	C	D	E	19	A	B	C	D	E	33	A	B	C	D	E	47	A	B	C	D	E
	6	A	B	C	D	E	20	A	B	C	D	E	34	A	B	C	D	E	48	A	B	C	D	E
	7	A	B	C	D	E	21	A	B	C	D	E	35	A	B	C	D	E	49	A	B	C	D	E
	8	A	B	C	D	E	22	A	B	C	D	E	36	A	B	C	D	E	50	A	B	C	D	E
	9	A	B	C	D	E	23	A	B	C	D	E	37	A	B	C	D	E	51	A	B	C	D	E
	10	A	B	C	D	E	24	A	B	C	D	E	38	A	B	C	D	E	52	A	B	C	D	E
	11	A	B	C	D	E	25	A	B	C	D	E	39	A	B	C	D	E	53	A	B	C	D	E
	12	A	B	C	D	E	26	A	B	C	D	E	40	A	B	C	D	E	54	A	B	C	D	E
	13	A	B	C	D	E	27	A	B	C	D	E	41	A	B	C	D	E	55	A	B	C	D	E
	14	A	B	C	D	E	28	A	B	C	D	E	42	A	B	C	D	E	56	A	B	C	D	E
SECTION 2 Math Ability	1	A	B	C	D	E	10	A	B	C	D	E	19	A	B	C	D	E	28	A	B	C	D	E
	2	A	B	C	D	E	11	A	B	C	D	E	20	A	B	C	D	E	29	A	B	C	D	E
	3	A	B	C	D	E	12	A	B	C	D	E	21	A	B	C	D	E	30	A	B	C	D	E
	4	A	B	C	D	E	13	A	B	C	D	E	22	A	B	C	D	E	31	A	B	C	D	E
	5	A	B	C	D	E	14	A	B	C	D	E	23	A	B	C	D	E	32	A	B	C	D	E
	6	A	B	C	D	E	15	A	B	C	D	E	24	A	B	C	D	E	33	A	B	C	D	E
	7	A	B	C	D	E	16	A	B	C	D	E	25	A	B	C	D	E	34	A	B	C	D	E
	8	A	B	C	D	E	17	A	B	C	D	E	26	A	B	C	D	E	35	A	B	C	D	E
	9	A	B	C	D	E	18	A	B	C	D	E	27	A	B	C	D	E	36	A	B	C	D	E

Section 1: Verbal Ability

Each of the following sentences has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five lettered words or sets of words. Choose the word or set of words that *best* fits the meaning of the sentence as a whole.

EXAMPLE:

Although its publicity has been _____, the film itself is intelligent, well-acted, handsomely produced, and altogether _____.

- (A) tasteless...respectable
- (B) extensive...moderate
- (C) sophisticated...amateur
- (D) risqué...crude
- (E) perfect...spectacular

(A) (B) (C) (D) (E)

1. He believed that because there is serious unemployment in our auto industry, we should not _____ foreign cars.
 - (A) build
 - (B) repair
 - (C) review
 - (D) import
 - (E) consolidate
2. How did you get your answer?
 - (A) I tried the word from each choice in the blank and came up with the best answer.
 - (B) I chose a word from the choices that sounded good but that I am really not sure is correct.
 - (C) I tried to figure out, *before* looking at the choices, what word would fit into the blank. Then I matched that word with the choices.
 - (D) I guessed.
 - (E) None of these.
3. The sales associates in that clothing store are so _____ that it is impossible to even look at a garment without being _____ by their efforts to convince you to purchase.
 - (A) offensive...considerate
 - (B) persistent...irritated
 - (C) extensive...induced
 - (D) immune...aided
 - (E) intriguing...evaluated
4. How did you get your answer?
 - (A) I tried each choice (two words at a time) in the blanks to see which made for the best sentence.
 - (B) I tried to see what words I could come up with for the blanks *before* looking at the choices.
 - (C) I tried the first word from each of the choices in the first blank in the sentence to see which made the most sense. Then I eliminated the choices whose first words didn't make sense in the sentence. Finally, I tried both words in the remaining choices to further eliminate incorrect choices.
 - (D) I guessed.
 - (E) None of these.

