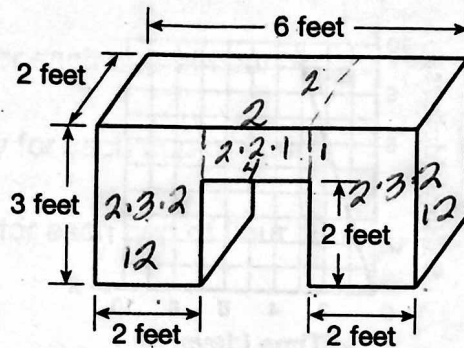


Section 1 Newspaper

Key

1. The Smiths have the workbench shown below.



$$\begin{array}{r} 12 \\ 12 \\ + 4 \\ \hline 28 \end{array}$$

What is the volume of the workbench in cubic feet?

$V = lhw$

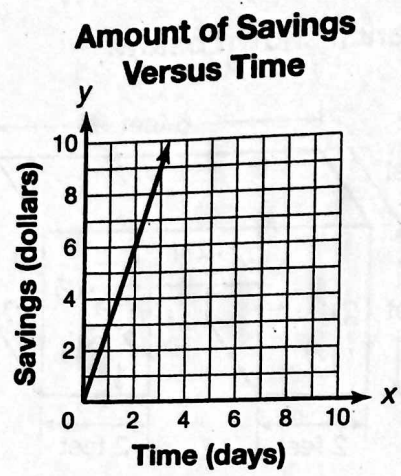
- A 20 cubic feet
- B 28 cubic feet
- C 32 cubic feet
- D 36 cubic feet

2. Which factor makes the equation true?

$$-1 \cdot \boxed{n} \cdot \frac{7}{8} = 1$$

- A $-\frac{8}{7}$
- B $-\frac{7}{8}$
- C $\frac{1}{7}$
- D $\frac{8}{7}$

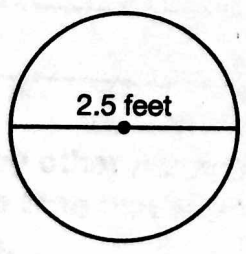
3. Thomas adds money to his savings account. The graph below shows the amount of money in the account over time.



What does the point (2, 6) on this graph mean?

- A On day 6, Thomas has twice as much money.
- B On day 2, Thomas has \$6.
- C On day 6, Thomas has \$2.
- D Each day, Thomas adds \$6 to the account.

4. The diagram shows the opening of a tunnel. What is the approximate circumference of the tunnel opening? Use 3.14 for π .



$$C = \pi d$$

$$2.5 \cdot 3.14$$

$$7.85$$

- A 3.93 feet
- B 4.91 feet
- C 7.85 feet
- D 19.63 feet

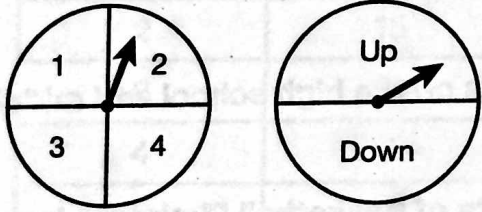


5. A recipe calls for $1\frac{1}{2}$ cups flour to $\frac{3}{4}$ cup grape jelly. How many cups of grape jelly are needed for each cup of flour?

- A $\frac{1}{4}$ cup of grape jelly for each cup of flour
- B** $\frac{1}{2}$ cup of grape jelly for each cup of flour
- C $1\frac{1}{8}$ cups of grape jelly for each cup of flour
- D 2 cups of grape jelly for each cup of flour

$(1\frac{1}{2})x = \frac{3}{4}$
 $\frac{3}{2}x = \frac{3}{4}$
 $x = \frac{6}{12} = \frac{1}{2}$
 or Jelly $\frac{3}{4} = x \cdot 1\frac{1}{2}$
 $\frac{3}{4} \div 1\frac{1}{2} = \frac{3}{4} \cdot \frac{2}{3} = \frac{6}{12} = \frac{1}{2}$

6. A game uses the two spinners shown to tell how to move around the board. Ingrid makes the organized list shown for the possible outcomes of spinning each spinner once.



- 1-Up 2-Up ✓ 3-Up 4-Up ✓
- 1-Down 2-Down 3-Down 4-Down

What is the probability that Ingrid will move up an even number of spaces?

