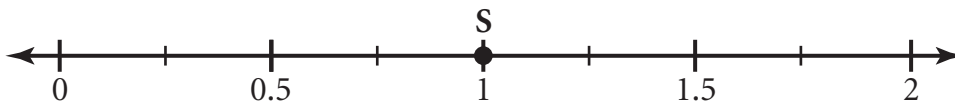


- 1** Study the table below. The table shows the distance Ricky walks each dog after school.

Distance Walked

Name of Dog	Distance
Speedy (S)	1 mile
Wags (W)	1.75 miles
Cookie (C)	0.25 miles
Jumper (J)	$1\frac{1}{4}$ miles
Paws (P)	$\frac{1}{2}$ mile

On the number line below, Point S represents the distance Ricky walks Speedy. Label the points for the distances that Ricky walks each of the other dogs.

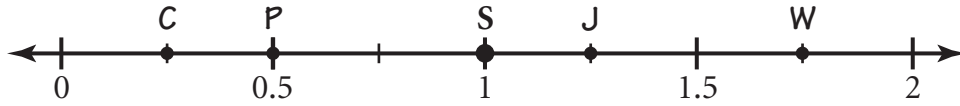


Item 1:

Rubric

Exemplary Response

•



Score Points: Apply 2-point holistic rubric.

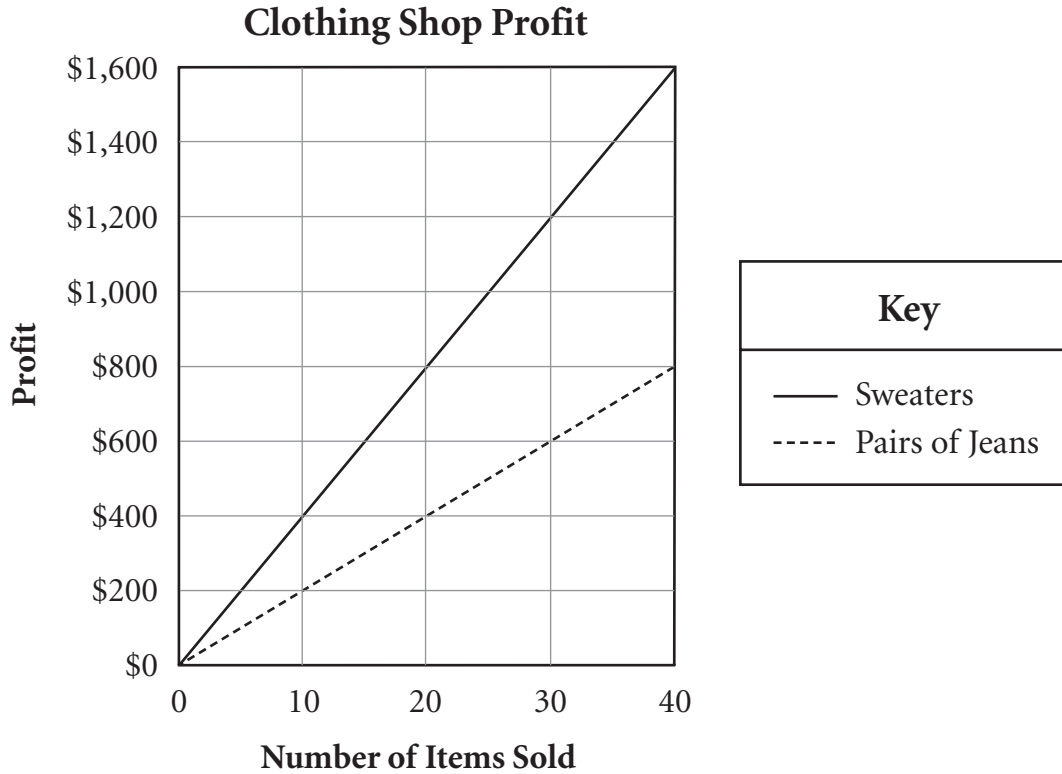
This item appeared at only one grade level.