5. Many buildings with historical significance are now being _____ instead of being torn down.
- (A) built
(B) forgotten
(C) destroyed
(D) praised
(E) repaired
6. How did you get your answer?
- (A) I tried each of the choices in the blank.
(B) I tried to find my own word that would fit the blank *before* looking at the choices. Then I matched one of the choices with my word.
(C) I looked for a word that meant the opposite of “being torn down.”
(D) I guessed.
(E) None of these.
7. Being _____ person, he insisted at the conference that when he spoke he was not to be interrupted.
- (A) a successful
(B) a delightful
(C) a headstrong
(D) an understanding
(E) a solitary
8. How did you get your answer?
- (A) I tried all the choices in the sentence and selected the best one.
(B) I realized, from the word *Being* and from the phrase after the comma, that there was a connection between the two parts of the sentence.
(C) I looked for the most difficult-sounding word.
(D) I guessed.
(E) None of these.
9. In spite of the _____ of her presentation, many people were _____ with the speaker’s concepts and ideas.
- (A) interest...enthralled
(B) power...taken
(C) intensity...shocked
(D) greatness...gratified
(E) strength...bored
10. How did you get your answer?
- (A) I tried both words from each choice in the blanks to see which choice made the sentence sound best.
(B) I tried the first word from each choice in the first blank of the sentence to eliminate choices. Then I tried both words from the remaining choices to further eliminate choices.
(C) I realized that the words *in spite of* would create an opposition or contrast between the two parts of the sentence and therefore looked for words in the choices that were opposites.
(D) I guessed.
(E) None of these.
11. Jacob Davis was frequently intolerant; moreover, his strange behavior caused most of his acquaintances to _____ the composer whenever possible.
- (A) contradict
(B) interrogate
(C) shun
(D) revere
(E) tolerate
12. How did you get your answer?
- (A) I tried all the choices in the blank and selected the best one.
(B) I realized that the word *moreover* indicated support, so I looked for a choice that would represent a *support* of what was in the first part of the sentence.
(C) I tried to find my own word to fit the blank. Then I matched that word with a word in one of the choices.
(D) I guessed.
(E) None of these.

Each of the following questions consists of a word in capital letters, followed by five lettered words or phrases. Choose the word or phrase that is most nearly *opposite* in meaning to the word in capital letters. Since some of the questions require you to distinguish fine shades of meaning, consider all the choices before deciding which is best.

EXAMPLE:

GOOD: (A) sour (B) bad (C) red
(D) hot (E) ugly

(A) ● (C) (D) (E)

Note: Although antonyms are no longer a part of the SAT, we are still testing vocabulary through antonyms on this particular test, since it is important for you to develop vocabulary strategies for the Sentence Completions and Reading Comprehension parts of the SAT.

13. TENACIOUS:
(A) changing
(B) stupid
(C) unconscious
(D) poor
(E) antagonistic
14. How did you get your answer?
(A) I knew the meaning of the word TENACIOUS.
(B) I knew what the root TEN meant and looked for the opposite of that root.
(C) I did not know what TENACIOUS meant but knew a word that sounded like TENACIOUS.
(D) I guessed.
(E) None of these.
15. PROFICIENT:
(A) antiseptic
(B) unwilling
(C) inconsiderate
(D) antagonistic
(E) awkward
16. How did you get your answer?
(A) I knew what the prefix PRO- meant and used it to figure out the capitalized word, but I didn't use any root of PROFICIENT.
(B) I used the meaning of the prefix PRO- and the meaning of the root FIC to figure out the meaning of the word PROFICIENT.
(C) I knew from memory what the word PROFICIENT meant.
(D) I guessed.
(E) None of these.
17. DELUDE:
(A) include
(B) guide
(C) reply
(D) upgrade
(E) welcome
18. How did you get your answer?
(A) I knew what the prefix DE- meant and used it to figure out the meaning of the word DELUDE, but I didn't use any root of DELUDE.
(B) I used the meaning of the prefix DE- and the meaning of the root LUD to figure out the meaning of the word DELUDE.
(C) I knew from memory what the word DELUDE meant.
(D) I guessed.
(E) None of these.
19. POTENT:
(A) imposing
(B) pertinent
(C) feeble
(D) comparable
(E) frantic
20. How did you get your answer?
(A) I knew what the capitalized word meant.
(B) I knew a word or part of a word that sounded the same as POTENT or had a close association with the word POTENT.
(C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
(D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
(E) None of these.

