SECTION 5

Time — 25 minutes
20 Questions

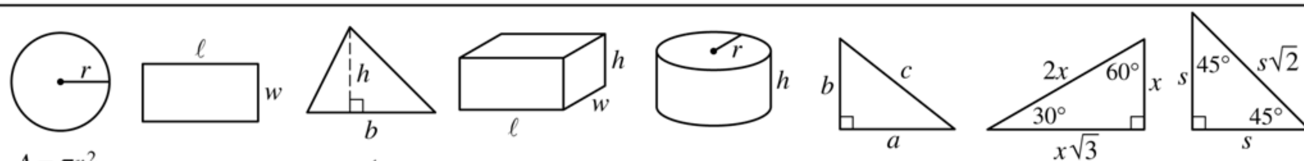
Turn to Section 5 (page 5) of your answer sheet to answer the questions in this section.

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



$A = \pi r^2$ $\quad C = 2\pi r$ $\quad A = \ell w$ $\quad A = \frac{1}{2}bh$ $\quad V = \ell wh$ $\quad V = \pi r^2 h$ $\quad c^2 = a^2 + b^2$ $\quad$ 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.

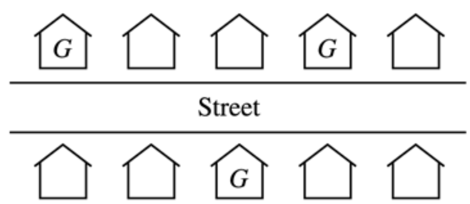
1. Each of the following is a factor of 80 EXCEPT

(A) 5
(B) 8
(C) 12
(D) 16
(E) 40

$$k = 3wx$$
$$m = (w - 1)k$$

2. If k and m are defined by the equations above, what is the value of m when $w = 4$ and $x = 1$?

(A) 0
(B) 3
(C) 12
(D) 24
(E) 36



3. There are five houses on each side of a street, as shown in the figure above. No two houses next to each other on the same side of the street and no two houses directly across from each other on opposite sides of the street can be painted the same color. If the houses labeled G are painted gray, how many of the seven remaining houses cannot be painted gray?

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

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4. If $7^n \quad 7^3 = 7^{12}$, what is the value of n ?

(A) 2
(B) 4
(C) 9
(D) 15
(E) 36

PRICES

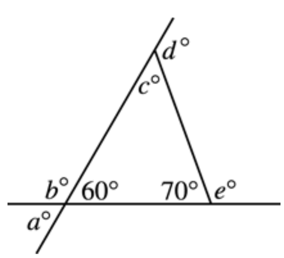
	Table	Chair
1990	\$240	\$25
1995	\$265	\$30
2000	\$280	\$36

INVENTORY CAPACITY

	Warehouse		
	X	*Y*	*Z*
Tables	30	80	30
Chairs	125	200	140

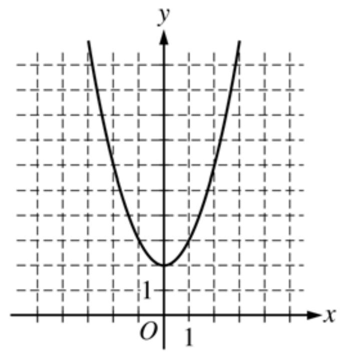
5. A furniture company makes one style of tables and chairs. The chart on the left above gives the prices of these tables and chairs in three different years. The chart on the right gives the maximum number of tables and chairs that can be stocked in each of three warehouses, X, Y, and Z. Based on the prices shown, what was the maximum possible value of the table and chair inventory in warehouse Y in 1995 ?

(A) \$23,950
(B) \$26,500
(C) \$27,200
(D) \$28,400
(E) \$29,500



6. In the figure above, which of the following is greatest?

(A) a
(B) b
(C) c
(D) d
(E) e



7. Which of the following could be the equation of the graph above?

(A) $y = x^2 + 2$
(B) $y = (x + 2)^2$
(C) $y = x^2 - 2$
(D) $y = (x - 2)^2$
(E) $y = 2x^2$

