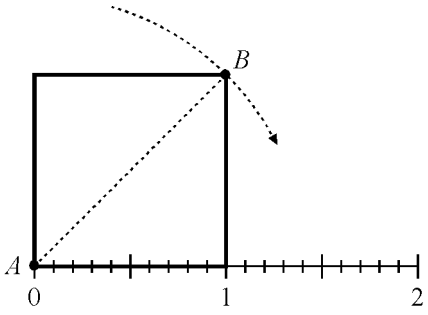
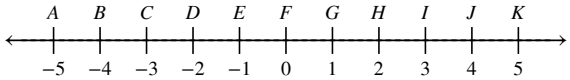
1. Imagine a square drawn on a number line, as shown in the figure. The side of the square is 1. Now imagine the points of a compass positioned at A and B, which are opposite corners of the square. If the compass is rotated about point A, where will its arc cross the number line? (Round answer to the nearest tenth.)



A. 1.3 B. 1.4 C. 1.5 D. 1.6

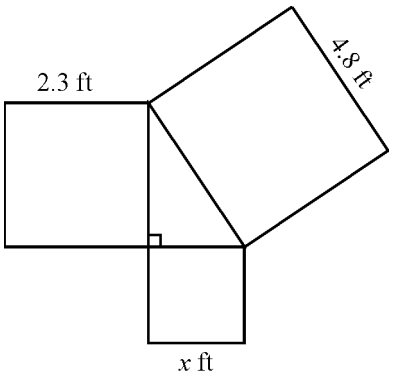
2. $\sqrt{20}$ is located between which of the letters on the number line?



A. B and C B. C and D

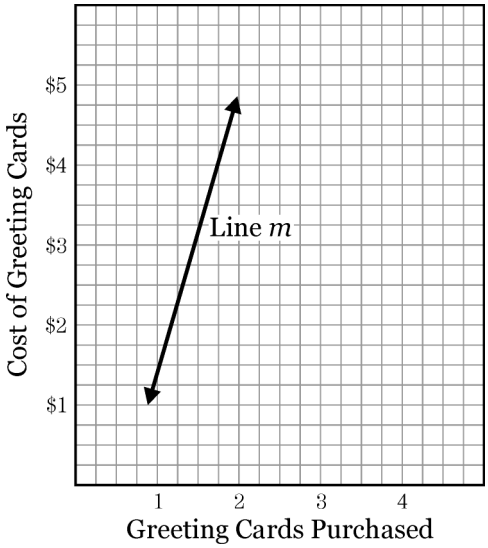
C. I and J D. J and K

3. Use the known lengths of the squares that form the right triangle to find the length x of the third square.



A. 4.2 ft B. 5.3 ft C. 5.9 ft D. 6.2 ft

4. Interpret the slope of line m if the slope is $\frac{5}{2}$.



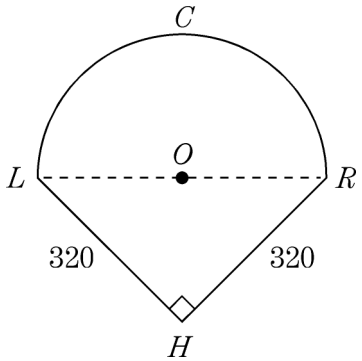
A. For every \$2 spent, you will receive 5 greeting cards.