21. RECEDE:

- (A) accede
- (B) settle
- (C) surrender
- (D) advance
- (E) reform

22. How did you get your answer?

- (A) I found a word opposite in meaning to the word RECEDE, *without* looking at the choices. Then I matched my word with the choices.
- (B) I used prefixes and/or roots to get the meaning of the word RECEDE.
- (C) I looked at the choices to see which word was opposite to RECEDE. I *did not* try first to get my own word that was opposite to the meaning of RECEDE, as in Choice A.
- (D) I guessed.
- (E) None of these.

23. THERMAL:

- (A) improving
- (B) possible
- (C) beginning
- (D) reduced
- (E) frigid

24. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as THERMAL or had a close association with the word THERMAL.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

25. SLOTHFUL:

- (A) permanent
- (B) ambitious
- (C) average
- (D) truthful
- (E) plentiful

26. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as SLOTH or had a close association with the word SLOTH.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

27. MUNIFICENCE:

- (A) disloyalty
- (B) stinginess
- (C) dispersion
- (D) simplicity
- (E) vehemence

28. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as MUNIFICENCE or had a close association with the word MUNIFICENCE.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

29. FORTITUDE:

- (A) timidity
- (B) conservatism
- (C) placidity
- (D) laxness
- (E) ambition

30. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as FORTITUDE or had a close association with the word FORTITUDE.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

31. DETRIMENT:

- (A) recurrence
- (B) disclosure
- (C) resemblance
- (D) enhancement
- (E) postponement

32. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as DETRIMENT or had a close association with the word DETRIMENT.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

33. CIRCUMSPECT:

- (A) suspicious
- (B) overbearing
- (C) listless
- (D) determined
- (E) careless

34. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as CIRCUMSPECT or had a close association with the word CIRCUMSPECT.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

35. LUCID:

- (A) underlying
- (B) complex
- (C) luxurious
- (D) tight
- (E) general

36. How did you get your answer?

- (A) I knew what the capitalized word meant.
- (B) I knew a word or part of a word that sounded the same as LUCID or had a close association with the word LUCID.
- (C) I knew a prefix or root of the capitalized word, which gave me a clue to the meaning of the word.
- (D) I knew from a part of the capitalized word that the word had a negative or positive association. Thus, I selected a choice that was opposite in flavor (positive or negative).
- (E) None of these.

Each of the following passages is followed by questions based on its content. Answer all questions following a passage on the basis of what is *stated* or *implied* in that passage.

She walked along the river until a policeman stopped her. It was one o'clock, he said. Not the best time to be walking alone by the side of a half-frozen river. He smiled at her, then offered to walk her home. It was the first day of the
5 new year, 1946, eight and a half months after the British tanks had rumbled into Bergen-Belsen.

That February, my mother turned twenty-six. It was difficult for strangers to believe that she had ever been a concentration camp inmate. Her face was smooth and
10 round. She wore lipstick and applied mascara to her large dark eyes. She dressed fashionably. But when she looked into the mirror in the mornings before leaving for work, my mother saw a shell, a mannequin who moved and spoke but who bore only a superficial resemblance to her real self.
15 The people closest to her had vanished. She had no proof that they were truly dead. No eyewitnesses had survived to vouch for her husband's death. There was no one living who had seen her parents die. The lack of confirmation haunted her. At night before she went to sleep and during the day as
20 she stood pinning dresses she wondered if, by some chance, her parents had gotten past the Germans or had crawled out of the mass grave into which they had been shot and were living, old and helpless, somewhere in Poland. What if only one of them had died? What if they had survived and had
25 died of cold or hunger after she had been liberated, while she was in Celle* dancing with British officers?

She did not talk to anyone about these things. No one, she thought, wanted to hear them. She woke up in the morning, went to work, bought groceries, went to the Jewish
30 Community Center and to the housing office like a robot.

