Solve the equation below.

$$0.4\left(2x + \frac{1}{2}\right) = 3[0.2x + (-2)] - 4$$

Show your work.

Answer $x =$ _____

Solve the equation below for d.
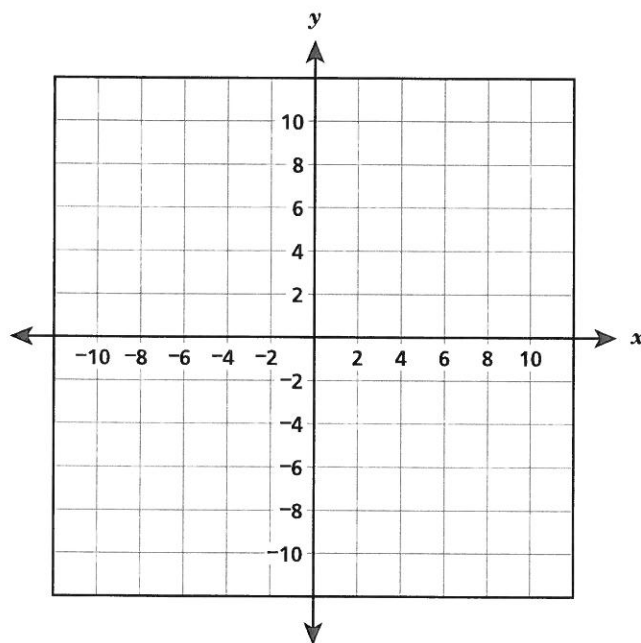
$$0.2(d - 6) = 0.3d + 5 - 3 + 0.1d$$

Show your work.

Answer $d = $ _____

Graph and label the given system of equations on the coordinate grid shown below.
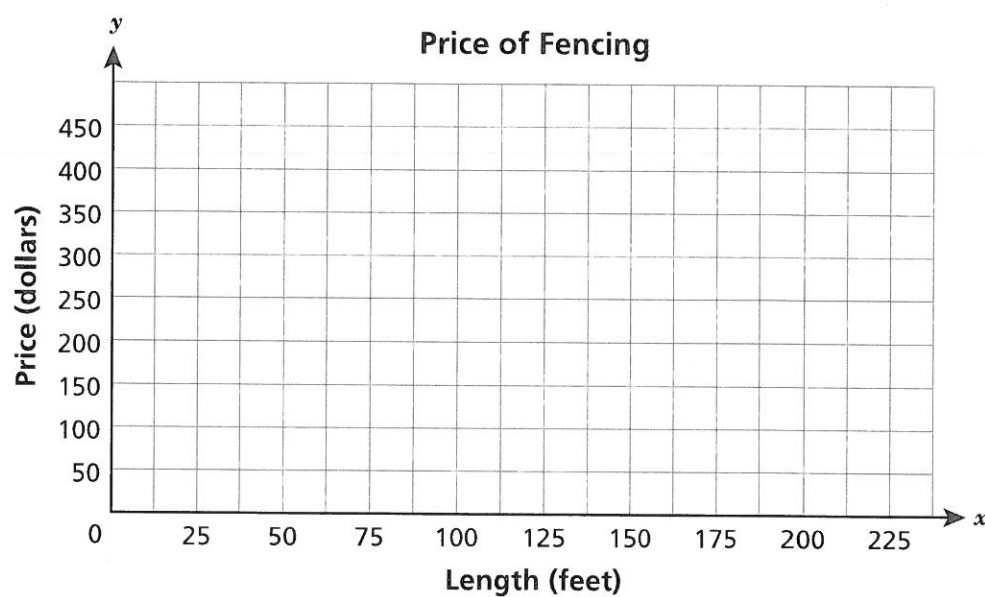
$$y = \frac{1}{2}x + 2$$
$$y = x - 1$$

What is the solution to the system of equations?

Answer _____

Measured CCLS: 8.EE.8a

Commentary: This question measures 8.EE.8a because it assesses a student's ability to understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

On the grid below, graph for each store the relationship between the length of the fencing and the price to verify your answers. Be sure to label each line.

Price of Fencing

Length (feet)

Commentary: This question measures 8.EE.5 because it assesses a student's ability to graph proportional relationships, interpret the unit rate as the slope of the graph, and compare two different proportional relationships represented in different ways.

Bert's cab company charges $1.00 plus an additional $3.00 per mile for a ride. Madeline's cab company charges $3.00 plus an additional $2.00 per mile for a ride. Write a system of linear equations that shows the cost in dollars, *y*, for a cab ride of *x* miles for each cab driver.