Grade 5

Standard 1.1a: Number Sense

Subcontent Area: number and operations

- 2** Study the graph below. The graph shows the profit a clothing shop makes from selling sweaters and pairs of jeans.



Part A Complete the tables below by using the information from the graph to show the amount of profit for the number of items sold.

Clothing Shop Profits

Number of Sweaters Sold	Amount of Profit (in dollars)
10	
15	
25	

Number of Pairs of Jeans Sold	Amount of Profit (in dollars)
10	
15	
25	

Part B What is the amount of profit made from selling one sweater? In the space below, show your work and write your answer on the line.

\$ _____

Part C In one day, the shop sold 20 sweaters and 30 pairs of jeans. The sale of which of these items made more profit? In the space below, show your work to find the difference in profit and write your answers on the lines.

_____ made more profit

Difference in profit \$ _____

Item 2:

Rubric

Exemplary Response

Part A

-

Clothing Shop Profits

Number of Sweaters Sold	Amount of Profit (in dollars)	Number of Pairs of Jeans Sold	Amount of Profit (in dollars)
10	400	10	200
15	600	15	300
25	1,000	25	500

Part B

- \$40

AND

- By dividing the profit made from selling 10 sweaters, \$400, by 10, I can see that the profit made from selling 1 sweater is \$40.

OR

- Other valid process

Part C

- **Sweaters** made more profit

Difference in profit \$200

AND

- 20 sweaters \times \$40 per sweater = \$800
30 pairs of jeans \times \$20 per pair of jeans = \$600
\$800 – \$600 = \$200

OR

- Other valid process

Score Points: Apply 4-point holistic rubric.

This item appeared at two adjacent grade levels.

Grade 5

Standard 3.4b: Data Analysis, Probability, and Statistics
Subcontent Area: data displays

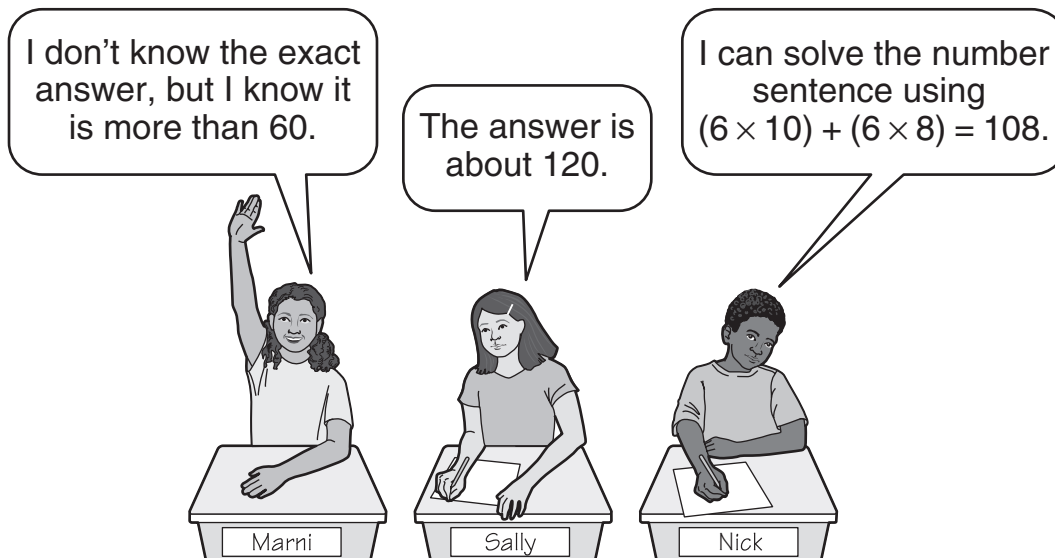
Grade 6

Standard 3.4a: Data Analysis, Probability, and Statistics
Subcontent Area: not classified

- 3 On the board in her classroom, Ms. Jones wrote the number sentence shown below.

