

# Photo Troubles

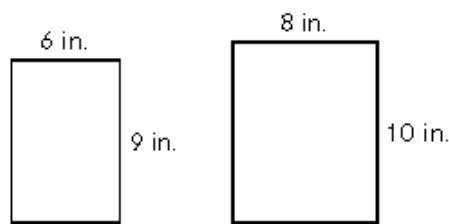
## Lesson 2-14

DATE

TIME

### Math Message

- 1 Julian took a photography class. For his final project, he took a family portrait. He printed a 6-inch by 9-inch copy that looked beautiful. His grandmother asked for a larger photo. He ordered an 8-inch by 10-inch copy, but his grandmother and aunt were cut out of the photo. What do you think happened?




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Julian asked the photo-printing company for a list of its print sizes. He received the list below of the ratios for width to height.

Small (inches)	Medium (inches)	Large (inches)
3.5 : 5	8 : 8	12 : 12
4 : 4	8 : 10	12 : 15
4 : 5	8 : 12	12 : 18
4 : 6	10 : 10	16 : 20
5 : 7	10 : 12.5	16 : 24
6 : 9	10 : 15	20 : 25

$\frac{6}{9} \neq \frac{4}{6}$   
 $36 = 36$   
 $\frac{6}{9} \neq \frac{4}{5}$   
 $36 \neq 30$

- 2 If Julian's picture printed correctly in the 6 : 9 format, what other ratios from the list would print the image correctly? List the other ratios in the table.

Width (inches)	6	7	4	12	8	10	16	42
Height (inches)	9	7	6	18	12	15	24	63

Unit ratio

$\frac{W}{H} = \frac{6}{9} = \frac{1}{1.5}$   
 $\frac{6x}{6} = \frac{9}{6}$   
 $x = 1.5$

$1 : 1.5$   
 $\frac{1}{1.5}$

# Photo Troubles (continued)

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- 3 Julian's classmate Marquise printed a photo of his dog in the 4 : 4 format. What other ratios from the list could he use?

Width (inches)	4	8	10	12
Height (inches)	4	8	10	12

Unit ratio 1:1

- 4 Julian's grandmother found an old family photo that is 8 : 10. She wants Julian to print additional copies of it in a larger format. What other ratios from the list could he use?

Width (inches)	8				
Height (inches)	10				

Unit ratio \_\_\_\_\_

- 5 Julian's teacher shows the class some panoramic images from a trip to Italy. She said her camera used a 4 : 1 aspect ratio to take the photos, meaning it is 4 times as wide as it is tall.

Julian notices that there are no ratios on the list equivalent to 4 : 1.

Julian figured out some ratios equivalent to the 4 : 1 ratio of his teacher's photos.

- a. Fill in the table with ratios that would work for enlarging the teacher's photos.

Width (inches)	4	8	12	16	400	4 trillion.
Height (inches)	1	2	3	4	100	1 trillion.

- b. Explain or show how you determined ratios equivalent to the teacher's ratio.

# Graphing Ratios

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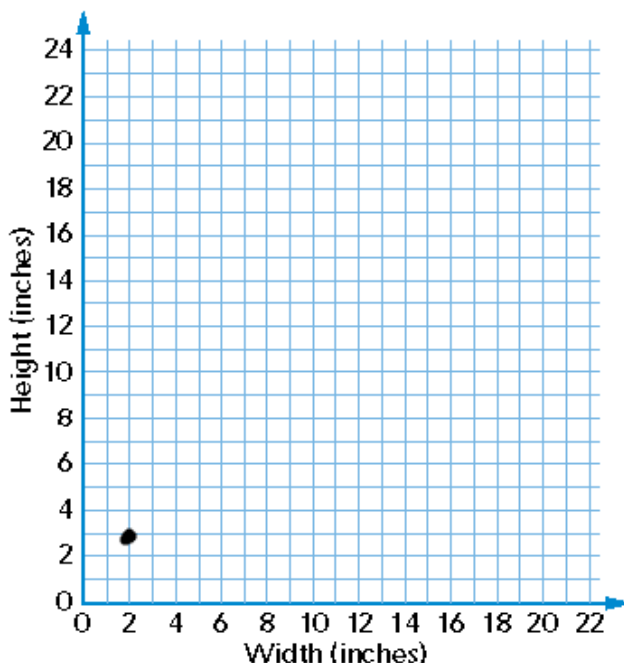
TIME

- 1 Find all of the ratios equivalent to  $2 : 3$  that are listed in the photo-printing company's size list on journal page 100.