Bert's _____

Madeline's _____

At what distance, in miles, will the cost be the same for both companies?
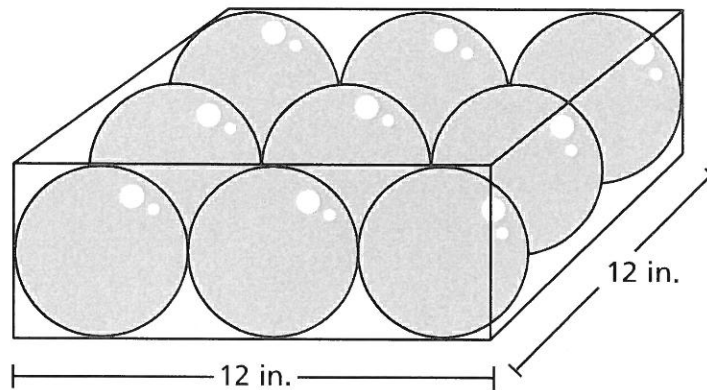
Show your work.

Answer _____ miles

Which cab driver's charge will be less for a ride that is 10 miles in distance?

Answer _____

Use words and numbers to explain how you determined your answer.

_____

_____

A box contains 9 identical glass spheres that are used to make snow globes. The spheres are tightly packed, as shown below.

12 in.

12 in.

What is the total volume, in cubic inches, of all 9 spheres? Round your answer to the nearest tenth of a cubic inch.

$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

Show your work.

Answer _____ cubic inches

Triangle *ABC* was rotated 90° clockwise. Then it underwent a dilation centered at the origin with a scale factor of 4. Triangle *A'B'C'* is the resulting image.

What parts of △*A'B'C'* are congruent to the corresponding parts of the original triangle? Explain your reasoning.

_____

_____

_____

Compare the perimeters of △*ABC* and △*A'B'C'*. Explain your reasoning.

_____

_____

_____

Does the equation below define a linear function?

$$y = \frac{3}{x}, \text{ when } x \neq 0$$

Explain how you got your answer.

Answer

_____

_____

_____

Measured CCLS: 8.F.3

Commentary: This question measures 8.F.3 because it assesses a student's ability to recognize and explain if a function is linear by showing that it cannot be defined by an equation in the form $y = mx + b$ or by determining if its graph is a straight line.

The table shown below was posted on the wall at Andy's Hardware to show the price of varying lengths of chain-link fencing.

PRICE OF FENCING

Length (feet)	Price
75	$168.75
125	$281.25
175	$393.75
225	$506.25

The price of the same fencing at Bargain Hardware can be determined by the equation $y = 2.50x$, where y is the price, in dollars, for x feet of fencing.
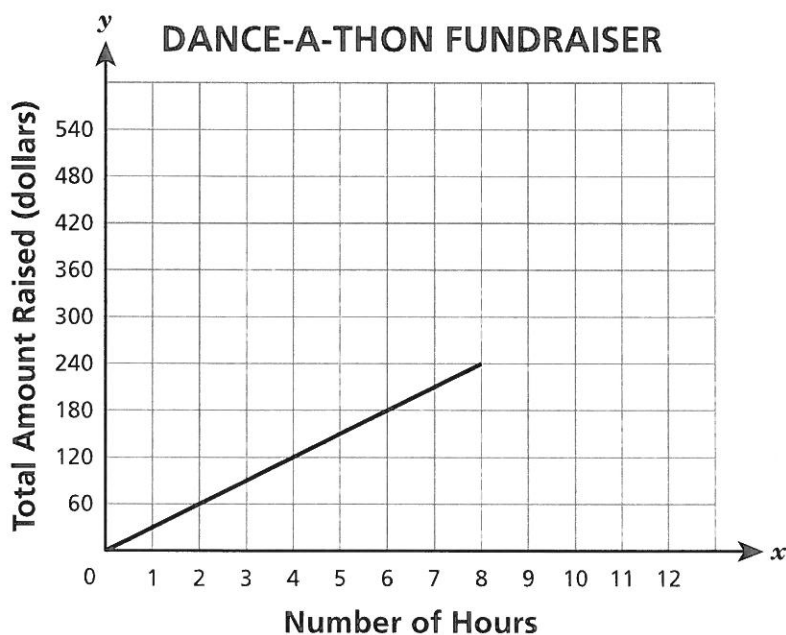
Determine the unit price for fencing, in dollars per foot, for each store.

Show your work.

Answers Andy's Hardware $_____ per foot

Bargain Hardware $_____ per foot

Students organized a 12-hour "dance-a-thon" as a fundraiser for their summer camp. The graph below represents the amount of money they raised during the first 8 hours.

DANCE-A-THON FUNDRAISER

What was the amount of money raised per hour during the first 8 hours?

Show your work or explain how you determined your answer.

Answer $_____ per hour

During the next 4 hours of the dance-a-thon, the students raised money at twice the hourly rate of the first 8 hours.

On the coordinate plane on the previous page, complete the graph for the next 4 hours to represent the total amount of money raised at the dance-a-thon. Use words and numbers on the following lines to explain how you knew where to draw the graph.

_____

_____

_____

_____