Time-25 Minutes 20 Questions

Directions: For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding oval on the answer sheet. You may use any available space for scratchwork.

1. Calculator use is permitted.
2. All numbers used are real numbers.
$\frac{3}{6}$ 3. Figures are provided for some problems. All figures are drawn to scale and lie in a plane UNLESS otherwise indicated.
3. 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.


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

1 If line $l$ has a slope of 5 and passes through the point $(4,-2)$, then what is the $y$-intercept of line $l$ ?
(A) -30
(B) -22
(C) -7
(D) -2
(E) 3
$4,20,100, d, 2500,12500, \ldots$
2 In the sequence above, what is the value of $d$ ?
(A) 500
(B) 1000
(C) 1080
(D) 1100
(E) 1500
$3\left(2 \times 10^{4}\right)+\left(5 \times 10^{3}\right)+\left(6 \times 10^{2}\right)+\left(4 \times 10^{1}\right)=$
(A) 2,564
(B) 20,564
(C) 25,064
(D) 25,604
(E) 25,640

5 If $2^{\mathrm{x}+1}=16$, what is the value of $x$ ?
(A) 2
(B) 3
(C) 4
(D) 5
(E) 6


4 On the number line shown above, the length of $Y Z$ is how much greater than the length of $X Y$ ?
(A) 3
(B) 4
(C) 5
(D) 6
(E) 7


Note: Figure not drawn to scale.

6 In the figure above, what is the value of $a$ ?
(A) 50
(B) 55
(C) 60
(D) 65
(E) 70

7 If $x-1$ is a multiple of 3 , which of the following must be the next greater multiple of 3 ?
(A) $x$
(B) $x+2$
(C) $x+3$
(D) $3 x$
(E) $3 x-3$

9 If 40 percent of $r$ is equal to $s$, then which of the following is equal to 10 percent of $r$ ?
(A) $4 s$
(B) $2 s$
(C) $\frac{s}{2}$
(D) $\frac{s}{4}$
(E) $\frac{s}{8}$

8 The average of 20,70 , and $x$ is 40 . If the average of 20 , $70, x$, and $y$ is 50 , then what is the value of $y$ ?
(A) 100
(B) 80
(C) 70
(D) 60
(E) 30

10 If a prifact number is a nonprime integer such that each factor of the integer other than 1 and the integer itself is a prime number, which of the following is a prifact number?
(A) 12
(B) 18
(C) 21
(D) 24
(E) 28


11 The figure above shows the graph of $w(x)$. Which of the following shows the graph of $w(x-3)$ ?
(A)

(B)

(C)

(D)


12 If $3 x+y=14$, and $x$ and $y$ are positive integers, each of the following could be the value of $x+y$ EXCEPT
(A) 12
(B) 10
(C) 8
(D) 6
(E) 4

13 If $\frac{q+7}{4}+\frac{2 q}{7}=5+\frac{q-7}{2}$, then what is the value of $q$ ?
(A) -14
(B) -7
(C) 0
(D) 4
(E) 7
15. If $d$ is an integer, which of the following CANNOT be an integer?
(A) $\frac{d}{2}$
(B) $\frac{\sqrt{d}}{2}$
(C) $2 d$
(D) $d \sqrt{2}$
(E) $d+2$

14 A certain deck of cards contains $r$ cards. After the cards are distributed evenly among $s$ people, 8 cards are left over. In terms of $r$ and $s$, how many cards did each person receive?
(A) $\frac{s}{8-r}$
(B) $\frac{r-s}{8}$
(C) $\frac{r-8}{s}$
(D) $s-8 r$
(E) $r s-8$


16 In the figure above, the area of $\triangle A B C$ is 6 . If $B C=C D$. what is the area of $\triangle A C D$ ?
(A) 6
(B) 8
(C) 9
(D) 10
(E) 12

## Section 3

17 The ratio of $x$ to $y$ to $z$ is 3 to 6 to 8 . If $y=24$, what is the value of $x+z$ ?
(A) 11
(B) 33
(C) 44
(D) 66
(E) 88

18 If $x+y=11, y+z=14$, and $x+z=13$, what is the value of $x+y+z$ ?
(A) 16
(B) 17
(C) 18
(D) 19
(E) 20

19 If $r<0$ and $(4 r-4)^{2}=36$, what is the value of $r$ ?
(A)
(B) -1
(C) $-\frac{1}{2}$
(D $\frac{1}{4}$
(E)

20 If a cube has a surface area of $36 n^{2}$ square feet, what is its volume in cubic feet, in terms of $n$ ?
(A) $n^{3} \sqrt{6}$
(B) $6 n^{3} \sqrt{6}$
(C) $36 n^{3}$
(D) $36 n^{3} \sqrt{6}$
(E) $216 n^{3}$