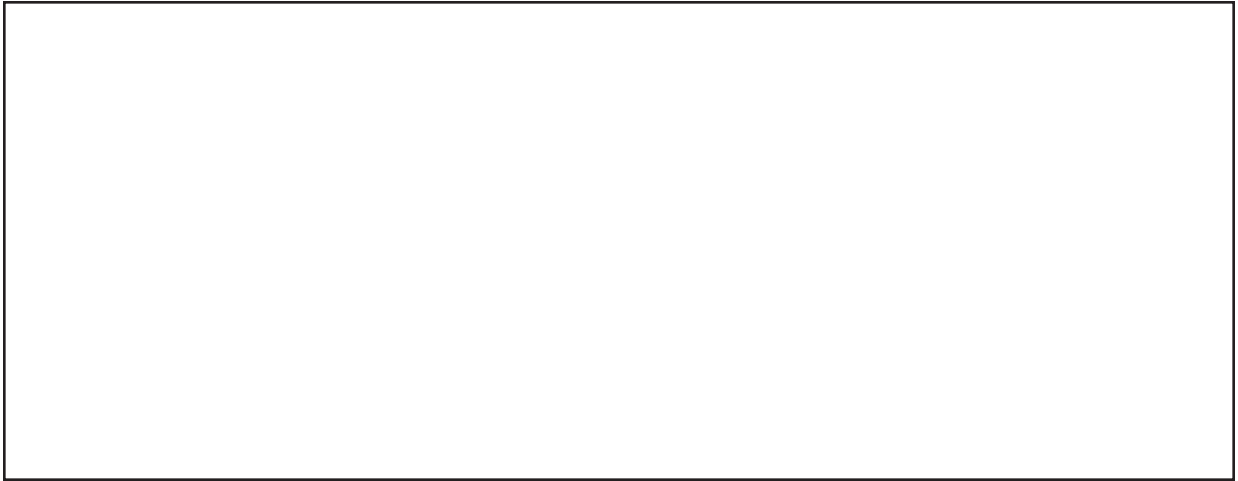
$$6 \times 18 = ?$$

Study what three of her students said.



Part A In the space below, explain how Marni could know that the answer is more than 60 without solving the number sentence.

Part B In the space below, explain how Sally could use estimation to find that the answer is about 120.



Part C Nick wants to use his strategy to solve the problem shown below.

$$7 \times 24 = ?$$

In the space below, show how Nick would solve the problem using his strategy.



Item 3:

Rubric

Exemplary Response

Part A

- 6×10 equals 60. Since 18 is greater than 10, the answer must be greater than 60.

OR

- Other valid response

Part B

- Sally rounded 18 to 20 and then multiplied 6×20 to get 120.

OR

- Other valid response

Part C

- $(7 \times 20) + (7 \times 4) = 168$

OR

- Other valid response

Score Points: Apply 3-point holistic rubric.

This item appeared at two adjacent grade levels.

Grade 5

Standard 1.6b: Number Sense

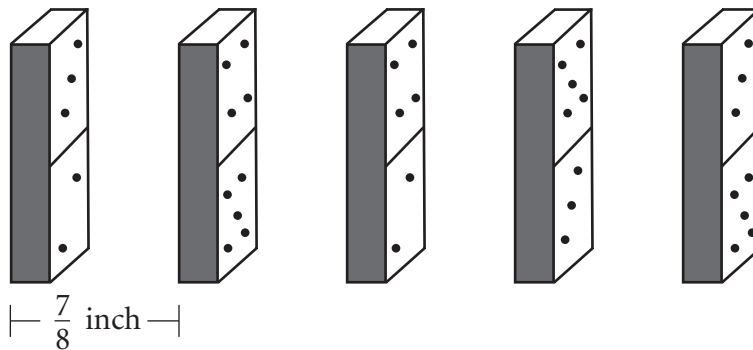
Subcontent Area: numbers and operations

Grade 6

Standard 1.6a: Number Sense

Subcontent Area: numbers and operations

- 4** Madeline is setting up dominoes in a line, as shown below. Each domino requires $\frac{7}{8}$ inch of space in the line.