*Celle is a small town in Germany.

37. The policeman stopped the author's mother from walking along the river because

- (A) the river was dangerous
- (B) it was the wrong time of day
- (C) it was still wartime
- (D) it was too cold
- (E) she looked suspicious

38. Which part of the passage gives you the best clue for getting the right answer?

- (A) Line 2: "It was one o'clock, he said."
- (B) Lines 2-3: "It was one o'clock, he said. Not the best time to be walking alone."
- (C) Lines 2-3: "It was one o'clock, he said. Not the best time to be walking alone by the side of a half-frozen river."
- (D) None of these.
- (E) I don't know.

39. The author states that his mother thought about her parents when she

- (A) walked along the river
- (B) thought about death
- (C) danced with the officers
- (D) arose in the morning
- (E) was at work

40. Which part of the passage gives you the best clue for getting the right answer?

- (A) Line 19: "At night before she went to sleep..."
- (B) Lines 19-20: "...and during the day as she stood pinning dresses she wondered..."
- (C) Lines 11-12: "But when she looked into the mirror in the mornings..."
- (D) Lines 24-26: "What if they had survived and died of cold...while she was...dancing with British officers?"
- (E) I don't know.

41. When the author mentions his mother's dancing with the British officers, he implies that his mother

- (A) compared her dancing to the suffering of her parents
- (B) had clearly put her troubles behind her
- (C) felt it was her duty to dance with them
- (D) felt guilty about dancing
- (E) regained the self-confidence she once had

42. Which words expressed in the passage lead us to the right answer?

- (A) Line 24: "had survived"
- (B) Lines 24-25: "had died of cold or hunger"
- (C) Line 21: "gotten past the Germans"
- (D) Line 30: "like a robot"
- (E) I don't know.

That one citizen is as good as another is a favorite American axiom, supposed to express the very essence of our Constitution and way of life. But just what do we mean when we utter that platitude? One surgeon is not as good
5 as another. One plumber is not as good as another. We soon become aware of this when we require the attention of either. Yet in political and economic matters we appear to have reached a point where knowledge and specialized training count for very little. A newspaper reporter is sent
10 out on the street to collect the views of various passersby on such a question as "Should the United States defend El Salvador?" The answer of the barfly who doesn't even

know where the country is located, or that it is a country, is quoted in the next edition just as solemnly as that of the college teacher of history. With the basic tenets of democracy—that all men are born free and equal and are entitled to life, liberty, and the pursuit of happiness—no decent American can possibly take issue. But that the opinion of one citizen on a technical subject is just as authoritative as that of another is manifestly absurd. And to accept the opinions of all comers as having the same value is surely to encourage a cult of mediocrity.

43. Which phrase best expresses the main idea of this passage?
- (A) the myth of equality
 (B) a distinction about equality
 (C) the essence of the Constitution
 (D) a technical subject
 (E) knowledge and specialized training
44. Which is the best title for this passage?
- (A) “Equality—for Everyone, for Every Situation?”
 (B) “Dangers of Opinion and Knowledge”
 (C) “The American Syndrome”
 (D) “Freedom and Equality”
 (E) I don’t know.
45. The author most probably included the example of the question on El Salvador (lines 11–12) in order to
- (A) move the reader to rage
 (B) show that he is opposed to opinion sampling
 (C) show that he has thoroughly researched his project
 (D) explain the kind of opinion sampling he objects to
 (E) provide a humorous but temporary diversion from his main point
46. The distinction between a “barfly” and a college teacher (lines 12–15) is that
- (A) one is stupid, the other is not
 (B) one is learned, the other is not
 (C) one is anti-American, the other is not
 (D) one is pro-El Salvadoran, the other is not
 (E) I don’t know.
47. The author would be most likely to agree that
- (A) some men are born to be masters; others are born to be servants
 (B) the Constitution has little relevance for today’s world
 (C) one should never express an opinion on a specialized subject unless he is an expert in that subject
 (D) every opinion should be treated equally
 (E) all opinions should not be given equal weight
48. Which lines give the best clue to the answer to this question?
- (A) Lines 3–5
 (B) Lines 4–6
 (C) Lines 14–17
 (D) Lines 18–22
 (E) I don’t know.