8. What is the total number of right angles formed by the edges of a cube?

(A) 36
(B) 24
(C) 20
(D) 16
(E) 12

9. If $(p + 1)(t - 3) = 0$ and p is positive, what is the value of t ?

(A) -3
(B) -1
(C) 0
(D) 1
(E) 3

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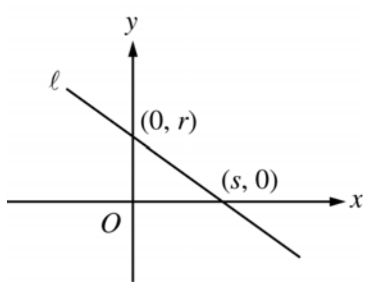
(x, y)
$(0, 100)$
$(1, 99)$
$(2, 96)$

10. Which of the following equations describes y in terms of x for all ordered pairs in the table above?

(A) $y = 100 - x^2$
(B) $y = 100 - x$
(C) $y = 100 - 2x$
(D) $y = 100 - 4x$
(E) $y = 100 - 100x$

11. A stamp collecting club calculated that the average (arithmetic mean) number of stamps in its members' 10 collections was 88. However, it was discovered that 2 numbers in the calculations were entered incorrectly. The number 55 was entered as 75 and the number 78 as 88. What is the correct average number of stamps in the 10 collections?

(A) 91
(B) 89
(C) 87
(D) 86
(E) 85



12. In the figure above, what is the slope of line ℓ ?

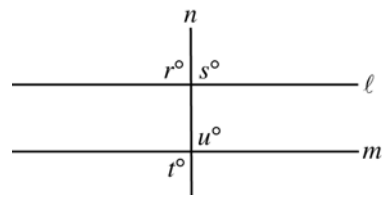
(A) $-\frac{r}{s}$

(B) $\frac{r}{s}$

(C) $-\frac{s}{r}$

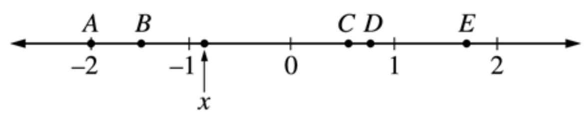
(D) $\frac{s}{r}$

(E) $-\frac{1}{rs}$



13. In the figure above, if $\ell \parallel m$ and $r = 91$, then $t + u =$

(A) 178
(B) 179
(C) 180
(D) 181
(E) 182



14. If x is the coordinate of the indicated point on the number line above, which of the lettered points has coordinate $-2x$?

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

15. Points X and Y are two different points on a circle. Point M is located so that line segment $\overline{XM}$ and line segment $\overline{YM}$ have equal length. Which of the following could be true?

I. M is the center of the circle.
II. M is on arc $\overset{\frown}{XY}$.
III. M is outside of the circle.

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

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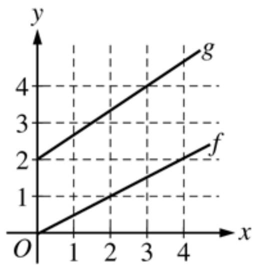

16. The graphs of the functions f and g are lines, as shown above. What is the value of $f(3) + g(3)$?

(A) 1.5
(B) 2
(C) 3
(D) 4
(E) 5.5

17. If A is the set of prime numbers and B is the set of two-digit positive integers whose units digit is 5, how many numbers are common to both sets?

(A) None
(B) One
(C) Two
(D) Five
(E) Nine

18. If 75 percent of m is equal to k percent of 25, where $k > 0$, what is the value of $\frac{m}{k}$?

(A) $\frac{3}{16}$
(B) $\frac{1}{3}$
(C) $\frac{3}{4}$
(D) 3
(E) $\frac{16}{3}$

19. R is the midpoint of line segment $\overline{PT}$, and Q is the midpoint of line segment $\overline{PR}$. If S is a point between R and T such that the length of segment $\overline{QS}$ is 10 and the length of segment $\overline{PS}$ is 19, what is the length of segment $\overline{ST}$?

(A) 13
(B) 14
(C) 15
(D) 16
(E) 17

20. A telephone company charges x cents for the first minute of a call and charges for any additional time at the rate of y cents per minute. If a certain call costs $5.55 and lasts more than 1 minute, which of the following expressions represents the length of that call, in minutes?

(A) $\frac{555 - x}{y}$
(B) $\frac{555 + x - y}{y}$
(C) $\frac{555 - x + y}{y}$
(D) $\frac{555 - x - y}{y}$
(E) $\frac{555}{x + y}$

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.