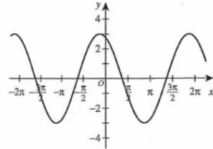


16. Given  $4x + 2 = -10$ , then  $|5 - x^2| = ?$

- E. 1
- G. 4
- H. 9
- J. 11
- K. 14

17. The graph of  $y = 3 \sin(x + 2)$  is shown in the standard  $(x, y)$  coordinate plane below. What is the maximum value of this function?



- A. 2
- B. 3
- C. 6
- D.  $\pi$
- E.  $2\pi$

18. Renata took 9 quizzes in German class. Her scores, in order, were 6, 7, 7, 6, 8, 7, 8, 10, and 9. She discovered a scoring error on the 9th quiz, and her score on that quiz was corrected to 10. Which of the following measures of central tendency changed as a result of the correction?

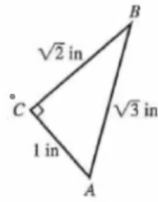
- I. Mean
  - II. Median
  - III. Mode
- F. I only
  - G. II only
  - H. I and II only
  - J. II and III only
  - K. I, II, and III

19. Which of the following equations is that of a line parallel to the line with equation  $y = \frac{2}{3}x + 4$  in the standard  $(x, y)$  coordinate plane?

- A.  $y = -\frac{3}{2}x + 4$
- B.  $y = -\frac{3}{2}x + 7$
- C.  $y = -\frac{2}{3}x + 4$
- D.  $y = \frac{3}{2}x + 4$
- E.  $y = \frac{2}{3}x + 7$

20. For  $\triangle ABC$  shown below, what is the value of  $\tan B$ ?

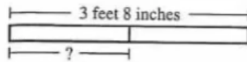
- F.  $\sqrt{2}$
- G.  $\sqrt{3}$
- H.  $\frac{1}{\sqrt{2}}$
- J.  $\frac{\sqrt{3}}{\sqrt{2}}$
- K.  $\frac{1}{\sqrt{3}}$



21. Given the true statement "If I live in Chicago, then I live in Illinois," which of the following statements *must* be true?

- A. I live in Illinois.
- B. I live in Chicago.
- C. If I live in Illinois, then I live in Chicago.
- D. If I don't live in Chicago, then I don't live in Illinois.
- E. If I don't live in Illinois, then I don't live in Chicago.

22. Shown below, a board 3 feet 8 inches long is cut into 2 equal parts. What is the length, to the nearest inch, of each part?



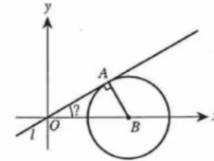
- F. 1 foot 5 inches
- G. 1 foot 8 inches
- H. 1 foot 9 inches
- J. 1 foot 10 inches
- K. 2 feet 5 inches

23. What is the minimum number of square floor tiles, each 9 inches on a side, that could be used to cover the floor of a rectangular hallway 15 feet long and 6 feet wide?

- A. 28
- B. 56
- C. 81
- D. 90
- E. 160

24. Graphed in the standard  $(x,y)$  coordinate plane below is line  $l$  and the circle with equation  $(x-2)^2 + y^2 = 1$ . Line  $l$  passes through  $O(0,0)$  and is tangent to the circle at  $A$ , and  $B$  is the center of the circle. What is the measure of  $\angle AOB$ ?

- F.  $15^\circ$
- G.  $22.5^\circ$
- H.  $30^\circ$
- J.  $45^\circ$
- K.  $60^\circ$



25. One square has a side whose length is  $x$  centimeters, and a second square has a side whose length is  $(x-2)$  centimeters. What expression below represents the sum of the areas of the 2 squares, in square centimeters?

- A.  $2x^2 - 2$
- B.  $x^2 - 4$
- C.  $2x^2 + 4x - 4$
- D.  $2x^2 + 4x + 4$
- E.  $2x^2 - 4x + 4$

Use the following information to answer questions 27–29.

Kojo has an Internet site where his classmates can sell items in online auctions. For each item, a student pays Kojo a listing fee, based on the item's starting price, and a selling fee calculated as a percent of the selling price, as shown in the tables below.

Starting price	Listing fee
\$ 0.01–\$ 4.99	\$0.25
\$ 5.00–\$19.99	\$0.50
\$20.00–\$49.99	\$1.00
\$50.00 and up	\$2.00

Selling price	Selling fee
\$ 0.01–\$49.99	5% of selling price
\$50.00 and up	3% of selling price

27. Lucie sold a jacket on Kojo's site. The starting price of the jacket was \$6.25, and its selling price was \$34.20. What is the sum of the listing fee and selling fee Lucie paid to sell the jacket?
- A. \$1.50
  - B. \$1.71
  - C. \$2.02
  - D. \$2.21
  - E. \$2.52

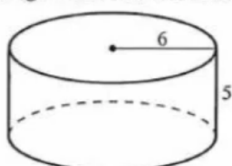
28. For the items his classmates listed on his site last Friday, Kojo was paid listing fees that totaled \$5.75. What is the maximum number of the items listed last Friday whose starting prices could have been in the range of \$5.00–\$19.99?
- F. 11
  - G. 12
  - H. 23
  - J. 39
  - K. 40

29. Erick sold 2 items on Kojo's site. The sum of the selling prices for the 2 items was \$116.00. The sum of the selling fees for the 2 items was \$4.34. The system of equations below can be used to obtain the selling price for each item. What was the total listing fee for the 2 items given that the starting price was equal to the selling price for each of the 2 items?

$$\begin{aligned} x + y &= 116.00 \\ 0.03x + 0.05y &= 4.34 \end{aligned}$$

- A. \$2.00
- B. \$2.25
- C. \$2.50
- D. \$3.00
- E. \$4.00

30. A formula for the volume,  $V$ , of a right circular cylinder is  $V = \pi r^2 h$ , where  $r$  is the radius and  $h$  is the height. The cylindrical tank shown below has radius 6 meters and height 5 meters and is filled with water.



Given that the weight of 1 cubic meter of water is approximately 2,205 pounds, the weight, in pounds, of the water in the tank is:

- E. less than 400,000.  
 G. between 400,000 and 900,000.  
 H. between 900,000 and 1,200,000.  
 J. between 1,200,000 and 1,700,000.  
 K. more than 1,700,000.
31. Admission to a carnival is \$4 for children and \$6 for adults. A group of 21 people pays \$90 for admission to the carnival. What is the ratio of the number of children to the number of adults in this group?
- A. 3:1  
 B. 4:1  
 C. 6:1  
 D. 9:1  
 E. 18:1

32. For all nonzero  $x$ ,  $y$ , and  $z$ , which of the following is

equal to  $\left(\frac{2x^3y^{-5}z^8}{8x^{-2}y^6z^3}\right)^{-2}$ ?

F.  $\frac{16x^{10}y^{22}}{z^{10}}$

G.  $\frac{16y^{22}z^{10}}{x^{10}}$

H.  $\frac{x^{10}y^{22}}{16z^{10}}$

J.  $\frac{x^{10}z^{10}}{16y^{22}}$

K.  $\frac{16y^{22}}{x^{10}z^{10}}$