Record them in the table below.

Width (inches)	2						
Height (inches)	3						

- 2 Treat the ratios from Problem 1 as ordered pairs (width, height) and plot them on this grid:



- 3
- On the grid above, draw a diagonal line that begins at  $(0, 0)$  and connects the points you plotted.
  - List two additional points on the line that are not in your table.  

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  - Explain how you can check whether the coordinates for the points you found in Part b represent ratios equivalent to  $2 : 3$ .  

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# Analyzing a Histogram

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Use the histogram to answer the questions.



- 1 What is the graph about?

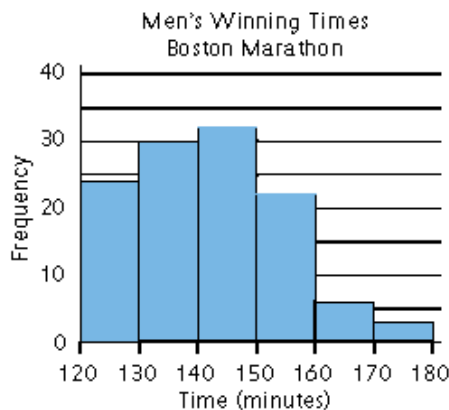
\_\_\_\_\_

- 2 Write one question you can answer with this graph.

\_\_\_\_\_

- 3 Write one question you cannot answer from this graph.

\_\_\_\_\_



- 4 About how many men's times are represented on the graph? \_\_\_\_\_

- 5 Would you expect the median to be about the same as, greater than, or less than the mean?

Explain. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 6 Describe the shape of the graph. \_\_\_\_\_

\_\_\_\_\_

Why do you think the graph has this shape? \_\_\_\_\_

\_\_\_\_\_

## Try This

- 7 In 2011, Geoffrey Mutai set the record for the Boston Marathon at 2:03:02. The race is about 26.2 miles. Find his average minutes per mile. *Hint:* First change the time to minutes.

\_\_\_\_\_



- 1 Multiply or divide.

a.  $24 * \frac{1}{6} =$  \_\_\_\_\_

b.  $64 \div 8 =$  \_\_\_\_\_

c. \_\_\_\_\_  $= 32 * \frac{1}{8}$

d. \_\_\_\_\_  $= 140 \div 20$



- 3 Selene and Jeremy wanted to compare how many words per minute they type. They completed five practice typing tests. Here are their scores:

Selene: 38, 45, 43, 43, 22

Jeremy: 36, 41, 40, 50, 37

Using mean or median, determine who types more words per minute.

\_\_\_\_\_

Explain. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



- 5 How many  $\frac{7}{16}$ -inch segments make up a line segment that is  $1\frac{5}{16}$  inches long? Circle the best answer.

A. 6                      B.  $\frac{1}{2}$

C.  $1\frac{1}{2}$                       D. 3



- 2 Name two fractions between  $\frac{4}{8}$  and  $\frac{4}{9}$ .

\_\_\_\_\_

- 4 Write two fractions equivalent to each one given.

a.  $\frac{3}{5}$  \_\_\_\_\_

b.  $\frac{4}{25}$  \_\_\_\_\_

c.  $\frac{8}{9}$  \_\_\_\_\_

d.  $\frac{7}{12}$  \_\_\_\_\_

- 6 Every 8 days Stephen has to babysit his brother. Every 3 days he has piano lessons. On July 3rd he babysits and has a piano lesson. When is the next date he will babysit and have a piano lesson?

Solution: \_\_\_\_\_

Handwritten text in a stylized script, possibly representing the word "Polaris". The characters are formed with continuous, fluid lines. The first character is a large 'P' with a diagonal stroke. The second character is a vertical line. The third character is an oval shape. The fourth character is a complex shape with a loop and a tail. The fifth character is a circle with a tail. The sixth character is a vertical line. The seventh character is a complex shape with a loop and a tail. The eighth character is a vertical line. The ninth character is a complex shape with a loop and a tail. The tenth character is a vertical line. The eleventh character is a complex shape with a loop and a tail. The twelfth character is a vertical line. The thirteenth character is a complex shape with a loop and a tail. The fourteenth character is a vertical line. The fifteenth character is a complex shape with a loop and a tail. The sixteenth character is a vertical line. The seventeenth character is a complex shape with a loop and a tail. The eighteenth character is a vertical line. The nineteenth character is a complex shape with a loop and a tail. The twentieth character is a vertical line.