Mist continues to obscure the horizon, but above us the sky is suddenly awash with lavender light. At once the geese respond. Now, as well as their cries, a beating roar rolls across the water as if five thousand housewives have taken it into their heads to shake out blankets all at one time. Ten thousand housewives. It keeps up—the invisible rhythmic beating of all those goose wings—for what seems a long time. Even Lonnie is held motionless with suspense.

Then the geese begin to rise. One, two, three hundred—then a thousand at a time—in long horizontal lines that unfurl like pennants across the sky. The horizon actually darkens as they pass. It goes on and on like that, flock after flock, for three or four minutes, each new contingent announcing its ascent with an accelerating roar of cries and wingbeats. Then gradually the intervals between flights become longer. I think the spectacle is over, until yet another flock lifts up, following the others in a gradual turn toward the northeastern quadrant of the refuge.

Finally the sun emerges from the mist; the mist itself thins a little, uncovering the black line of willows on the other side of the wildlife preserve. I remember to close my mouth—which has been open for some time—and inadvertently shut two or three mosquitoes inside. Only a few straggling geese oar their way across the sun’s red surface. Lonnie wears an exasperated, proprietary expression, as if he had produced and directed the show himself and had just received a bad review. “It would have been better with more light,” he says; “I can’t always guarantee just when they’ll start moving.” I assure him I thought it was a fantastic sight. “Well,” he rumbles, “I guess it wasn’t too bad.”

49. In the descriptive phrase “shake out blankets all at one time” (line 5), the author is appealing chiefly to the reader’s
- (A) background
 - (B) sight
 - (C) emotions
 - (D) thoughts
 - (E) hearing
50. Which words preceding the descriptive phrase “shake out blankets all at one time” (line 5) give us a clue to the correct answer to the previous question (question 49)?
- (A) “into their heads”
 - (B) “lavender light”
 - (C) “across the water”
 - (D) “a beating roar”
 - (E) I don’t know.
51. The mood created by the author is one of
- (A) tranquility
 - (B) excitement
 - (C) sadness
 - (D) bewilderment
 - (E) unconcern
52. Which word in the passage is most closely associated with the correct answer?
- (A) mist
 - (B) spectacle
 - (C) geese
 - (D) refuge
 - (E) I don’t know.
53. The main idea expressed by the author about the geese is that they
- (A) are spectacular to watch
 - (B) are unpredictable
 - (C) disturb the environment
 - (D) produce a lot of noise
 - (E) fly in large flocks
54. Which line(s) gives us a clue to the correct answer?
- (A) Line 1
 - (B) Lines 16–17
 - (C) Line 19
 - (D) Line 30
 - (E) I don’t know.
55. Judging from the passage, the reader can conclude that
- (A) the speaker dislikes nature’s inconveniences
 - (B) the geese’s timing is predictable
 - (C) Lonnie has had the experience before
 - (D) both observers are hunters
 - (E) the author and Lonnie are the same person
56. Which gives us a clue to the right answer?
- (A) Lines 9–10
 - (B) Line 19
 - (C) Lines 21–22
 - (D) Lines 28–29
 - (E) I don’t know.

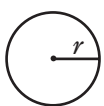
Section 2: Math Ability

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:

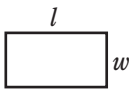
1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE INFORMATION

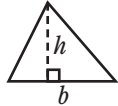


$$A = \pi r^2$$

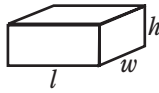
$$C = 2\pi r$$



$$A = lw$$



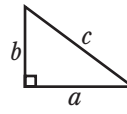
$$A = \frac{1}{2}bh$$



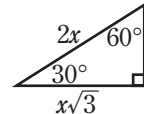
$$V = lwh$$



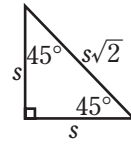
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles



The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

1. If $P \times \frac{11}{14} = \frac{11}{14} \times \frac{8}{9}$, then $P =$

- (A) $\frac{8}{9}$
 (B) $\frac{9}{8}$
 (C) 8
 (D) 11
 (E) 14

2. How did you get your answer?

- (A) I multiplied $\frac{11}{14}$ by $\frac{8}{9}$, *reducing first*.
 (B) I multiplied 11×8 and then divided the product by 14×9 .
 (C) I canceled $\frac{11}{14}$ from both sides of the equals sign.
 (D) I guessed.
 (E) None of these.