B. For every \$1 spent, you will receive 1.25 greeting cards.

C. For each additional greeting card you purchase, you will spend \$0.40.

D. For every \$5 spent, you will receive 2 greeting cards.

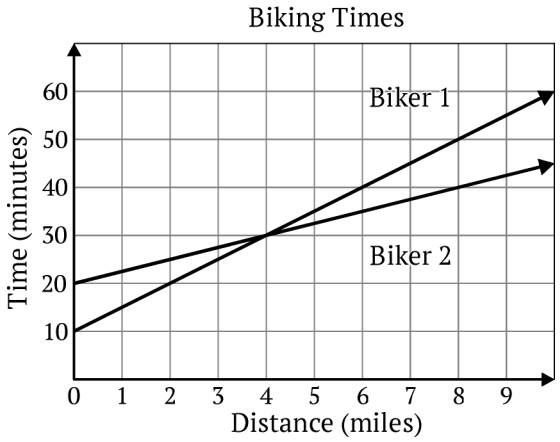
5. A baseball field is shaped as shown with semicircle $LORC$ adjoining $\triangle LHR$. If $LH = HR = 320$ feet, what is the approximate area of the field?



A. 102,400 ft^2 B. 131,624.77 ft^2

C. 263,249.5 ft^2 D. 321,699 ft^2

6. The graph models the linear relationship between the time in minutes and the number of miles biked for two bikers.



Biker 1 and Biker 2 each want to complete a route that is 4 miles long. Which of the following statements is true?

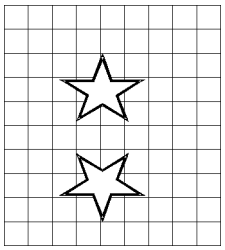
A. Biker 1 would finish 10 minutes before Biker 2.

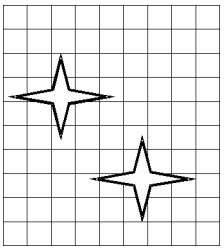
B. Biker 2 would finish 10 minutes before Biker 1.

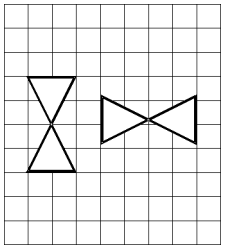
C. Biker 1 and Biker 2 would finish at the same time.

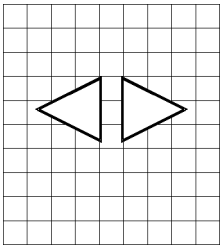
D. More information is needed.

7. Which diagram shows only a translation of the figure?

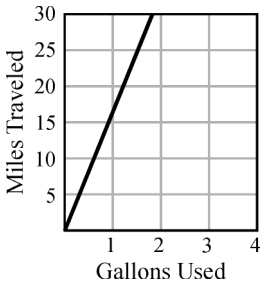
A. 

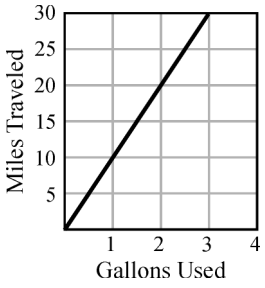
B. 

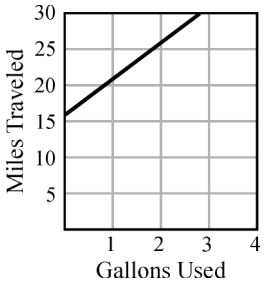
C. 

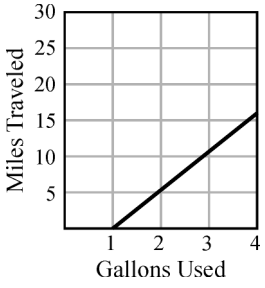
D. 

8. Which graph shows the fuel consumption of a truck that gets 16 miles per gallon?

A. 

B. 

C. 

D. 

9. Reflect the point $(-4, 1)$ across the line $y = -2$, then translate it horizontally five units in the positive direction. What are the intermediate and the final coordinates, respectively?

A. $(0, 1), (5, 1)$ B. $(0, 1), (0, 6)$

C. $(-4, -5), (1, -5)$ D. $(-4, -1), (1, -1)$

10. Using an instrument that collects raindrops, total rainfall for the day can be calculated with the equation

$$r = 1.2t + 2.4$$

where r is depth in inches and t is the number of hours since 8:00 am. What could be the meaning of 2.4 in the equation?