Part A The line of dominoes will be 29 feet long. A box of dominoes contains 28 dominoes. **Estimate** the number of boxes Madeline will need. In the space below, show your work and write your estimate on the line.

Estimate _____ boxes

Part B After Madeline pushes over the first domino, each domino in the line will fall one after the other. It takes 0.8 seconds for 5 dominoes to fall. **Estimate** the time it will take for all the dominoes to fall. In the space below, show your work and write your estimate on the line.

Estimate _____ seconds

Item 4:

Rubric

Exemplary Response

Part A

- Estimate 12 boxes (accept range 12 to 15 boxes)

AND

- Each domino requires $\frac{7}{8}$ inch \approx 1 inch,
29 feet \approx 30 feet and 12 inches per foot \times 30 feet \approx 360 inches,
so 360 inches/1 inch per domino \approx 360 dominoes, and
28 dominoes per box \approx 30 dominoes per box, so
360 dominoes/30 dominoes per box \approx 12 boxes.

OR

- Each domino requires $\frac{7}{8}$ inch = 0.875 inch.
Approximately 360 inches/0.875 inch per domino \approx 411 dominoes, and
411 dominoes/28 dominoes per box \approx 14.7 boxes \approx 15 boxes.

OR

- Other valid response

Part B

- Estimate **72** seconds (accept range 54 to 80)

AND

- 5 dominoes fall in 0.8 seconds \approx 1 second
the time it takes 360 dominoes to fall is approximately
 $360 \text{ dominoes} / 5 \text{ dominoes per second} \approx 72 \text{ seconds}$

OR

- $29 \text{ feet} \times 12 \text{ inches per foot} = 348 \text{ inches} \approx 350 \text{ inches} / 1 \text{ inch per domino} \approx 350 \text{ dominoes}$ and
 $350 \text{ dominoes} \times 0.8 \text{ seconds} / 5 \text{ dominoes} = 0.8 \text{ seconds} \times 70 = 56 \text{ seconds}$

OR

- Other valid response

Score Points: Apply 3-point holistic rubric.

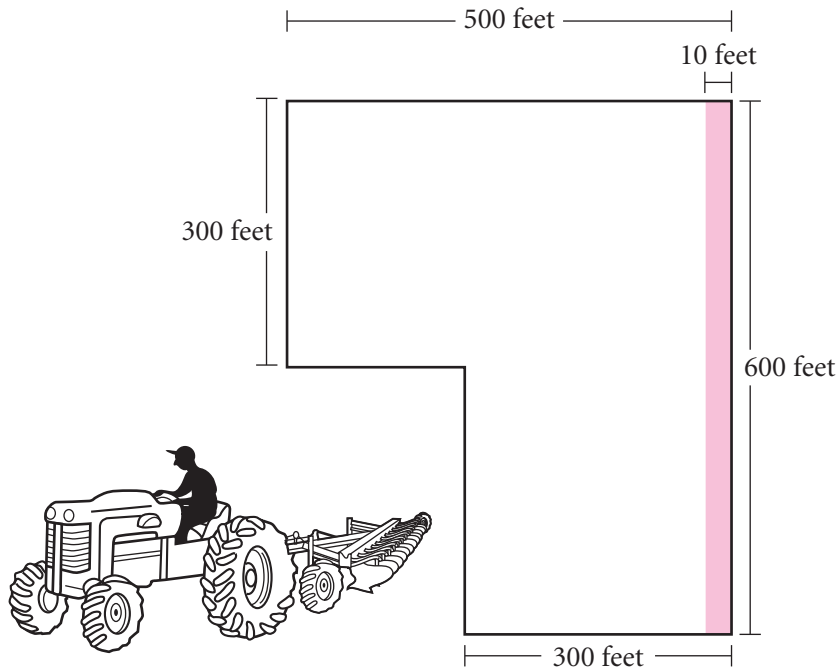
This item appeared at only one grade level.

