SECTION 2
Time — 25 minutes
### 20 Questions

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Turn to Section 2 (page 4) of your answer sheet to answer the questions in this section.

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.
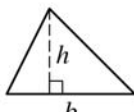
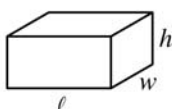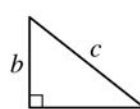**Reference Information**
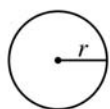
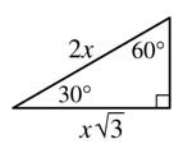$A = \pi r^2$
$C = 2\pi r$
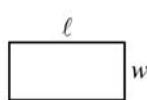
$A = \ell w$

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

$V = \ell wh$

$V = \pi r^2 h$

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

Special Right Triangles
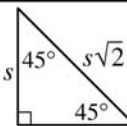
The number of degrees of arc in a circle is 360.
The sum of the measures in degrees of the angles of a triangle is 180.

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1. When 70,000 is written as 7.0×10^n, what is the value of n ?

(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

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2. On a car trip Sam drove m miles, Kara drove twice as many miles as Sam, and Darin drove 20 fewer miles than Kara. In terms of m, how many miles did Darin drive?

(A) $2m + 20$

(B) $2m - 20$

(C) $\dfrac{m}{2} + 20$

(D) $\dfrac{m + 20}{2}$

(E) $\dfrac{m}{2} - 20$

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3. If x and y are positive integers, what are all the solutions (x, y) of the equation $3x + 2y = 11$?

(A) $(1, 4)$ only
(B) $(3, 1)$ only
(C) $(1, 4)$ and $(2, 2)$
(D) $(1, 4)$ and $(3, 1)$
(E) $(2, 2)$ and $(3, 1)$

GO ON TO THE NEXT PAGE

4. A company's profit, P, in dollars, for producing x machines in one day is given by $P = 500x - 20x^2$. If the company produces 10 machines in one day, then, according to this formula, what is the profit for that day?
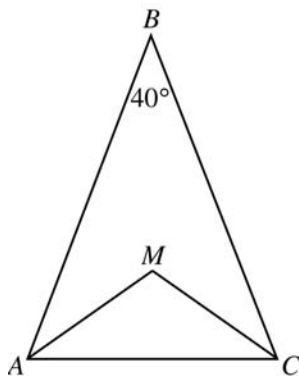
(A) $5,000
(B) $4,000
(C) $3,000
(D) $2,000
(E) $1,000

$$12 - n, \quad 12, \quad 12 + n$$

5. What is the average (arithmetic mean) of the 3 quantities in the list above?

(A) 4

(B) 12

(C) 18

(D) $4 + \dfrac{n}{3}$

(E) $12 + \dfrac{n}{3}$

6. In isosceles triangle ABC above, $\overline{AM}$ and $\overline{CM}$ are the angle bisectors of angle BAC and angle BCA. What is the measure of angle AMC ?

(A) 110°
(B) 115°
(C) 120°
(D) 125°
(E) 130°

7. A fruit salad is made from pineapples, pears, and peaches mixed in the ratio of 2 to 3 to 5, respectively, by weight. What fraction of the mixture by weight is pineapple?

(A) $\dfrac{1}{5}$

(B) $\dfrac{3}{10}$

(C) $\dfrac{2}{5}$

(D) $\dfrac{1}{2}$

(E) $\dfrac{2}{3}$
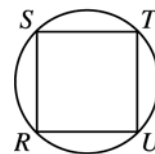
8. In the figure above, square $RSTU$ is inscribed in the circle. What is the degree measure of arc $\overset{\frown}{ST}$?

(A)   45°
(B)   60°
(C)   90°
(D) 120°
(E) 180°

9. If P and Q are two sets of numbers, and if every number in P is also in Q, which of the following CANNOT be true?

(A) 4 is in both P and Q.
(B) 5 is in neither P nor Q.
(C) 6 is in P, but not in Q.
(D) 7 is in Q, but not in P.
(E) If 8 is not in Q, then 8 is not in P.

GO ON TO THE NEXT PAGE

10. What is the maximum number of rectangular blocks measuring 3 inches by 2 inches by 1 inch that can be packed into a cube-shaped box whose interior measures 6 inches on an edge?

(A) 24
(B) 28
(C) 30
(D) 36
(E) 40

11. If $a \neq 0$ and $\dfrac{5}{x} = \dfrac{5 + a}{x + a}$, what is the value of x ?
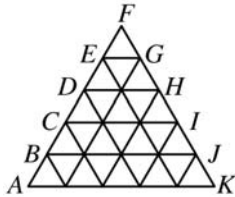
(A) −5
(B) −1
(C) 1
(D) 2
(E) 5

12. The figure above is composed of 25 small triangles that are congruent and equilateral. If the area of $\triangle DFH$ is 10, what is the area of $\triangle AFK$?