- A $\frac{1}{8}$
- B** $\frac{1}{4}$
- ~~C~~ $\frac{1}{2}$
- D $\frac{3}{4}$

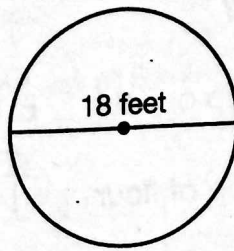
$\frac{\text{fav}}{\text{Poss}} = \frac{2}{8} = \frac{1}{4}$



7. A farmer plans to build a circular water tank, as shown.

$$d = 18$$

$$r = 9$$



$$A = \pi r^2$$

$$3.14 \cdot 9 \cdot 9$$

$$254.34$$

What is the area, in square feet, that will be covered by the tank? Use 3.14 for π .

- A 1,017.36 square feet
- B 254.34 square feet
- C 56.52 square feet
- D 28.26 square feet
8. The heights of the starters on the high school and middle school basketball teams are shown in the table.

Heights of Basketball Players in Inches

	High School	Middle School	
$\begin{array}{r} 75 \\ -68 \\ \hline 7 \end{array}$	73, 70, <u>75</u> , 74, 71, 70, 74, <u>68</u>	65, <u>76</u> , <u>60</u> , 70, 70, 63, 68, 64	$\begin{array}{r} 76 \\ -60 \\ \hline 16 \end{array}$

What conclusion can you draw?

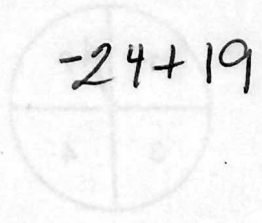
- A The middle school players are 6 inches shorter than the high school players because the median for the high school is 6 inches greater than the median for the middle school.
- B The middle school players are taller than the high school players because the maximum height on the middle school team is greater than all of the players on the high school. *only 1 in this*
- C The high school players are closer in height to each other than the middle school players because the range is less than the range for the middle school team.
- D The height of the high school players varies more than the height of the middle school players because the average height is greater on the high school team.

↑ Average does not measure a data sets variability.



9. Which expression is equivalent to $-24 - (-19)$? *Add the opposite*

- A $-24 + 19$
- B $-24 - 19$
- C $24 + 19$
- D $24 - 19$



10. The table shows the results of spinning a spinner that has the numbers 1 through 4.

Spinning a Spinner

Result	Number of Times
1	20
2	15
3	10
4	5
Totals	50

Experimental Probability

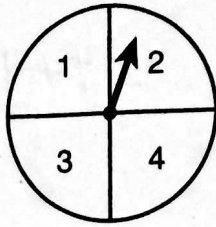
Based on the results given in the table, what is the probability of landing on 3?

- A 0.3
- B 0.25
- C 0.2
- D 0.1

FAV
trials $\frac{10}{50} = \frac{1}{5} = .2$



11. Pauline uses the spinner shown.



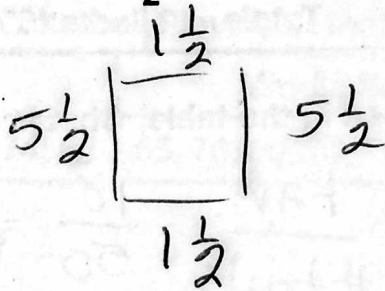
She spins the spinner and tosses a number cube with sides numbered 1 to 6. Which can you use to calculate the probability of the outcome 3-5?

- A $\frac{1}{3} \times \frac{1}{5}$
- B $\frac{1}{3} \times \frac{1}{6}$
- C $\frac{1}{4} \times \frac{1}{5}$
- D $\frac{1}{4} \times \frac{1}{6}$

$$P(3,5) = \frac{1}{4} \times \frac{1}{6}$$

12. A rectangular window has a height of $5\frac{1}{2}$ feet and a width of $1\frac{1}{2}$ feet. What is the perimeter of the window?

- A 7 feet
- B 13 feet
- C 14 feet
- D 28 feet



$$P = 5\frac{1}{2} + 1\frac{1}{2} + 5\frac{1}{2} + 1\frac{1}{2} = 14$$

13. A jacket has a regular price of \$80. It is on sale for 10% off. The sales tax is 7%. What is the TOTAL cost of the jacket including tax?