3. Sarah is twice as old as John. Six years ago, Sarah was 4 times as old as John was then. How old is John now?

(A) 3
 (B) 9
 (C) 18
 (D) 20
 (E) Cannot be determined.

4. How did you get your answer?

(A) I substituted S for *Sarah*, $=$ for *is*, and J for *John* in the first sentence of the problem. Then I translated the second sentence into mathematical terms also.
 (B) I tried specific numbers for *Sarah* and/or *John*.
 (C) I racked my brain to figure out the ages but didn't write any equations down.
 (D) I guessed.
 (E) None of these.

5. 200 is what percent of 20?

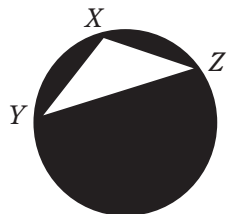
(A) $\frac{1}{10}$
 (B) 10
 (C) 100
 (D) 1,000
 (E) 10,000

6. How did you get your answer?

(A) I translated *is* to $=$, *what* to a variable, *of* to \times , etc. Then I was able to set up an equation.
 (B) I just divided the two numbers and multiplied by 100 to get the percent.
 (C) I tried to remember how to work with *is-of* problems, putting the *of* over *is* or the *is* over *of*.
 (D) I guessed.
 (E) None of these.

7. In the diagram below, $\triangle XYZ$ has been inscribed in a circle. If the circle encloses an area of 64, and the area of $\triangle XYZ$ is 15, then what is the area of the shaded region?

(A) 25
 (B) 36
 (C) 49
 (D) 79
 (E) Cannot be determined.



8. How did you get your answer?

(A) I tried to calculate the area of the circle and the area of the triangle.
 (B) I used a special triangle or tried different triangles whose area was 15.
 (C) I subtracted 15 from 64.
 (D) I guessed.
 (E) None of these.

9. $66^2 + 2(34)(66) + 34^2 =$

(A) 4,730
 (B) 5,000
 (C) 9,860
 (D) 9,950
 (E) 10,000

10. How did you get your answer?

(A) I multiplied 66×66 , $2 \times 34 \times 66$, and 34×34 and added the results.
 (B) I approximated a solution.
 (C) I noticed that $66^2 + 2(34)(66) + 34^2$ had the form of $a^2 + 2ab + b^2$ and set the form equal to $(a + b)^2$.
 (D) I guessed.
 (E) None of these.

11. The average height of three students is 68 inches. If two of the students have heights of 70 inches and 72 inches respectively, then what is the height (in inches) of the third student?

(A) 60
 (B) 62
 (C) 64
 (D) 65
 (E) 66

12. How did you get your answer?

- (A) I used the following equation:

$$(68 + 2) + (68 + 4) + x = 68 + 68 + 68$$

Then I got:


$$68 + 68 + (x + 6) = 68 + 68 + 68, \text{ and}$$

crossed off the two 68s on both sides of the equation to come up with $x + 6 = 68$.

- (B) I was able to eliminate the incorrect choices without figuring out a complete solution.

- (C) I got the equation $\frac{(70 + 72 + x)}{3} = 68$, then solved for x .

(D) I guessed.
 (E) None of these.