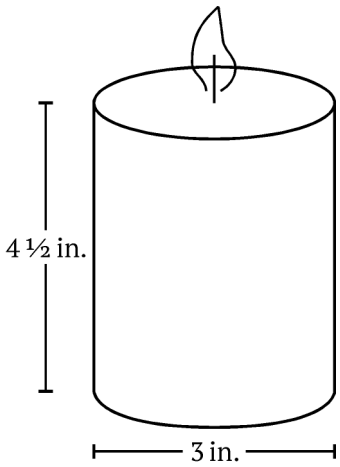
A. rainfall that already occurred that day before 8:00 am

B. number of inches of rain that is falling every hour of that day

C. time at which the local river will reach flood stage

D. maximum rainfall possible in one day at that location

11. The dimensions of a cylindrical candle are shown below.



If the formula for the volume of a cylinder is $V = Bh$, which of the following can be used to find B, the area of the base of the candle in square inches?

A. $B = \pi(3)^2$

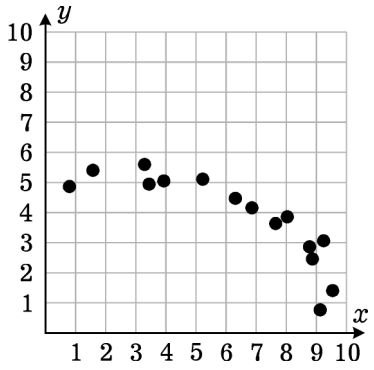
B. $B = 2\pi(3)$

C. $B = \pi(1\frac{1}{2})^2$

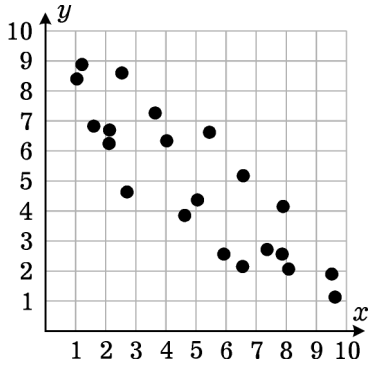
D. $B = \pi(4\frac{1}{2})(6)$

12. Below are four scatterplots. Which of them suggests a linear relationship between x and y?

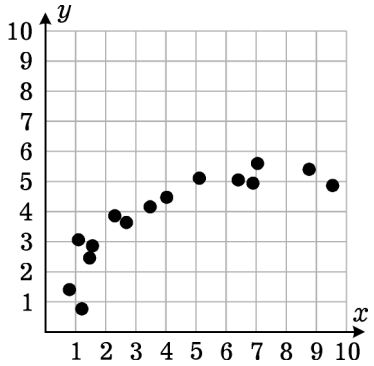
A.



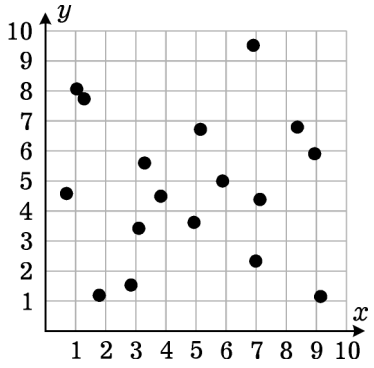
B.



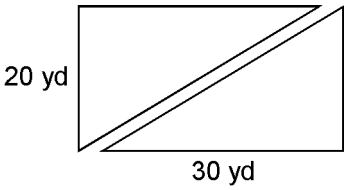
C.



D.



13.



A vacant lot measures 20 yd by 30 yd. The neighborhood kids have cut a diagonal path through the lot. The exact length of this path is $\sqrt{20^2 + 30^2}$ yd. What is the approximate length of the path?