Grade 7

Standard 6.3b: Operation and Calculation

Subcontent Area: number sense

- 5 Study the diagram below. The diagram shows a farmer’s field. It takes the farmer approximately 6 minutes to plow a strip that measures 10 feet wide by 600 feet long.



Drawing **not** to scale

Part A What is the area, in square feet, that the farmer plows per minute? In the space below, show your work and write your answer on the line.

_____ square feet per minute

Part B At the same rate, approximately how long will it take the farmer to plow the entire field? In the space below, show your work and write your answer on the line.

Approximately _____ hours

Part C The next time he plows his field, the farmer uses new equipment. Now, the farmer can plow a strip that measures 600 feet long by 12 feet wide in approximately 6 minutes. Approximately how much time will the farmer save when plowing his entire field with his new equipment? In the space below, show your work and write your answer on the line.

Approximate time saved _____

Item 5:

Rubric

Exemplary Response

Part A

- 1,000 square feet per minute

AND

- One strip is $(600 \text{ ft})(10 \text{ ft}) = 6,000$ square feet. Since it takes 6 minutes to plow one strip, the area per minute is $\frac{6,000 \text{ square feet}}{6 \text{ minutes}} = 1,000$ square feet per minute.

OR

- Other valid response

Part B

- Approximately 4 hours (or 240 minutes)

AND

- Area of entire field = $(500 \text{ ft})(300 \text{ ft}) + (300 \text{ ft})(300 \text{ ft}) = 150,000 + 90,000 = 240,000$ square feet. At the same rate, it will take $\frac{240,000 \text{ square feet}}{1,000 \text{ square feet/minute}} = 240$ minutes, or $240 \div 60 = 4$ hours.

OR

- Other valid response

Part C

- Approximate time saved **40 minutes**

AND

- With the new equipment, each strip will have an area of $(600 \text{ ft})(12 \text{ ft}) = 7,200$ square feet,

so the new rate will be $\frac{7,200 \text{ square feet}}{6 \text{ minutes}} = 1,200$ square feet per minute.

At that rate, the entire field will take $\frac{240,000 \text{ square feet}}{1,200 \text{ square feet/minute}} = 200$ minutes.

So the new equipment will save $240 - 200 = 40$ minutes.

OR

- Other valid response

Score Points: Apply 4-point holistic rubric.

This item appeared at only one grade level.

Grade 8

Standard 6.4a: Patterns, Functions, and Algebra

Subcontent Area: proportional thinking

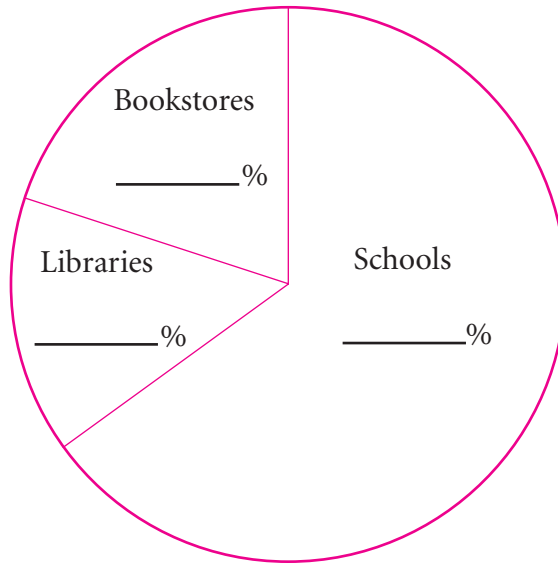
6



From your punch-out tools, use the protractor to help you solve this problem.

Part A The circle graph below shows the proportions of a publisher’s books sold to schools, bookstores, and libraries. Label the circle graph by writing the percents on the lines.

Books Sold



Part B The publisher sold 350,000 books last year. How many books were sold to bookstores? In the space below, show your work and write your answer on the line.