- A \$81.84
- B \$77.04
- C \$72.00
- D \$66.96

$$10\% \text{ of } 80 = 8$$

$$\begin{array}{r} 80 \\ - 8 \\ \hline 72 \end{array} \times \begin{array}{l} \text{TAX} \\ .07 \end{array} = 5.04$$

Cost w/ 10% off + 5.04 TAX

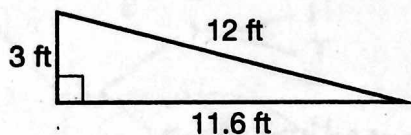
$$\$77.04 \text{ Total Cost w/ TAX}$$



14. Multiply: $(-0.2) \times 0.4 \times (-5)$

- A 4
- B 0.4
- C -0.4
- D -4

15. An engineering firm is designing a ramp to be used on construction sites. The diagram below illustrates the actual dimensions of the ramp. A sketch of the ramp is to be made using a scale factor of 2 inches : 3 feet. How long should the 12 foot side of the ramp be in the scale drawing?



- A 8 inches
- B 2 inches
- C 18 inches
- D 96 inches

$$\frac{\text{Scale}}{\text{Actual}} = \frac{2 \text{ in}}{3 \text{ ft}} = \frac{x}{12 \text{ ft}}$$
$$3x = 24$$
$$\frac{3x}{3} = \frac{24}{3}$$
$$x = 8$$

16. Wendy notices that $\frac{3}{5}$ of her marbles are striped. Which decimal represents the fraction of her marbles that are striped?

- A 0.06
- B 0.35
- C 0.53
- D 0.6

$$5 \overline{) 3.0} \begin{array}{r} .6 \\ \underline{3.0} \\ 0 \end{array}$$

GO ON 

17. Jeremy rolls a number cube with sides numbered 1 to 6 and flips a fair coin. He makes a table to show the outcomes of rolling the number cube once and flipping the coin once.

Outcomes of a Number Cube and a Coin

	1	2	3	4	5	6
Heads	H-1	H-2 ✓	H-3	H-4 ✓	H-5	H-6 ✓
Tails	T-1	T-2	T-3	T-4	T-5	T-6

Fav
Poss

What is the probability of getting Heads and an even number?

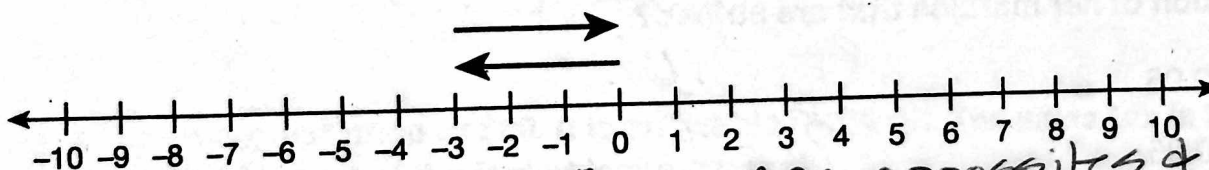
- A $\frac{1}{6}$ C $\frac{1}{2}$
 B $\frac{1}{4}$ D $\frac{2}{3}$

18. Which expression is equivalent to $45 - 20s$?

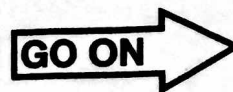
- A $25 - s$
 B $5(9 - 4s)$
 C $s(45 - 20)$
 D $5s(9 - 4)$

$5(9 - 4s)$

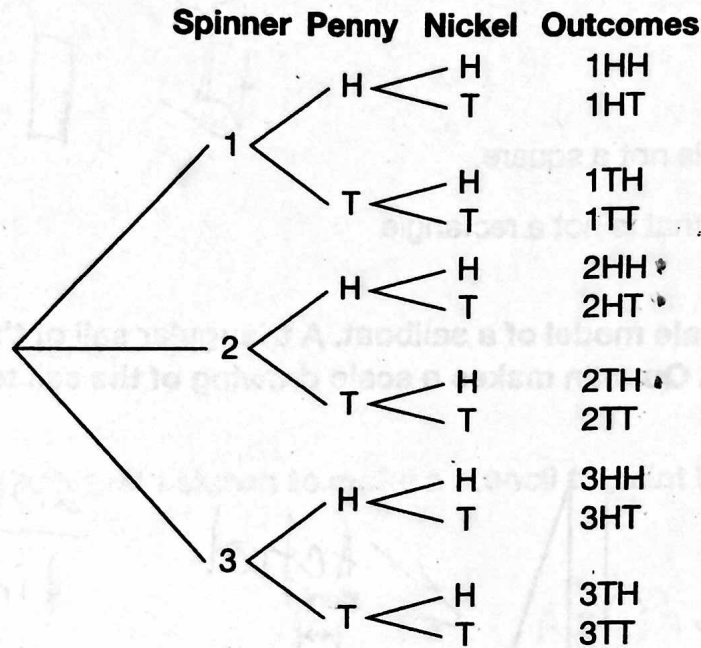
19. Which property on integers is modeled by this number line?