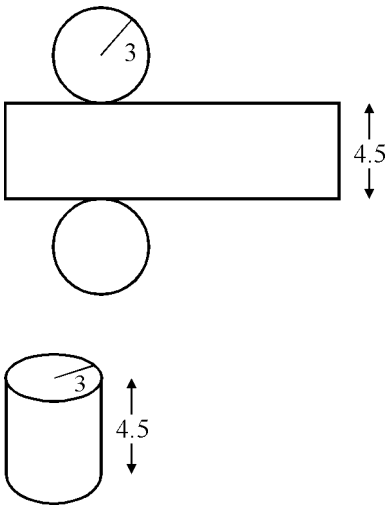
A. about 36 yd

B. about 37 yd

C. about 38 yd

D. about 39 yd

14. Diane has to paint the outside of a large cylinder. The height of the cylinder is $4\frac{1}{2}$ feet and the radius is 3 feet, as shown in the figure.



What is the surface area of the cylinder, if the calculation is simplified by using the value $\pi = 3$?

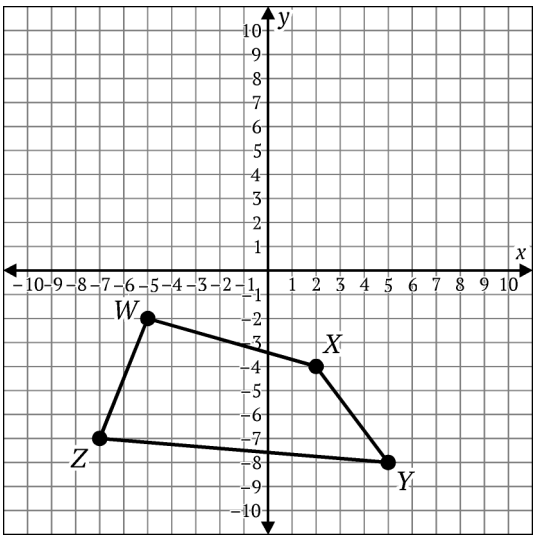
A. 135 square feet

B. 145 square feet

C. 155 square feet

D. 165 square feet

15. A student plots quadrilateral $WXYZ$ on the coordinate grid.



The student then transforms quadrilateral $WXYZ$ according to the rule $(x, y) \rightarrow (x - 1, y + 4)$ to create quadrilateral $W'X'Y'Z'$. Which statement is true?

A. The length of $W'X'$ is four times as many units as the length of WX.

B. The measure of $\angle Z'W'X'$ is equal to the measure of $\angle ZWX$.

C. The length of $Y'Z'$ is 5 more units than the length of YZ.

D. The measure of $\angle X'Y'Z'$ is greater than the measure of $\angle XYZ$.

16. On a TV station, 1 out of every 3 commercials are for food products. Arzina wants to estimate the probability that 2 out of the next 4 commercials shown will be for food products. She decides to simulate the situation. Select the best method of simulation.

A. spinning a 3-sector spinner

B. rolling a die

C. tossing a coin and rolling a die

D. drawing a card from a deck of playing cards

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1.
Answer: B
Objective: 8.02B
Points: 1

2.
Answer: D
Objective: 8.02B
Points: 1

3.
Answer: A
Objective: 8.07C
Points: 1

4.
Answer: D
Objective: 8.05D
Points: 1

5.
Answer: B
Objective: 8.07C
Points: 1

6.
Answer: C
Objective: 8.09
Points: 1

7.
Answer: B
Objective: 8.10A
Points: 1

8.
Answer: A
Objective: 8.04B
Points: 1

9.
Answer: C
Objective: 8.10A
Points: 1

10.
Answer: A
Objective: 8.05D
Points: 1

11.
Answer: C
Objective: 8.06A
Points: 1

12.
Answer: B
Objective: 8.05C
Points: 1

13.
Answer: A
Objective: 8.02B
Points: 1

14.
Answer: A
Objective: 8.07B
Points: 1

15.
Answer: B
Objective: 8.10A
Points: 1

16.
Answer: A
Objective: 8.11C
Points: 1