_____ books

publisher—company that prepares books

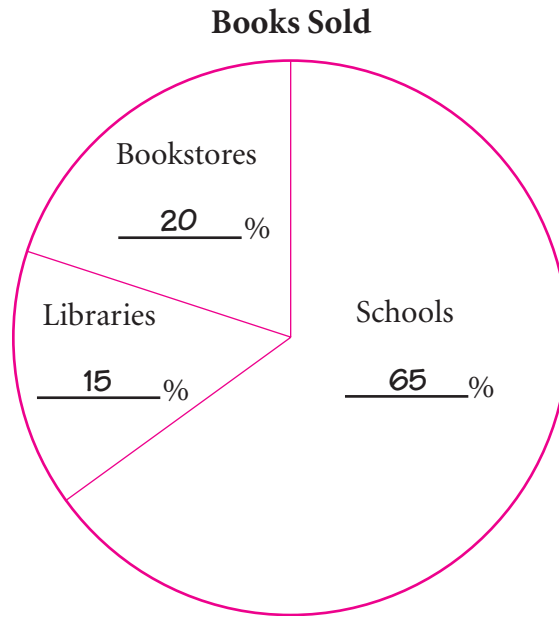
Item 6:

Rubric

Exemplary Response

Part A

•



- Accept range: Libraries 14% to 15%, Bookstores 20% to 21%, Schools 64% to 65%

Part B

- 70,000 books

AND

- $350,000 \text{ books}(20\%) = 350,000(0.20) = 70,000 \text{ books}$

OR

- Other valid response

Score Points: Apply 2-point holistic rubric.

This item appeared at only one grade level.

Grade 8

Standard 3.1a: Data Analysis, Probability, and Statistics

Subcontent Area: proportional thinking

7

Russell hits a golf ball, the path of which can be approximated by the equation shown below.

$$y = -\frac{1}{400}(x - 140)^2 + 49$$

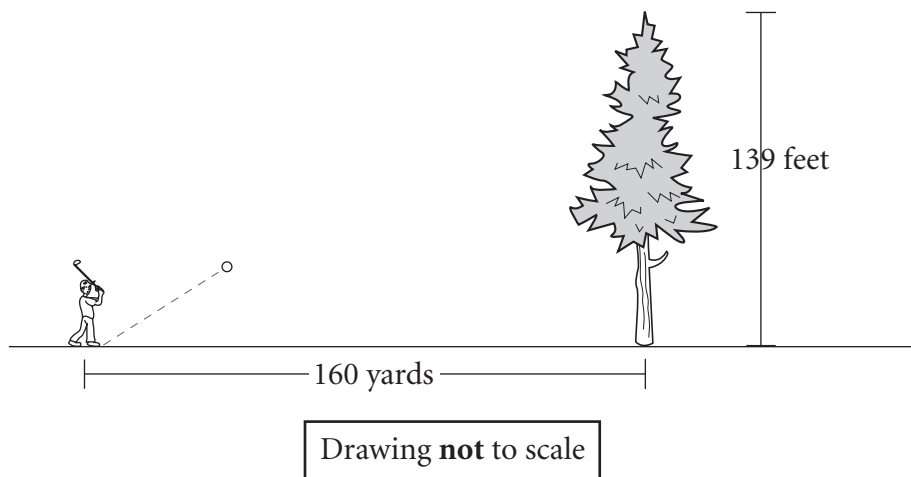
y = height of the ball, in yards
 x = horizontal distance, in yards

Part A Find the height of the ball after it has traveled a horizontal distance of 100 yards. In the space below, show your work and write your answer on the line.

Height _____ yards

Part B What do the x -intercepts represent in the context of the problem? On the lines below, explain your reasoning.

Part C Study the diagram below. The diagram shows a tree at a horizontal distance of 160 **yards** from the starting point of the ball. The tree is 139 **feet** tall.



By how many feet will the ball clear the tree? In the space below, show your work and write your answer on the line.