(A) 40
(B) 42.5
(C) 50
(D) 52.5
(E) 62.5

$$3x + 2y + 2z = 19$$
$$3x + y + z = 14$$

13. If the equations above are true, which of the following is the value of $y + z$?

(A) −5
(B) −4
(C) 0
(D) 4
(E) 5

14. A boat costs x dollars, and this cost is to be shared equally by a group of people. In terms of x, how many dollars less will each person contribute if there are 4 people in the group instead of 3 ?

(A) $\dfrac{x}{12}$

(B) $\dfrac{x}{4}$

(C) $\dfrac{x}{3}$

(D) $\dfrac{7x}{12}$

(E) $7x$

15. If $y = 2x + 3$ and $x < 2$, which of the following represents all the possible values for y ?

(A) $y < 7$
(B) $y > 7$
(C) $y < 5$
(D) $y > 5$
(E) $5 < y < 7$
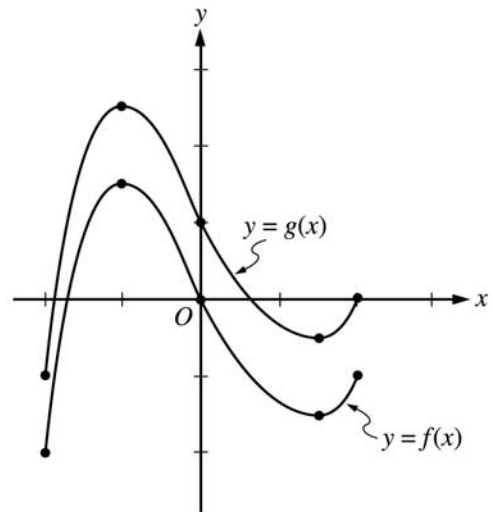
16. The graphs of the functions f and g in the interval from $x = -2$ to $x = 2$ are shown above. Which of the following could express g in terms of f?

(A) $g(x) = f(x + 1)$
(B) $g(x) = f(x) + 1$
(C) $g(x) = f(x + 1) + 1$
(D) $g(x) = f(x - 1)$
(E) $g(x) = f(x) - 1$

GO ON TO THE NEXT PAGE
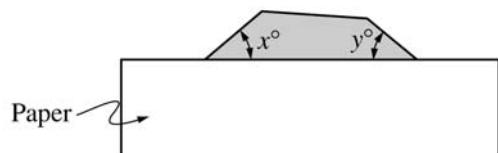
Paper

17. In the figure above, a shaded polygon which has equal sides and equal angles is partially covered with a sheet of blank paper. If $x + y = 80$, how many sides does the polygon have?

(A) Ten
(B) Nine
(C) Eight
(D) Seven
(E) Six
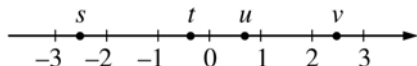
18. If s, t, u, and v are the coordinates of the indicated points on the number line above, which of the following is greatest?

(A) $|s + t|$
(B) $|s + v|$
(C) $|s - t|$
(D) $|s - v|$
(E) $|s + u|$

DEPTH OF THE WINDING RIVER
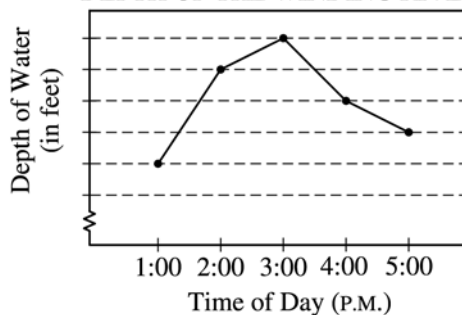
19. On the day of a rainstorm, the depth of the water at a certain location along the Winding River was recorded hourly, and the results are indicated in the line graph above. Each unit on the vertical axis represents 1 foot. If the depth of the water decreased 10 percent from 3:00 P.M. to 4:00 P.M., what was the depth of the water at 4:00 P.M.?

(A) 3 feet
(B) 15 feet
(C) 18 feet
(D) 20 feet
(E) 30 feet

20. For all numbers a and b, let $a \odot b$ be defined by $a \odot b = ab + a + b$. For all numbers x, y, and z, which of the following must be true?

 I. $x \odot y = y \odot x$
 II. $(x - 1) \odot (x + 1) = (x \odot x) - 1$
 III. $x \odot (y + z) = (x \odot y) + (x \odot z)$

(A) I only
(B) II only
(C) III only
(D) I and II only
(E) I, II, and III

S T O P
If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.