- A The product of a number and 0 is always 0.
 B When you add 0 to any number, the sum is the number.
 C The sum of a number and its opposite is always 0.
 D A number and its opposite are the same distance from 0.



20. Amari makes the tree diagram shown to find the possible outcomes of rolling a spinner with equal sections numbered 1 through 3, tossing a penny, and tossing a nickel.



$$\frac{3}{12} \frac{\text{FAV}}{\text{POSS}} = \frac{1}{4}$$

What is the probability of landing on 2 and having at least one coin land heads up?

- A $\frac{1}{6}$ C $\frac{1}{3}$
B $\frac{1}{4}$ D $\frac{3}{4}$
21. Mr. Washington drills a water well. Ground conditions cause an increase of 5% to the cost per meter, c . In addition, the cost of equipment is \$1,400. He calculates the cost of his well using the expression $1400 + 1.05c$. What other expression could he have used?

$$\begin{array}{r} 1.00c = c \\ + .05c \\ \hline 1.05c \end{array}$$

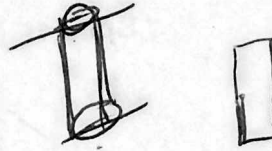
So, $c + .05c + 1400$

- A $1401.05c$
B $1400c + c + 0.05c$
C $c + 0.05c + 1400$
D $1.05(c + 1400)$

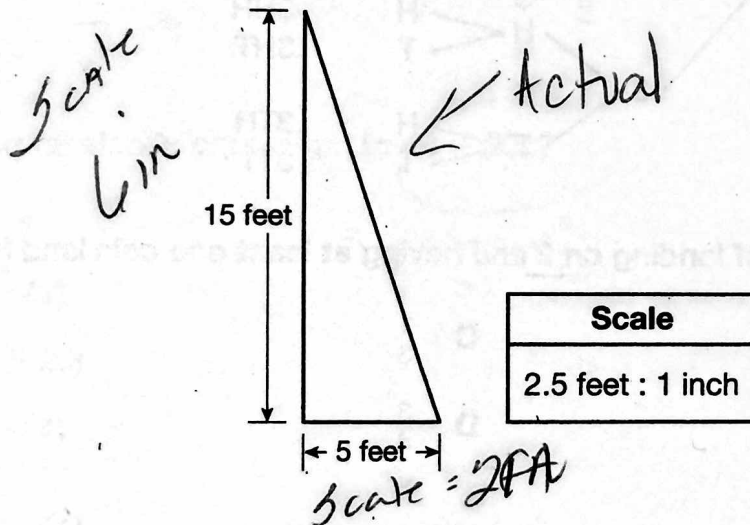
GO ON

22. A wooden log is in the shape of a cylinder. It is 18 inches long and has a radius of 7 inches. Carina cuts the log perpendicular to the bases. Which describes the cross-section?

- A a square
- B a circle
- C a rectangle that is not a square
- D a parallelogram that is not a rectangle



23. Quentin builds a scale model of a sailboat. A triangular sail of the boat has the dimensions shown. Quentin makes a scale drawing of the sail to cut cloth for his model.



$$\frac{2.5 \text{ ft}}{1 \text{ in}} = \frac{15 \text{ ft}}{x}$$

$$\frac{2.5x}{2.5} = \frac{15}{2.5}$$

$$x = 6$$

$$\frac{2.5 \text{ ft}}{1 \text{ in}} = \frac{5 \text{ ft}}{x}$$

$$\frac{2.5x}{2.5} = \frac{5}{2.5}$$

$$x = 2$$

What area will the model sail have?