_____ feet

Item 7:

Rubric

Exemplary Response

Part A

- Height **45** yards

AND

- $h = -\frac{1}{400}(100 - 140)^2 + 49$

$$h = -\frac{1}{400}(-40)^2 + 49$$

$$h = -\frac{1}{400}(1,600) + 49$$

$$h = -4 + 49$$

$$h = 45$$

OR

- Other valid process

Part B

- The x -intercepts represent the points at which the ball is at a height of zero yards, which are at the beginning of the hit and after the ball lands.

OR

- Other valid process

Part C

- 5 feet

AND

- $h = -\frac{1}{400}(160 - 140)^2 + 49$

$$h = -\frac{1}{400}(400) + 49$$

$$h = -1 + 49$$

$$48 \text{ yards} \times 3 \text{ feet per yard} = 144 \text{ feet}$$

OR

- Other valid process

Score Points: Apply 3-point holistic rubric.

This item appeared at two adjacent grade levels.

Grade 9

Standard 2.3a: Patterns, Functions, and Algebra
Subcontent Area: not classified

Grade 10

Standard 2.3a: Patterns, Functions, and Algebra
Subcontent Area: not classified

8

The snow sports club in Montrose surveyed its members. The results of the survey are shown below.

35% of the members downhill ski only.

20% of the members cross-country ski only.

45% of the members snowboard only.

What is the fewest number of people that **could be** members of the club? In the space below, show your work and write your answer on the line.

_____ people

Item 8:

Rubric

Exemplary Response

- 20 people

AND

- If 100 people were in the club, the ratio of each type would be 35:20:45. These numbers are all divisible by 5, giving 7:4:9, which is fully reduced. Summing gives 20 members.

OR

- Other valid response

Score Points: Apply 2-point holistic rubric.

This item appeared at two adjacent grade levels.

Grade 9

Standard 6.1a: Operation and Calculation

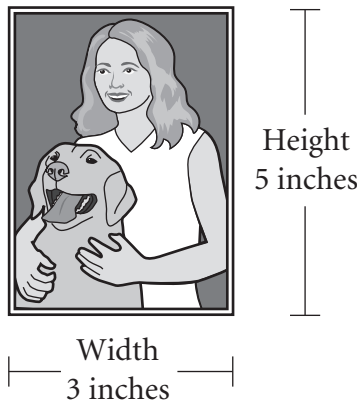
Subcontent Area: not classified

Grade 10

Standard 6.1a: Operation and Calculation

Subcontent Area: not classified

- 9 Karen will enlarge the photograph shown below.



Drawing **not** to scale

Part A While maintaining the ratio of height to width, Karen will increase the height to 12.5 inches. What will be the width of the enlarged photograph? In the space below, show your work and write your answer on the line.

_____ inches

Part B Karen will use a copy machine to enlarge the photograph. The copy machine increases the area of the photograph by any percentage, while maintaining the height-to-width ratio of the original. By what percent does Karen need to enlarge the area of the original photograph? In the space below, show your work and write your answer on the line.

_____ percent

Part C Before framing, Karen surrounded the enlarged photograph with a 2-inch border. On the lines below, explain the effect of the border on the proportional relationship between the height and width.

Item 9:

Rubric

Exemplary Response

Part A

- 7.5 inches

AND

- $12.5 \times 3 \div 5 = 7.5$ inches

OR

- Other valid process

Part B

- 625 percent

AND

- $(12.5 \times 7.5) \div (5 \times 3) \times 100 = 625\%$

OR

- Other valid process

Part C

- The framed photograph does not have the same ratio because the ratios of the original and enlarged photographs are 5 to 3, while the ratio of the framed photograph is $16\frac{1}{2}$ to $11\frac{1}{2}$.

This is not an equivalent ratio because it does not reduce to $5/3$.

OR

- Other valid response comparing $5 : 3$ to $16.5 : 11.5$

NOTE: A student may draw diagrams in the space available at the bottom of the page. Diagrams may be referred to in the student's explanation.

Score Points: Apply 3-point holistic rubric.

This item appeared at only one grade level.

Grade 10

Standard 6.1a: Operation and Calculation

Subcontent Area: not classified