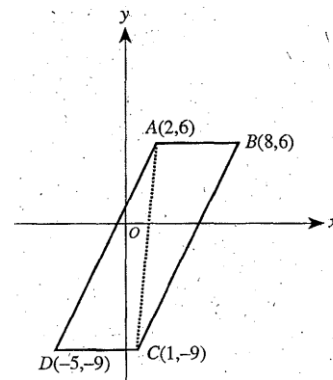
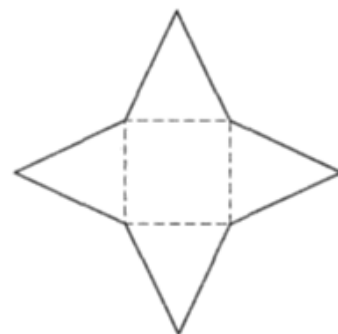


- In xy -coordinate plane, line l is perpendicular to the y -axis and passes through the point $(5, -3)$. Which of the following is an equation of line l ?
a. $x = 0$ b. $x = 5$ c. $y = -3$ d. $y + 3 = x + 5$ e. $y - 3 = x + 5$
- The total daily profit p , in dollars, from producing and selling x units of a certain products is given by function $p(x) = 17x - (10x + b)$, where b is a constant. If 300 units were produced and sold yesterday for a total profit of \$ 1900, what is the value of b ?
a. -200 b. -100 c. 0 d. 100 e. 200
- The area of the square in the figure is 81 and the perimeter of the each of the 4 triangles is 30, what is the perimeter of the figure outlined by the solid line?
a. 36 b. 72 c. 80 d. 84 e. 120
- The number that results when an integer is multiplied by itself cannot end in which of the following digits?
a. 1 b. 4 c. 5 d. 6 e. 8
- A bag contains only red marbles, blue marbles and yellow marbles. The probability of randomly selecting a red marble from the bag is $\frac{1}{4}$, the probability of randomly selecting a blue marble is $\frac{1}{6}$. Which of the following could be the total number of marbles in the bag?
a. 10 b. 12 c. 18 d. 20 e. 30
- When the sum of a list of prices is divided by the arithmetic mean of the prices, the result is k . What does k represent?
a. The sum of the prices
b. Half of the sum of the prices
c. The average of the prices
d. The number of prices
e. Half of the number of prices
- Given the vertices of parallelogram $ABCD$ in the standard (x, y) coordinate plane. What is the area of $\triangle ABC$ in square units?
a. 10.5 b. 21.0 c. 42.0 d. 45.0 e. 90.0
- Marlo has a basketball court that measures 30 feet by 50 feet. She needs a grass strip around it. How wide must the strip be, in feet, to provide 900 square feet of grass?
a. 3 b. 4 c. 5 d. 6 e. 7
- Two hikers leave the same point and travel to right angles of each other. After 2 hours, they are 10 miles apart. If one walks 1 mile per hour faster than the other, what is the speed of the slower hiker, in miles per hour?
a. 2 b. 3 c. 4 d. 5 e. 6
- Macey is 3 times as old as Mike. In 8 years, she will be twice as old as Mike. How old was Macey 3 years ago?
a. 5 b. 8 c. 21 d. 24 e. 3
- In the standard (x, y) coordinate plane, what is the slope of a line that passes through the points $(-2, 3)$ and $(3, -2)$?
a. -2 b. -1 c. 0 d. 1 e. 2
- Three angles of a pentagon are 130° , 90° and 80° . Of the remaining two angles, one is 30° more than twice the other. What is the sum of the smallest two angles?
a. 140 b. 150 c. 160 d. 170 e. 180
- Which of the following could be the remainders when 4 consecutive positive integers are each divided by 3?
a. 1, 2, 3, 1 b. 1, 2, 3, 4 c. 0, 1, 2, 3 d. 0, 1, 2, 0 e. 0, 2, 3, 0
- If k is a positive integer, what is the least value of k for which $\sqrt{\frac{5k}{3}}$ is an integer?
a. 3 b. 15 c. 25 d. 5 e. 60
- How many integers greater than 20 and less than 30 are each the product of two different numbers, both of which are prime?
a. zero b. one c. two d. three e. four



16. If k is a positive integer, which of the following must represent an even integer that is twice the value of an odd integer?