13. If $0 < x < 1$, then which of the following must be true?
- I. $2x < 2$
 II. $x - 1 < 0$
 III. $x^2 < x$
- (A) I only
 (B) II only
 (C) I and II only
 (D) II and III only
 (E) I, II, and III
14. How did you get your answer?
- (A) I plugged in only one number for x in I, II, and III.
 (B) I plugged in more than one number for x and tried I, II, and III using each set of numbers.
 (C) I used the fact that $0 < x$ and $x < 1$ and manipulated those inequalities in I, II, and III.
 (D) I guessed.
 (E) None of these.
15. The sum of the cubes of any two consecutive positive integers is always
- (A) an odd integer
 (B) an even integer
 (C) the cube of an integer
 (D) the square of an integer
 (E) the product of an integer and 3
16. How did you get your answer?
- (A) I translated the statement into the form $x^3 + (x + 1)^3 = \underline{\hspace{2cm}}$ and tried to see what I would get.
 (B) I tried numbers like 1 and 2 for the consecutive integers. Then I calculated the sum of the cubes of those numbers. I was able to eliminate some choices and then tried some other numbers for the consecutive integers to eliminate more choices.
 (C) I said, of two consecutive positive integers, one is even and therefore its cube is even. The other integer is odd, therefore its cube is odd. An odd + an even is an odd.
 (D) I guessed.
 (E) None of these.
17. If p is a positive integer, which *could* be an odd integer?
- (A) $2p + 2$
 (B) $p^3 - p$
 (C) $p^2 + p$
 (D) $p^2 - p$
 (E) $7p - 3$
18. How did you get your answer?
- (A) I plugged in a number or numbers for p and started testing all the choices, *starting with Choice A*.
 (B) I plugged in a number or numbers for p in each of the choices, *starting with Choice E*.
 (C) I looked at Choice E first to see if $7p - 3$ had the form of an even or odd integer.
 (D) I guessed.
 (E) None of these.
19. In this figure, two points, B and C , are placed to the right of point A such that $4AB = 3AC$. The value of $\frac{BC}{AB}$
- (A) equals $\frac{1}{3}$
 (B) equals $\frac{2}{3}$
 (C) equals $\frac{3}{2}$
 (D) equals 3
 (E) Cannot be determined.
- 
20. How did you get your answer?
- (A) I drew points B and C on the line and labeled AB as a and BC as b and then worked with a and b .
 (B) I substituted numbers for AB and AC .
 (C) I drew points B and C on the line and worked with equations involving BC and AB .
 (D) I guessed.
 (E) None of these.
21. A man rode a bicycle a straight distance at a speed of 10 miles per hour. He came back the same way, traveling the same distance at a speed of 20 miles per hour. What was the man's total number of miles for the trip back and forth if his total traveling time was one hour?
- (A) 15
 (B) $13\frac{1}{3}$
 (C) $7\frac{1}{2}$
 (D) $6\frac{2}{3}$
 (E) $6\frac{1}{3}$

22. How did you answer this question?

- (A) I used $\text{Rate} \times \text{Time} = \text{Distance}$ and plugged in my own numbers.
- (B) I averaged 10 and 20 and worked from there.
- (C) I called the times going back and forth by two different unknown variables but noted that the sum of these times was 1 hour.
- (D) I guessed.
- (E) None of these.

23. If the symbol ϕ is defined by the equation

$$a \phi b = a - b - ab$$

for all a and b , then $\left(-\frac{1}{3}\right) \phi (-3) =$

- (A) $\frac{5}{3}$
- (B) $\frac{11}{3}$
- (C) $-\frac{13}{5}$
- (D) -4
- (E) -5

24. How did you get your answer?

- (A) I played around with the numbers $-\frac{1}{3}$ and -3 to get my answer. I didn't use any substitution method.
- (B) I substituted in $a \phi b = a - b - ab$, $\left(-\frac{1}{3}\right)$ for a and -3 for b .
- (C) I worked backward.
- (D) I guessed.
- (E) None of these.

25. If $y^8 = 4$ and $y^7 = \frac{3}{x}$, what is the value of y in terms of x ?

- (A) $\frac{4x}{3}$
- (B) $\frac{3x}{4}$
- (C) $\frac{4}{x}$
- (D) $\frac{x}{4}$
- (E) $\frac{12}{x}$

26. How did you get your answer?

- (A) I solved for the value of y from $y^8 = 4$. Then I substituted that value of y in $y^7 = \frac{3}{x}$.
- (B) I took the seventh root of y in the second equation.
- (C) I divided the first equation by the second equation to get y alone in terms of x .
- (D) I guessed.
- (E) None of these.

