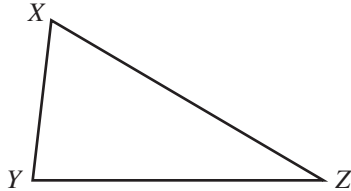**15.** What polynomial must be added to $x^2 - 2x + 6$ so that the sum is $3x^2 + 7x$?

A. $4x^2 + 5x + 6$
B. $3x^2 + 9x + 6$
C. $3x^2 + 9x - 6$
D. $2x^2 + 9x - 6$
E. $2x^2 - 5x + 6$

16. What is the slope of any line parallel to the line $8x + 9y = 3$ in the standard (x,y) coordinate plane?

F. -8

G. $-\dfrac{8}{9}$

H. $\dfrac{8}{3}$

J. 3

K. 8

17. In the standard (x,y) coordinate plane, a line segment has its endpoints at $(3,6)$ and $(9,4)$. What are the coordinates of the midpoint of the line segment?

A. $(\ 3,-1)$
B. $(\ 3,\ 1)$
C. $(\ 6,\ 2)$
D. $(\ 6,\ 5)$
E. $(12,10)$

18. When $y = x^2$, which of the following expressions is equivalent to $-y$?

F. $(-x)^2$
G. $-x^2$
H. $-x$
J. x^{-2}
K. x

19. For the function $h(x) = 4x^2 - 5x$, what is the value of $h(-3)$?

A. -93
B. -9
C. 21
D. 51
E. 159

20. For all triangles $\triangle XYZ$ where side $\overline{XZ}$ is longer than side $\overline{YZ}$, such as the triangle shown below, which of the following statements is true?

F. The measure of $\angle X$ is always less than the measure of $\angle Y$.
G. The measure of $\angle X$ is always equal to the measure of $\angle Y$.
H. The measure of $\angle X$ is always greater than the measure of $\angle Y$.
J. The measure of $\angle X$ is sometimes less than the measure of $\angle Y$ and sometimes equal to the measure of $\angle Y$.
K. The measure of $\angle X$ is sometimes greater than the measure of $\angle Y$ and sometimes equal to the measure of $\angle Y$.

21. $|7(-3) + 2(4)| = $?

A. -28
B. -13
C. 13
D. 28
E. 29

22. If $x > |y|$, which of the following is the solution statement for x when $y = -4$?

F. x is any real number.
G. $x > 4$
H. $x < 4$
J. $-4 < x < 4$
K. $x > 4$ or $x < -4$

23. The perimeter of a parallelogram is 72 inches, and 1 side measures 12 inches. What are the lengths, in inches, of the other 3 sides?

A. 12, 12, 36
B. 12, 18, 18
C. 12, 24, 24
D. 12, 30, 30
E. Cannot be determined from the given information

24. The lengths of the corresponding sides of 2 similar right triangles are in the ratio of 2:5. If the hypotenuse of the smaller triangle is 5 inches long, how many inches long is the hypotenuse of the larger triangle?

F. 2
G. 2.5
H. 7
J. 10
K. 12.5
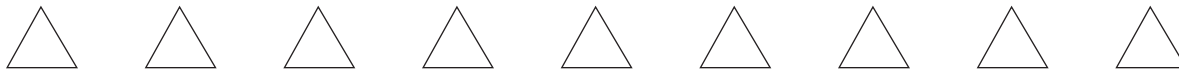
25. The sides of a square are 3 cm long. One vertex of the square is at (3,0) on a square coordinate grid marked in centimeter units. Which of the following points could also be a vertex of the square?

   A. (6, 0)

   B. $\left(4\frac{1}{2}, 1\frac{1}{2}\right)$

   C. (1, 2)

   D. (0, –2)

   E. (–3, 0)

26. In the circle shown below, M is the center and lies on $\overline{RU}$ and $\overline{ST}$. Which of the following statements is NOT true?
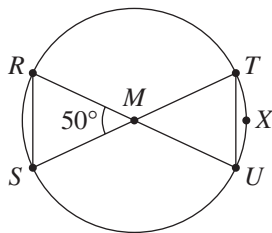
   F. $\angle TUM$ measures 65°

   G. $\overline{TU}$ is parallel to $\overline{RS}$

   H. $\overset{\frown}{TXU}$ measures 50°

   J. $\overline{RM} \cong \overline{TM}$

   K. $\overline{RS} \cong \overline{SM}$

27. John Jones has decided to go into the business of producing and selling boats. In order to begin this venture, he must invest $10 million in a boat production plant. The cost to produce each boat will be $7,000, and the selling price will be $20,000. Accounting for the cost of the production plant, which of the following expressions represents the profit, in dollars, that John will realize when x boats are produced and sold?

   A.   13,000x – 10,000,000

   B.   27,000x – 10,000,000

   C. 9,973,000x

   D.   20,000x

   E.   13,000x

28. If $2x^2 + 6x = 36$, what are the possible values of x ?

   F.   –12 and   3

   G.   –6 and   3

   H.   –3 and   6

   J.   –3 and 12

   K.   12 and 15

29. As a class experiment, a cart was rolled at a constant rate along a straight line. Shawn recorded in the chart below the cart's distance (x), in feet, from a reference point at the start of the experiment and for each of 5 times (t), in seconds.

t	0	1	2	3	4	5
x	10	14	18	22	26	30

Which of the following equations represents this data?

   A. $x = $ $t + 10$

   B. $x = $ $4t + $ 6

   C. $x = $ $4t + 10$

   D. $x = 10t + $ 4

   E. $x = 14t$

30. To increase the mean of 4 numbers by 2, by how much would the sum of the 4 numbers have to increase?

   F.   2

   G.   4

   H.   6

   J.   8

   K. 16

31. Meg pounded a stake into the ground. When she attached a leash to both the stake and her dog's collar, the dog could reach 9 feet from the stake in any direction. Using 3.14 for π, what is the approximate area of the lawn, in square feet, the dog could reach from the stake?

   A.   28

   B.   57

   C. 113

   D. 254

   E. 283

32. Television screen sizes are the diagonal length of the rectangular screen. Hector recently changed from watching a television with a 13-inch screen to a television with a similar 19-inch screen. If a boxcar appeared 8 inches long on the 13-inch screen, how long, to the nearest inch, will it appear on the 19-inch screen?

   F. 10

   G. 12

   H. 14

   J. 16

   K. 18