

Comparing Models and Analyzing Methods

Lesson 2-5

DATE

TIME

Math Message

Use an area or number-line model to show how to find the solution for each problem.

1 $\frac{2}{3} * \frac{6}{8} =$ _____

$$\frac{12}{12} \cdot \frac{12}{48} = \frac{2}{4} = \frac{1}{2}$$

2 $\frac{6}{8} * \frac{2}{3} =$ _____



3 Mara uses this strategy to multiply $\frac{6}{8} * \frac{2}{3}$.

$$\frac{6}{8} * \frac{2}{3} = (6 * \frac{1}{8}) * (2 * \frac{1}{3}) = (6 * 2) * (\frac{1}{8} * \frac{1}{3}) = 12 * \frac{1}{24} = \frac{12}{24}$$

- a. Discuss her strategy with a partner. Explain how the Commutative and Associative Properties help Mara solve the problem.

- b. Explain how you could represent steps of Mara's strategy with an area model.

4 Use Mara's strategy to multiply $\frac{3}{8} * \frac{4}{5}$. Show your work.

$$6\frac{1}{2} \cdot 4\frac{5}{6}$$

$$\begin{array}{r} 29 \\ \times 10 \\ \hline 290 \end{array}$$

$$\begin{array}{r} 29 \\ \cdot 3 \\ \hline 87 \end{array}$$

$$\begin{array}{r} 30 \\ \cdot 3 \\ \hline 90 \end{array}$$

$$\frac{13}{2} \cdot \frac{29}{6}$$

$$\begin{array}{r} 377 \\ \hline 12 \end{array}$$

$$\left(3\frac{5}{12} \right)$$

$$\begin{array}{r} 390 \\ \text{BCUBD} \\ \text{B} \\ 12 \overline{) 377} \\ \underline{-36} \\ 17 \\ \underline{-12} \\ 5 \end{array}$$

$$390$$
$$\left(377 \right)$$

$$\begin{array}{r} 29 \\ \cdot 13 \\ \hline 187 \\ 290 \\ \hline 377 \end{array}$$

Comparing Models and Analyzing Methods (continued)

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- 5 To use Mara's strategy on the problem below, Jonah wrote:

$$6 * \frac{2}{3} = 6 * (2 * \frac{1}{3}) = 6 * (\frac{1}{3} * 2) = (6 * \frac{1}{3}) * 2 = 2 * 2 = 4$$

Explain how the Commutative and Associative Properties help Jonah solve the problem.

$$\frac{2}{3} * \frac{2}{1} = \frac{4}{1} = 4$$

- 6 Vera started to use Mara's method to solve $\frac{2}{3} * \frac{3}{2}$. Here is what she wrote:

$$\frac{2}{3} * \frac{3}{2} = (2 * \frac{1}{3}) * (3 * \frac{1}{2}) = (2 * \frac{1}{2}) * (3 * \frac{1}{3}) = 1 * 1 = 1$$

- a. Explain how Vera's strategy is similar to and different from Mara's strategy.

- b. Why does it make sense for Vera to regroup her factors the way she did?

- 7 Use strategies similar to those in this lesson to solve the problems below.

a. $\frac{3}{4} * \frac{4}{3} =$ _____

b. _____ = $\frac{8}{9} * \frac{9}{8}$

c. $3\frac{1}{3} * \frac{3}{10} =$ _____

d. _____ = $17 * \frac{1}{17}$

- 8 Describe patterns you see in the number sentences in Problem 7.

Try This

- 9 Use the patterns you described in Problem 8 to solve the problems below.

a. $1 = \frac{14}{4} *$ _____

b. _____ * $\frac{5}{6} = 1$



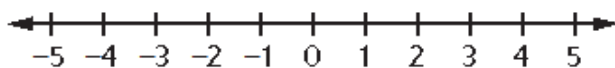
- 1 Use the grid method to find the LCM and GCF of 12 and 32.

GCF (12, 32) = _____

LCM (12, 32) = _____



- 2 Plot and label each point.



A: $-1\frac{1}{2}$

B: $4\frac{1}{4}$

C: $-3\frac{1}{2}$

D: $\frac{6}{2}$

- 3 Find the median and mean for a team's basketball scores.

123, 56, 92, 90, 88, 91

a. Median: _____

b. Mean: _____

- c. If the minimum of the data set were 20 instead of 56, which landmark would change, the median or mean?

show spiral



- 5 **Writing/Reasoning** Explain how understanding the way median and mean are calculated helped you decide which landmark would change in Problem 3c.

$$\textcircled{1} \quad \frac{6}{9} \cdot \frac{9}{10}$$

$$\textcircled{2} \quad \frac{8}{13} \cdot \frac{13}{15}$$

$$\textcircled{3} \quad \frac{300}{850} \cdot \frac{425}{600}$$

$$\textcircled{4} \quad \frac{3}{13} \cdot \frac{14}{17}$$

$$\textcircled{5} \quad \frac{8}{9} \cdot \frac{3}{8}$$

$$\textcircled{6} \quad \frac{7}{12} \cdot \frac{60}{84}$$

$$\textcircled{7} \quad \frac{3}{5} \cdot \frac{6}{7}$$

$$\frac{\cancel{3001}}{\cancel{850}_2} \cdot \frac{\cancel{4251}}{\cancel{600}_2} = \frac{1}{4}$$

$$\frac{300}{\# 425}$$

$$\frac{31}{32} \cdot \frac{17}{35}$$

$$\frac{850}{600}$$