- A 6 square inches
- B 12 square inches
- C 15 square inches
- D 37.5 square inches

$$A = \frac{1}{2}bh$$

$$\frac{1}{2} \cdot 6 \text{ in} \cdot 2 \text{ in}$$

$$3 \cdot 2$$

$$6 \text{ in}^2$$



24. Which factor makes the equation true?

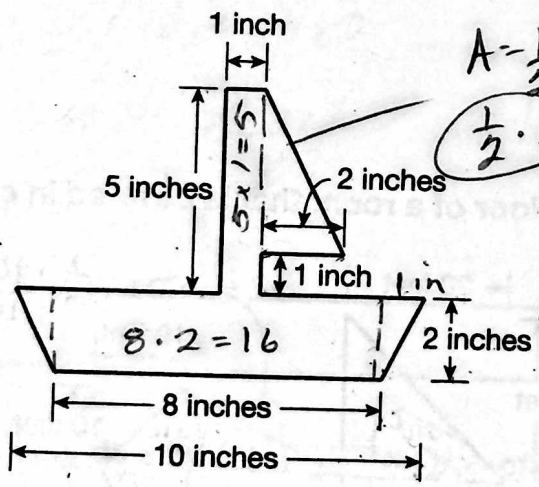
$$-\left(-\frac{3}{5} \times \boxed{n}\right) \times (-1) = 1$$

$$-1 \cdot -1 = 1$$

All neg

- A $-\frac{5}{3}$
- B $-\frac{1}{3}$
- C $\frac{3}{5}$
- D $\frac{5}{3}$

25. Manuel draws the diagram shown to make a stencil to paint boats on his brother's wall.



$A = \frac{1}{2}bh$
 $\frac{1}{2} \cdot 2 \cdot 1 = 1$
 $2 \cdot 2 = 4$
 $16 + 1 = 17$
 16
 1
 17

What is the area, in square inches, of each boat made using the stencil?

- A 31 square inches
- B 27 square inches
- C 25 square inches
- D 22 square inches

26. Rob has a batting average of .200. He estimates the probability that he will get **AT LEAST** one hit in his next two times at bat using a simulation. Because his batting average is .200, he will use the digits 0 and 1 to represent getting a hit and the digits 2 through 9 to represent not getting a hit. He uses a random number table to generate the simulated results shown below.

4, 8	9, 8	2, 5	5, 9	9, 6
7, 5	7, 3	1, 0 ✓	3, 9	6, 5

Based on the simulation, what is the probability that Rob will get **AT LEAST** one hit in his next two times at bat?

A 0

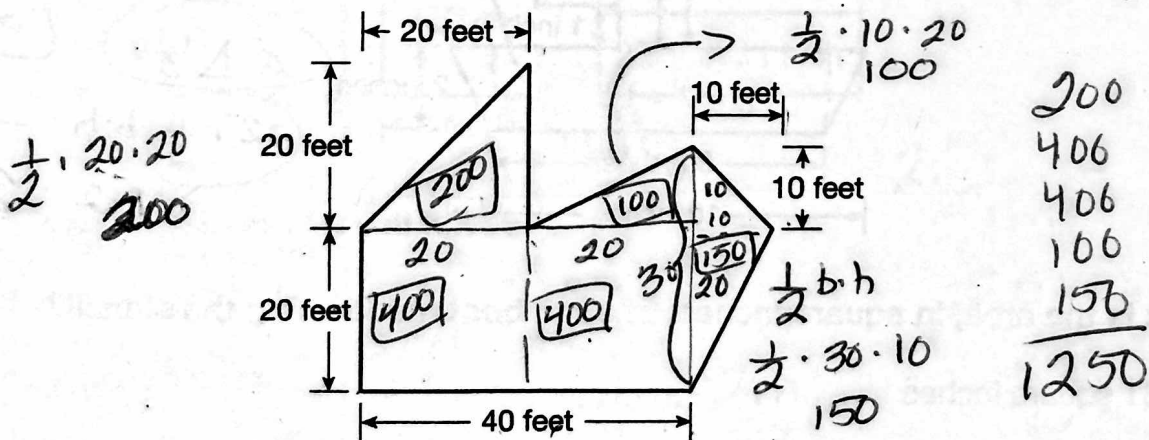
B $\frac{1}{10}$

C $\frac{1}{5}$

D $\frac{1}{2}$

$$\frac{P(\text{0 or 1})}{\# \text{ trials}} = \frac{1}{10}$$

27. The diagram shows the floor of a room that is covered in carpet.



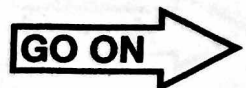
What is the area of the carpet in square feet?

