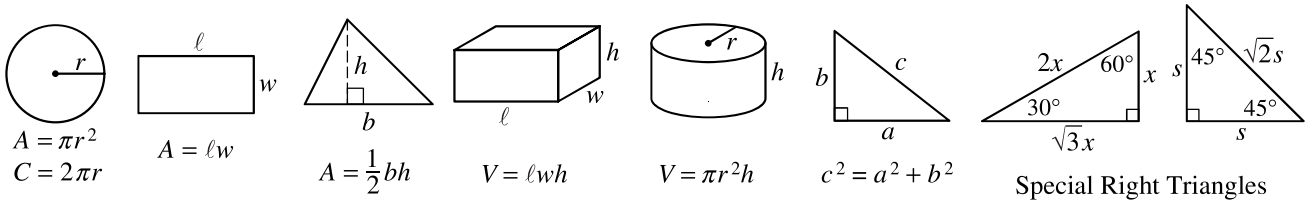
SECTION 2
Time — 30 minutes
25 Questions

Directions: In this section solve each problem, using any available space on the page for scratchwork. Then decide which is the best of the choices given and fill in the corresponding oval on the answer sheet.

Notes:

1. The use of a calculator is permitted. All numbers used are real numbers.
2. 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.

Reference Information



The number of degrees of arc in a circle is 360.
The measure in degrees of a straight angle is 180.
The sum of the measures in degrees of the angles of a triangle is 180.

1. If $2x + 4x + 6x = -24$, then $x =$

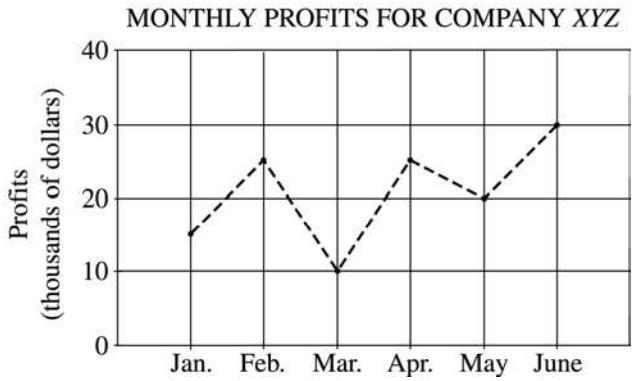
(A) -288

(B) -2

(C) $-\frac{1}{2}$

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

(E) 2



2. According to the chart above, Company *XYZ* experienced its largest increase in monthly profits between which two consecutive months?

(A) January and February
(B) February and March
(C) March and April
(D) April and May
(E) May and June

3. If $7^{10} = 7 \times 7^{n}$, what is the value of n ?

(A) 10
(B) 9
(C) 7
(D) 5
(E) 3

4. Each month, a telephone service charges a base rate of $10.00 and an additional $0.08 per call for the first 40 calls and $0.04 for every call after that. How much does the telephone service charge for a month in which 50 calls are made?

(A) $12.20
(B) $12.80
(C) $13.60
(D) $14.40
(E) $17.60

5. If 7.5 is x percent of 75, what is x percent of 10 ?

(A) 10
(B) 1
(C) 0.75
(D) 0.1
(E) 0.075

1 cup = 8 ounces
10 ounces = 60 teaspoons

6. Based on the information above, how many teaspoons are equivalent to $\frac{1}{4}$ cup?

(A) 12
(B) 10
(C) 8
(D) 6
(E) 4

E			0		3
F			0		2
G			0		0
H			0		1
	1	3	0	2	

7. Each square in the grid above is to be filled with either 1 or 0. Each number to the right of the grid is the sum of the numbers in the row to its left, and each number below the grid is the sum of the numbers in the column above it. For example, there is a 0 below the third column because the sum of the numbers in that column is 0. When the 0's and 1's are all entered correctly into the grid, what will row F be?

(A) F | 1 | 1 | 0 | 0 |

(B) F | 1 | 0 | 1 | 0 |

(C) F | 0 | 1 | 1 | 0 |

(D) F | 1 | 0 | 0 | 1 |

(E) F | 0 | 1 | 0 | 1 |

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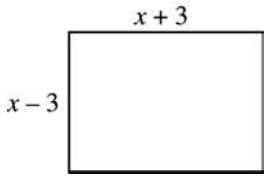


8. If the perimeter of the rectangle above is 72, what is the value of x?

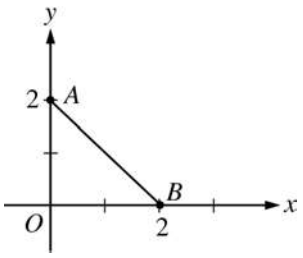
(A) 9
(B) 15
(C) 18
(D) 21
(E) 36

9. For which of the following lists of 7 numbers is the average (arithmetic mean) less than the median?

(A) 1, 2, 3, 8, 9, 10, 11
(B) 3, 4, 5, 8, 11, 12, 13
(C) 5, 5, 5, 8, 11, 11, 11
(D) 5, 6, 7, 8, 9, 10, 11
(E) 5, 6, 7, 8, 9, 10, 20

10. Wayne would like to buy a school jacket priced at \$81, but the price of the jacket is \$59 more than he has. In which of the following equations does x represent the number of dollars Wayne has?