Correct Answers and Difficulty Levels

Critical Reading

Section 4					Section 7					Section 8				
COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.	COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.	COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.
1. E	1	13.	A	3	1. D	1	13.	C	3	1. B	1	11.	C	3
2. C	1	14.	B	4	2. D	1	14.	E	3	2. D	2	12.	B	3
3. A	4	15.	B	3	3. A	2	15.	C	3	3. E	3	13.	B	3
4. E	2	16.	D	1	4. C	5	16.	C	3	4. D	3	14.	A	2
5. D	4	17.	C	3	5. B	5	17.	D	2	5. E	5	15.	E	3
6. E	4	18.	E	5	6. E	3	18.	D	2	6. D	5	16.	D	2
7. B	5	19.	A	3	7. B	1	19.	E	4	7. A	3	17.	C	4
8. A	5	20.	B	4	8. C	4	20.	E	5	8. C	3	18.	C	3
9. C	3	21.	A	4	9. A	5	21.	A	4	9. D	3	19.	E	3
10. C	2	22.	B	2	10. B	3	22.	D	3	10. D	3			
11. A	2	23.	D	3	11. B	5	23.	B	3					
12. E	1	24.	B	3	12. A	3	24.	E	3					

Number correct _____   Number correct _____   Number correct _____

Number incorrect _____   Number incorrect _____   Number incorrect _____

Math

Section 2

COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.
1. D	1	11.	E	3
2. B	1	12.	E	2
3. D	1	13.	E	3
4. C	1	14.	A	4
5. B	2	15.	A	4
6. A	2	16.	B	4
7. A	2	17.	B	5
8. C	3	18.	D	4
9. C	3	19.	C	5
10. D	2	20.	D	5

Number correct _____

Number incorrect _____

Section 6

Multiple-Choice Questions		Student-Produced Response Questions	
COR. ANS.	DIFF. LEV.	COR. ANS.	DIFF. LEV.
1. A	1	9. 12	1
2. C	1	10. 2	2
3. B	2	11. $120 < x < 125$	2
4. B	2	12. 2035	3
5. A	3	13. 5	3
6. E	5	14. 89	3
7. E	4	15. 13/2 or 6.5	4
8. A	4	16. 5/9, .555 or .556	4
		17. 700	5
		18. 120	4

Number correct _____   Number correct (9-18) _____

Number incorrect _____

Section 9

COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.
1. A	1	9.	C	3
2. B	1	10.	A	3
3. D	1	11.	D	3
4. C	1	12.	E	4
5. C	3	13.	B	4
6. A	2	14.	C	4
7. D	3	15.	C	5
8. E	3	16.	E	5

Number correct _____

Number incorrect _____

Writing

Section 5

COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.
1. D	1	10.	E	3	19.	E	3	28.	C	5
2. C	1	11.	C	3	20.	A	3	29.	B	5
3. A	1	12.	B	1	21.	C	3	30.	B	3
4. E	1	13.	E	3	22.	B	3	31.	E	3
5. C	1	14.	C	2	23.	B	3	32.	D	3
6. B	1	15.	C	2	24.	A	3	33.	A	3
7. E	2	16.	E	3	25.	C	4	34.	C	4
8. C	2	17.	C	3	26.	B	3	35.	E	3
9. A	2	18.	B	3	27.	B	4			

Number correct _____

Number incorrect _____

Section 10

COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.		COR. ANS.	DIFF. LEV.
1. C	1	6.	B	2	11.	A	3
2. C	1	7.	E	1	12.	C	4
3. A	1	8.	D	3	13.	E	5
4. C	2	9.	A	3	14.	E	5
5. B	1	10.	D	3			

Number correct _____

Number incorrect _____

NOTE: Difficulty levels are estimates of question difficulty for a reference group of college-bound seniors. Difficulty levels range from 1 (easiest) to 5 (hardest).

SAT Score Conversion Table

Raw Score	Critical Reading Scaled Score	Math Scaled Score	Writing Multiple-Choice Scaled Score*	Raw Score	Critical Reading Scaled Score	Math Scaled Score	Writing Multiple-Choice Scaled Score*
67	800			31	510	560	54
66	800			30	500	550	54
65	800			29	500	540	53
64	780			28	490	530	52
63	760			27	480	530	51
62	750			26	480	520	50
61	730			25	470	510	49
60	720			24	460	500	48
59	710			23	460	490	47
58	700			22	450	480	47
57	690			21	450	470	46
56	680			20	440	460	45
55	670			19	430	450	44
54	660	800		18	430	440	43
53	650	800		17	420	430	42
52	640	780		16	410	420	41
51	640	760		15	410	420	41
50	630	740		14	400	410	40
49	620	730	80	13	390	400	39
48	610	720	78	12	380	390	38
47	610	710	75	11	380	380	37
46	600	700	73	10	370	370	36
45	590	690	71	9	360	360	35
44	590	680	69	8	350	350	34
43	580	670	67	7	340	330	33
42	580	660	66	6	330	320	32
41	570	650	65	5	320	310	31
40	560	640	64	4	310	290	30
39	560	630	62	3	300	280	28
38	550	620	61	2	280	260	27
37	540	620	60	1	270	240	25
36	540	610	59	0	250	210	24
35	530	600	58	-1	230	200	22
34	530	590	57	-2	210	200	20
33	520	580	56	-3	200	200	20
32	510	570	55	and below			

This table is for use only with the test in this booklet.

*The writing multiple-choice score is reported on a 20-80 scale. Use the table on the following page for the writing composite scaled score.