

Lesson 2.3

November 7, 2013

Essential Question

How can you divide by a mixed number?

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LessonTarget

To be able to:

- use a visual model and a formal rule to divide with mixed numbers.

Self-Evaluation Rubric

| Score | Description |
|-------|---|
| 4 | I can teach other students how to use a visual model and a formal rule to divide by with mixed numbers. |
| 3 | I can use a visual model and a formal rule to divide by with mixed numbers. |
| 2 | I recognize a visual model and a formal rule to divide by with mixed numbers. |
| 1 | I do not know how to use a visual model and a formal rule to divide by with mixed numbers. |

 **Key Idea****Dividing Mixed Numbers**

Write each mixed number as an improper fraction. Then divide as you would with proper fractions.

2

Dividing Mixed Numbers

Find $3\frac{5}{6} \div 1\frac{2}{3}$.

$$\begin{aligned} 3\frac{5}{6} \div 1\frac{2}{3} &= \frac{23}{6} \div \frac{5}{3} \\ &= \frac{23}{6} \times \frac{3}{5} \\ &= \frac{23 \times \cancel{3}^1}{\cancel{6}_2 \times 5} \\ &= \frac{23}{10}, \text{ or } 2\frac{3}{10} \end{aligned}$$

∴ So, the quotient is $2\frac{3}{10}$.

Estimate $4 \div 2 = 2$

Write each mixed number as an improper fraction.

Multiply by the reciprocal of $\frac{5}{3}$, which is $\frac{3}{5}$.

Multiply fractions. Divide out common factors.

Simplify.

Reasonable? $2\frac{3}{10} \approx 2$ ✓

Step 1 = Change all mixed numbers to improper fractions

Step 2 = Rewrite/keep 1st number

Step 3 = Change div \rightarrow mult.

Step 4 = take the reciprocal of 2nd number

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Practice

For use after Lesson 2.3

Divide. Write the answer in simplest form.

1. $4\frac{1}{6} \div 5$

Handwritten work for problem 1:

$$4\frac{1}{6} \div 5 = \frac{25}{6} \div \frac{5}{1} = \frac{25}{6} \cdot \frac{1}{5} = \frac{5}{6}$$

2. $\frac{5}{8} \div 5\frac{3}{4}$

Handwritten work for problem 2:

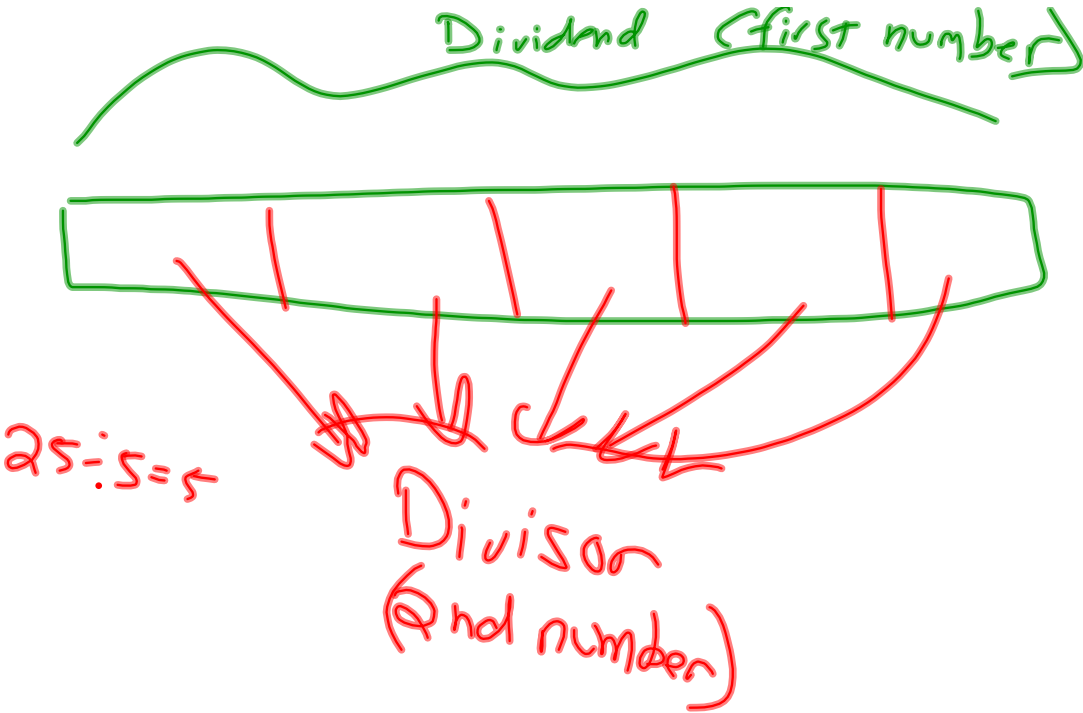
$$\frac{5}{8} \div 5\frac{3}{4} = \frac{5}{8} \div \frac{23}{4} = \frac{5}{8} \cdot \frac{4}{23} = \frac{5}{46}$$

3. $8\frac{1}{6} \div 2\frac{1}{24}$

Handwritten work for problem 3:

$$8\frac{1}{6} \div 2\frac{1}{24} = \frac{49}{6} \div \frac{49}{24} = \frac{49}{6} \cdot \frac{24}{49} = 4$$

The final answer 4 is circled in red.



4. $2\frac{3}{10} \div 3\frac{3}{5}$

$\frac{23}{10} \div \frac{18}{5}$

$\frac{23}{10} \cdot \frac{5}{18} = \frac{23}{36}$

5. $6\frac{6}{7} \div 3\frac{3}{5}$

$\frac{48}{7} \div \frac{18}{5}$

$\frac{48}{7} \cdot \frac{5}{18} = \frac{40}{7}$

6. $3\frac{3}{5} \div 6\frac{6}{7}$

$\frac{18}{5} \div \frac{48}{7}$

$\frac{18}{5} \cdot \frac{7}{48} = \frac{7}{20}$

$$4 \div 2 = \frac{2}{1}$$

$$2 \div 4 = \frac{1}{2}$$

$$9 \div 3 = \frac{3}{1}$$

$$3 \div 9 = \frac{1}{3}$$

Evaluate the expression.

7. $4\frac{7-3}{12} \div \frac{3}{4} \times \frac{3}{11}$

8. $9 \div 8\frac{1}{10} - \frac{5}{9}$

9. $5\frac{7}{8} \times \left(2\frac{4}{5} \div 7\right)$

Handwritten work for problem 7:

$$\frac{55}{12} \div \frac{3}{4}$$

$$\frac{55}{12} \cdot \frac{4}{3} = \frac{55 \cancel{4}}{3 \cancel{12}} = \frac{55}{3}$$

Then:

$$\frac{55}{3} \cdot \frac{3}{11} = \frac{55 \cancel{3}}{\cancel{3} \cdot 11} = \frac{5}{1}$$

The final answer 5 is circled in red.

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Homework

No Homework