(A) $x + 81 = 59$
(B) $x - 81 = 59$
(C) $x - 59 = -81$
(D) $x - 81 = -59$
(E) $x - 59 = 81$



11. In the figure above, line ℓ (not shown) is perpendicular to segment AB and bisects segment AB. Which of the following points lies on line ℓ?

(A) $(0, 2)$
(B) $(1, 3)$
(C) $(3, 1)$
(D) $(3, 3)$
(E) $(3, 6)$

12. If $(m - 1)(1 - k) = 0$, which of the following can be true?

I. $m = 1$
II. $k = 1$
III. $m = k$

(A) None
(B) I only
(C) II only
(D) I and II only
(E) I, II, and III

13. What is the radius of a circle whose circumference is π ?

(A) $\frac{1}{2}$
(B) 1
(C) 2
(D) π
(E) 2π

14. On a map, the length of the road from Town A to Town B is measured to be 12 inches. On this map, $\frac{3}{4}$ inch represents an actual distance of 8 miles. What is the actual distance, in miles, from Town A to Town B along this road?

(A) 128
(B) 102
(C) 96
(D) 90
(E) 72

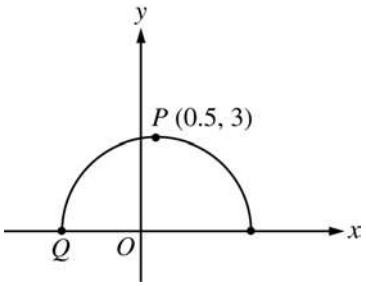
$$\begin{array}{r} R\ 2\ R \\ +\ 6\ T\ 9 \\ \hline T\ R\ 0 \end{array}$$

15. In the addition of two 3-digit numbers above, R and T represent two different digits and the units digit of the answer is zero. What digit does T represent?

(A) 1
(B) 6
(C) 7
(D) 8
(E) 9

16. How many of the prime factors of 30 are greater than 2 ?

(A) One
(B) Two
(C) Three
(D) Four
(E) Five



17. Point P is the point with the greatest y-coordinate on the semicircle shown above. What is the x-coordinate of point Q ?

(A) −3.5
(B) −3
(C) −2.5
(D) −2
(E) −1.5

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$a,\ 2a,\ b$

18. If the average (arithmetic mean) of the 3 numbers above is $2a$, what is b in terms of a ?

(A) a

(B) $\frac{3}{2}a$

(C) $2a$

(D) $\frac{5}{2}a$

(E) $3a$

19. The ratio of a to b is 2 to 3, where a and b are positive. If x equals a increased by 50 percent of a and y equals b decreased by 50 percent of b, what is the value of $\frac{x}{y}$?

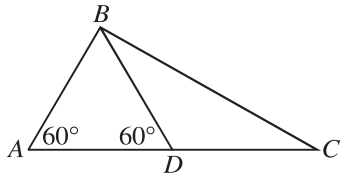
(A) $\frac{1}{3}$

(B) $\frac{2}{3}$

(C) 1

(D) $\frac{3}{2}$

(E) 2



20. In $\triangle ABC$ above, the length of AB is 3, and D is the midpoint of AC. What is the length of BC ?

(A) $3\sqrt{3}$ (approximately 5.20)

(B) $4\sqrt{2}$ (approximately 5.66)

(C) $4\sqrt{3}$ (approximately 6.93)

(D) $6\sqrt{2}$ (approximately 8.49)

(E) $5\sqrt{3}$ (approximately 8.66)

21. A garden has r parallel rows of plants, with 5 plants in each row. If x plants are added to each row, how many plants will then be in the garden, in terms of r and x ?

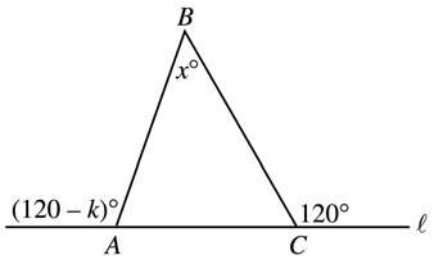
(A) $5rx$

(B) $5r + x$

(C) $5r + rx$

(D) $5r + 5x$

(E) $r + 5 + x$



Note: Figure not drawn to scale.

22. In the figure above, side AC of $\triangle ABC$ is on line ℓ. What is x in terms of k?

(A) $60 - k$
(B) k
(C) $60 + k$
(D) $120 - k$
(E) $120 - 2k$

23. Three lines are drawn in a plane so that there are exactly three different intersection points. Into how many nonoverlapping regions do these lines divide the plane?

(A) Three
(B) Four
(C) Five
(D) Six
(E) Seven

24. For all values of y, let $y \star$ be defined by $y \star = y^2 - 1$. Which of the following is equal to $(y \star) \star$?

(A) $y^4 - 1$
(B) $y^4 - y^2 - 1$
(C) $y^4 + y^2 - 1$
(D) $y^4 - 2y^2$
(E) $y^4 - 2y^2 + 1$

25. A club is buying boxes of candy bars to sell for a fund-raiser. If each box contains c candy bars, and each member sells x bars each day, how many boxes are needed to supply enough candy bars for $3c$ members to sell for 5 days?

(A) $15c^2x$
(B) $\frac{x}{15}$
(C) $\frac{3x}{5}$
(D) $\frac{15c^2}{x}$
(E) $15x$

STOP

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.