27. If $4x + 5y = 10$ and $x + 3y = 8$, then $\frac{5x + 8y}{3} =$

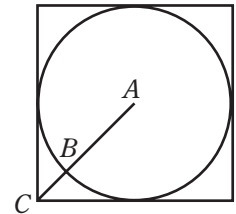
- (A) 18
- (B) 15
- (C) 12
- (D) 9
- (E) 6

28. How did you get your answer?

- (A) I solved both simultaneous equations for x and for y , then substituted the values of x and y into $\frac{(5x + 8y)}{3}$.
- (B) I tried numbers for x and for y that would satisfy the first two equations.
- (C) I added both equations to get $5x + 8y$. Then I divided my result by 3.
- (D) I guessed.
- (E) None of these.

29. The circle with center A and radius AB is inscribed in the square here. AB is extended to C . What is the ratio of AB to AC ?

- (A) $\sqrt{2}$
- (B) $\frac{\sqrt{2}}{4}$
- (C) $\frac{\sqrt{2}-1}{2}$
- (D) $\frac{\sqrt{2}}{2}$
- (E) None of these.

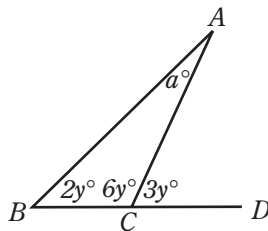


30. How did you get your answer?

- (A) I approximated the solution. I looked to see what the ratio of AB to AC might be from the diagram. Then I looked through the choices to see which choice was reasonable or to eliminate incorrect choices.
- (B) I saw a relationship between AB and AC but didn't draw any other lines.
- (C) I dropped a perpendicular from A to one of the sides of the square, then worked with the isosceles right triangle. I also labeled length AB by a single letter, and BC by another single letter.
- (D) I guessed.
- (E) None of these.

31. In the accompanying figure, BD is a straight line. What is the value of a ?

- (A) 15
- (B) 17
- (C) 20
- (D) 24
- (E) 30



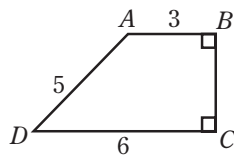
(Note: Figure is not drawn to scale.)

32. How did you get your answer?

- (A) I *first* said that $2y + 6y + a = 180$.
- (B) I *first* said that $6y + 3y = 180$, then solved for y .
- (C) I *first* said $3y = 2y + a$.
- (D) I guessed.
- (E) None of these.

33. What is the perimeter of the accompanying figure if B and C are right angles?

- (A) 14
- (B) 16
- (C) 18
- (D) 20
- (E) Cannot be determined.



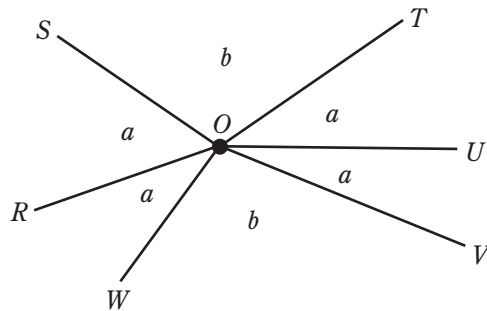
(Note: Figure is not drawn to scale.)

34. How did you get your answer?

- (A) I tried to first find angles A and D .
- (B) I drew a perpendicular from A to DC and labeled BC as an unknown (x or y , etc.).
- (C) I labeled BC as an unknown (x or y , etc.) but *did not* draw a perpendicular line from A to DC .
- (D) I guessed.
- (E) None of these.

35. Which of the angles below has a degree measure that can be determined?

- (A) $\angle WOS$
- (B) $\angle SOU$
- (C) $\angle WOT$
- (D) $\angle ROV$
- (E) $\angle WOV$



(Note: Figure is not drawn to scale.)

36. How did you get your answer?

- (A) I first said that $4a + 2b = 360$, got $2a + b = 180$, and then looked through the choices.
- (B) I looked through the choices first.
- (C) I knew that the sum of the angles added up to 360 degrees but didn't know where to go from there.
- (D) I guessed.
- (E) None of these.

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