

17. In right triangle ABC above, $\overline{EF} \parallel \overline{AC}$, and F is the midpoint of \overline{BC} . What is the area of the shaded rectangular region?

- (A) 25
- (B) $25\sqrt{2}$
- (C) 50
- (D) $50\sqrt{2}$
- (E) 100

x	-1	0	1
$f(x)$	$\frac{1}{8}$	$\frac{1}{2}$	2

18. The table above shows some values for the function f .

If $f(x) = ka^x$ for some constants k and a , what is the value of a ?

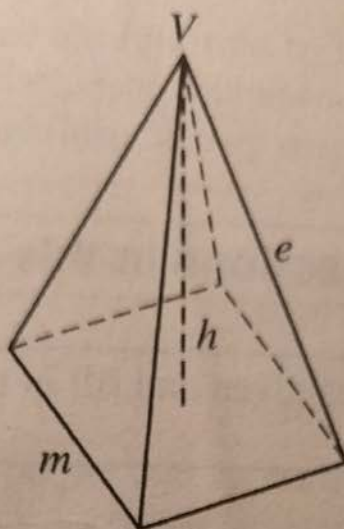
(A) $\frac{1}{2}$

(B) $\frac{1}{4}$

(C) 2

(D) 4

(E) 16



Note: Figure not drawn to scale.

19. The pyramid shown above has altitude h and a square base of side m . The four edges that meet at V , the vertex of the pyramid, each have length e . If $e = m$, what is the value of h in terms of m ?

(A) $\frac{m}{\sqrt{2}}$

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

(C) m

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

(E) $m\sqrt{2}$

20. A salesperson's commission is k percent of the selling price of a car. Which of the following represents the commission, in dollars, on 2 cars that sold for \$14,000 each?

(A) $280k$

(B) $7,000k$

(C) $28,000k$

(D) $\frac{14,000}{100 + 2k}$

(E) $\frac{28,000 + k}{100}$

14. Each term of a certain sequence is greater than the term before it. The difference between any two consecutive terms in the sequence is always the same number. If the third and sixth terms of the sequence are 17 and 77, respectively, what is the eighth term?

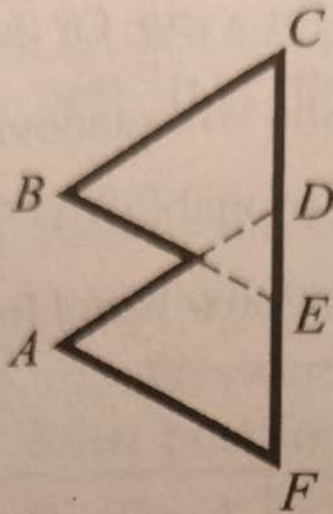
16. A four-digit integer, $WXYZ$, in which W , X , Y , and Z each represent a different digit, is formed according to the following rules.

1. $X = W + Y + Z$

2. $W = Y + 1$

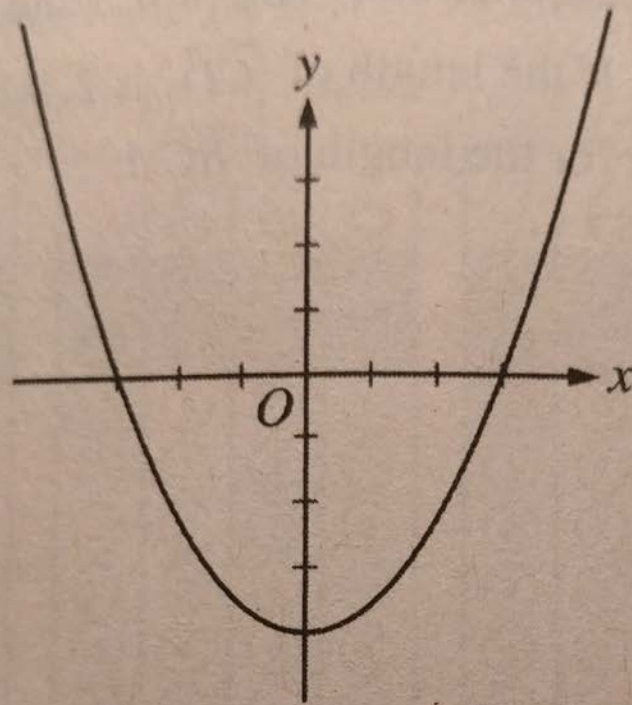
3. $Z = W - 5$

What is the four-digit integer?

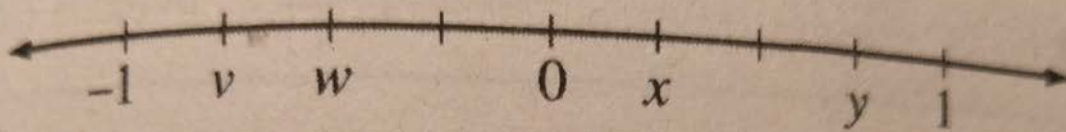


Note: Figure not drawn to scale.

17. The flag shown above is made of overlapping equilateral triangles ADF and BCE . Because ribbon is to be sewn around the entire outer edge, it is necessary to know the perimeter of the flag. If \overline{CD} , \overline{DE} , and \overline{EF} each have length 10 inches, what is the length, in inches, of the perimeter shown in bold?



18. The graph above shows the function g , where $g(x) = k(x + 3)(x - 3)$ for some constant k . If $g(a - 1.2) = 0$ and $a > 0$, what is the value of a ?



12. The letters v , w , x , and y represent numbers as shown on the number line above. Which of the following expressions has the least value?

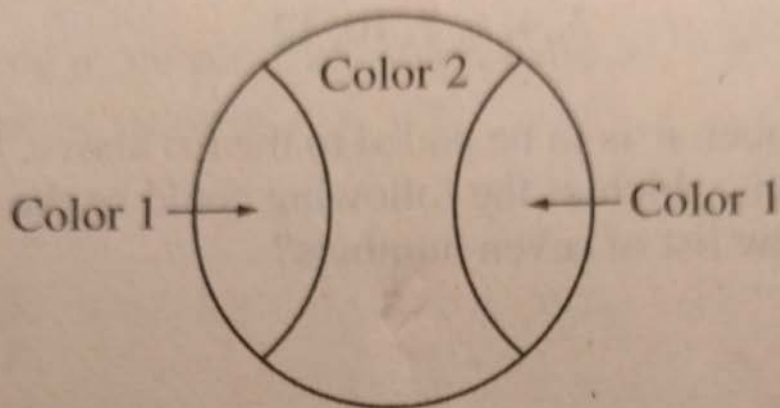
(A) $v + y$

(B) $v + x$

(C) $w + x$

(D) $v - w$

(E) $y - x$



14. As shown above, a certain design is to be painted using 2 different colors. If 5 different colors are available for the design, how many differently painted designs are possible?

- (A) 10
- (B) 20
- (C) 25
- (D) 60
- (E) 120

15. If the length of a rectangle is increased by 30% and the width of the same rectangle is decreased by 30%, what is the effect on the area of the rectangle?

- (A) It is increased by 60%.
- (B) It is increased by 30%.
- (C) It is unchanged.
- (D) It is decreased by 15%.
- (E) It is decreased by 9%.

$$n(t) = \frac{t^2}{2} - 20t + k$$

16. There was a 100-day period when the number of bees in a certain hive could be modeled by the function n above. In the function, k is a constant and $n(t)$ represents the number of bees on day number t for $0 \leq t \leq 99$. On what number day was the number of bees in the hive the same as it was on day number 10?

- (A) 20
- (B) 30
- (C) 40
- (D) 50
- (E) 60