A 1,150 square feet

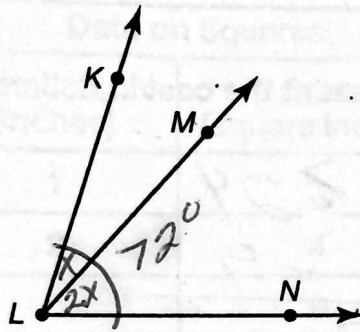
B 1,200 square feet

C 1,250 square feet

D 1,600 square feet



28. The measure of Angle KLN is 72° . The measure of Angle MLN is two times the measure of Angle KLM .



Part A:

What type of related angles are these? Explain your answer.

Adjacent angles because they share a side, or common ray \overrightarrow{LM} .

Part B:

Write and solve an equation to find the measures of $\angle KLN$ and $\angle MLN$.

Show your work.

$$\angle KLM + \angle MLN = \angle KLN$$

So, $x + 2x = 72^\circ$

$$\frac{3x}{3} = \frac{72}{3}$$

$$x = 24$$

So, $\angle KLM = 24^\circ$

$$\angle MLN = 2(24) = 48^\circ$$

GO ON 

29. Adita spends more than \$24 at the gift shop. She buys a mug for \$9 and 3 books that cost the same amount.

Part A:

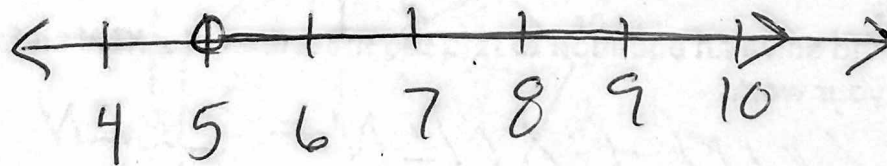
Write an inequality to represent the cost in dollars, d , of each book.

$d = \text{cost of each book}$


$$\begin{array}{r} 3d + 9 > 24 \\ -9 \quad -9 \\ \hline 3d > 15 \\ \frac{3d}{3} > \frac{15}{3} \\ d > 5 \end{array}$$

Part B:

Graph your answer from Part A.



Open circle 5 is not part of the solution.

GO ON 

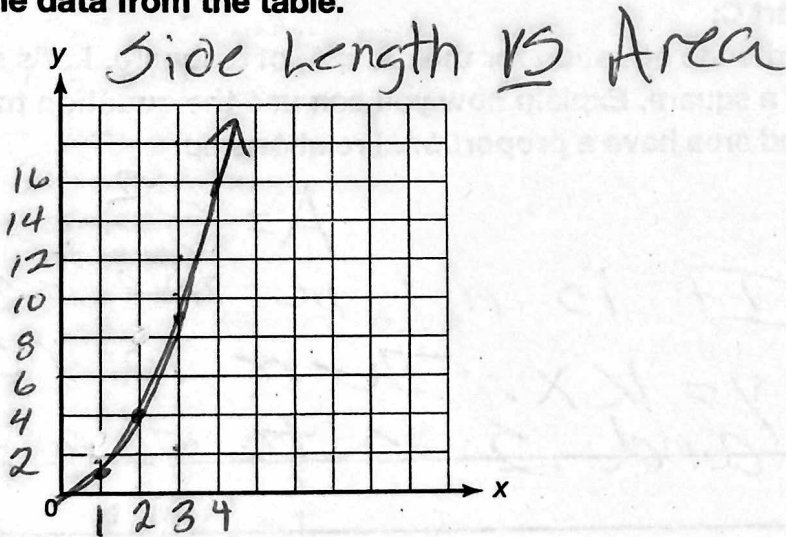
30. Beatrice is exploring the relationship between the side length of a square and the area of the square. The table below shows data that she calculated.

Data on Squares

Side Length (inches)	Area (square inches)
1	1
2	4
3	9
4	16

Part A:

Make a graph using the data from the table.



30. Continued. Please refer to the previous page for task explanation.

Part B:

Based on your graph, are the side length and area proportionally related? Explain how you know.

They are not proportionally related because the graph is not a straight line.

Part C:

Write the equation for the area, A , of a square. Let s stand for the side length of a square. Explain how you can use the equation to tell whether side length and area have a proportional relationship.

$A = s^2$
It is not in the form of $y = kx$. There is no constant and s is to the 2nd power.

Part D:

Beatrice earns \$10 per hour tutoring other students in math. She makes a graph of what she earns versus the time that she tutors. Explain what the point $(0, 0)$ on the graph represents.

At 0 hours Beatrice will earn 0 money for tutoring.