a. $2k$ b. $2k + 3$ c. $2k + 4$ d. $4k + 1$ e. $4k + 2$
17. The rate for a telephone call between City A and City B is 50 cents for the first minute and 30 cents for each additional minute or portion thereof. Which of the following functions describes the cost, in dollars, of a phone call between these two cities that lasts for n minutes, if n is a positive integer?
a. $f(n) = 0.80n$
b. $f(n) = 0.50 + 0.30n$
c. $f(n) = 0.50 + 0.30(n + 1)$
d. $f(n) = 0.50 + 0.30(n - 1)$
e. $f(n) = 0.50n + 0.30(n - 1)$
18. To celebrate a colleague's graduation, the m coworkers in an office agreed to contribute equally to a catered lunch that cost a total of y dollars. If p of the coworkers fail to contribute, which of the following represents the additional amount, in dollars, that each of the remaining coworkers must contribute to pay for the lunch?
a. $\frac{y}{m}$ b. $\frac{y}{m-p}$ c. $\frac{py}{m-p}$ d. $\frac{y(m-p)}{m}$ e. $\frac{py}{m(m-p)}$
19. How many times does the equation $y = x^4 - x^5$ intersect the x -axis?
a. 1 b. 2 c. 3 d. 4 e. 5
20. The current in a river is 4 miles per hour. A boat can travel 20 miles per hour in still water. How many miles up the river can the boat travel if the round trip is take 10 hours?
a. 88 b. 96 c. 100 d. 112 e. 124
21. In the standard (x, y) coordinate plane, if a line passes through the points $(6, 4)$ and $(-2, -4)$ what is the y -intercept?
a. 1 b. 0 c. -1 d. -2 e. -3
22. A total of k passengers went on a bus trip. Each of the n buses that were used to transport the passengers could seat a maximum of x passengers. If one bus had 3 empty seats and remaining buses were filled, which of the following expresses the relationship among n , x and k ?
a. $nx - 3 = k$ b. $nx + 3 = k$ c. $n + x + 3 = k$ d. $nk = x + 3$ e. $nk = x - 3$
23. For how many ordered pairs of positive integers $(x; y)$ is $2x + 3y < 6$?
a. One b. Two c. Three d. Five e. Seven
24. If x and y are positive consecutive odd integers, where $y > x$, which of the following is equal to $y^2 - x^2$?
a. $2x$ b. $4x$ c. $2x + 2$ d. $2x + 4$ e. $4x + 4$
25. If the average of x and y is k , which of the following is the average of x , y and z ?
a. $\frac{2k+z}{3}$ b. $\frac{2k+z}{2}$ c. $\frac{k+z}{3}$ d. $\frac{k+z}{2}$ e. $\frac{2(k+z)}{3}$
26. A regulation for riding a certain amusement park ride requires that a child be between 30 inches and 50 inches tall. Which of the following inequalities can be used to determine whether or not a child's height h satisfied the regulation for this ride?
a. $|h - 10| < 50$ b. $|h - 20| < 40$ c. $|h - 30| < 20$ d. $|h - 40| < 10$ e. $|h - 45| < 5$
27. Machine A can do a job alone in 10 hours. Machine B can do the same job alone in 12 hours. Machine A is turned on at 6 a.m. Machine B is turned on at 9 a.m. Machine A breaks down at 10 a.m. and machine B must finish the job alone. When will machine B finish?
14:30 b. 15:42 c. 16:12 d. 16:40
28. $\vec{u}$ has initial point $(-2; 2)$ and terminal point $(2, 5)$. $\vec{v}$ has initial point $(1, 5)$ and terminal point $(-2, 4)$. What is $\vec{u} - \vec{v}$?
a. $(4, 3)$ b. $(7, 2)$ c. $(2, 6)$ d. $(-1, 3)$ e. $(7, 4)$
29. The force required to stretch a spring beyond its natural length is proportional to how far the spring is being stretched. If a force of 15 pounds stretches a spring 8 centimeters beyond its natural length, what force, in pounds, is needed to stretch this spring 20 centimeters beyond its natural length?
a. 23 b. 27 c. 30.5 d. 35 e. 37.5
30. If t represents an odd integer, which of the following expressions represents an even integer?
a. $t + 2$ b. $2t - 1$ c. $3t - 2$ d. $3t + 2$ e. $5t + 1$