EssentialQuestion

How can you divide by a mixed number?

Lesson 2.3   November 7, 2013

LessonTarget

To be able to:

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

Self-EvaluationRubric

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 $3\dfrac{5}{6} \div 1\dfrac{2}{3}$.

Estimate $4 \div 2 = 2$

$$3\dfrac{5}{6} \div 1\dfrac{2}{3} = \dfrac{23}{6} \div \dfrac{5}{3}$$

Write each mixed number as an improper fraction.

$$= \dfrac{23}{6} \times \dfrac{3}{5}$$

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

$$= \dfrac{23 \times \overset{1}{\cancel{3}}}{\underset{2}{\cancel{6}} \times 5}$$

Multiply fractions. Divide out common factors.

$$= \dfrac{23}{10}, \text{ or } 2\dfrac{3}{10}$$

Simplify.

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

Reasonable? $2\dfrac{3}{10} \approx 2$ ✔

Step 1 = Change all mixed
numbers to improper
fractions

Step 2 = rewrite/keep
1st number

Step 3 = change div → mult.

Step 4 = take the reciprocal
of 2nd number

2.3 **Practice**
For use after Lesson 2.3

Divide. Write the answer in simplest form.

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

$$\frac{25}{6} \div \frac{5}{1}$$

$$\frac{25}{6} \cdot \frac{1}{5} = \boxed{\frac{5}{6}}$$

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

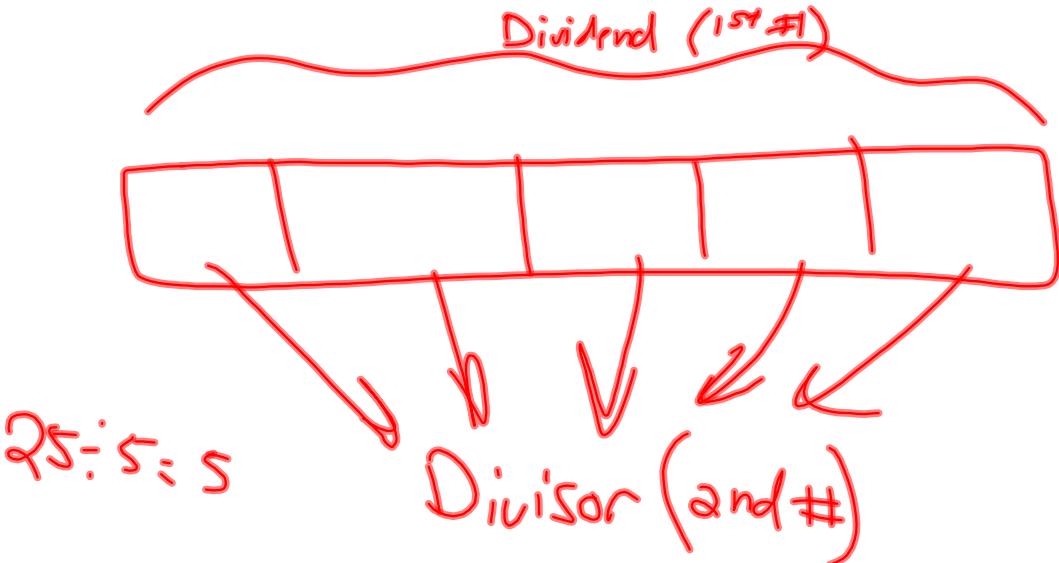$$\frac{5}{8} \div \frac{23}{4}$$

$$\frac{5}{8} \cdot \frac{1}{23} = \boxed{\frac{5}{46}}$$

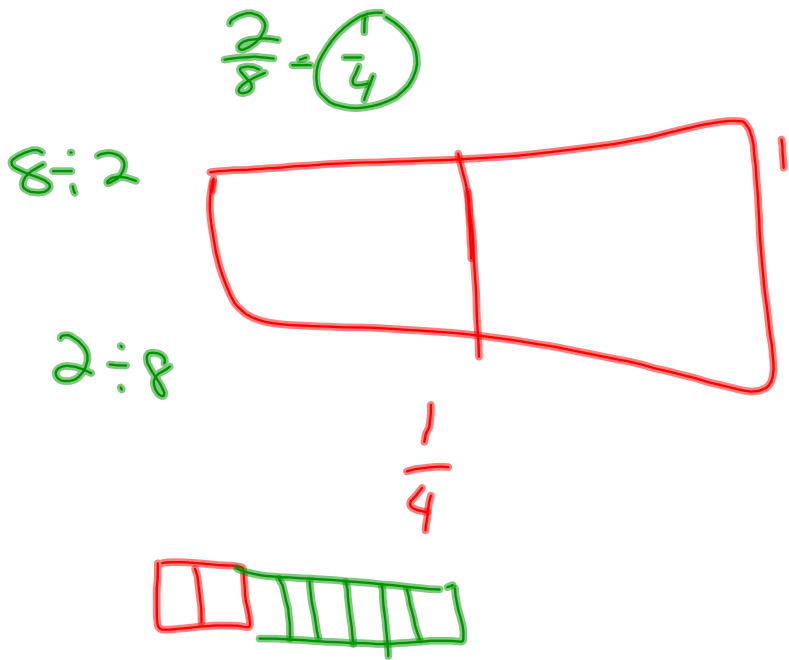**3.** $8\frac{1}{6} \div 2\frac{1}{24}$

$$\frac{49}{6} \div \frac{49}{24}$$

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

$$\boxed{4}$$

Dividend (1st #)

$25 \div 5 = 5$

Divisor (2nd #)

$$\frac{2}{8} = \boxed{\frac{1}{4}}$$

$8 \div 2$

$2 \div 8$

$\frac{1}{4}$

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

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

$\dfrac{23}{10} \cdot \dfrac{5}{18} = \boxed{\dfrac{23}{36}}$

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

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

$\dfrac{48}{7} \cdot \dfrac{5}{18} = \dfrac{40}{21} = \boxed{1\dfrac{19}{21}}$

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

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

$\dfrac{18}{5} \cdot \dfrac{7}{48} = \boxed{\dfrac{21}{40}}$

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

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

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

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

Evaluate the expression.

7. $\left(4\dfrac{7}{12} \div \dfrac{3}{4}\right) \times \dfrac{3}{11}$

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

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

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

$$\dfrac{55}{12} \cdot \dfrac{4}{3} \quad \dfrac{55}{9} \cdot \dfrac{3}{11} = \dfrac{5}{7} = \dfrac{5}{3} = \boxed{1\dfrac{2}{3}}$$

Evaluate the expression.

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

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

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

$$\frac{9}{1} \div \frac{81}{10}$$

$$\frac{9}{1} \cdot \frac{10}{81} = \frac{10}{9} - \frac{5}{9}$$

$$\boxed{\frac{5}{9}}$$

Evaluate the expression.

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

$A = B$

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

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

$3\dfrac{7}{8} \cdot \dfrac{2}{5}$

$\dfrac{47}{8} \cdot \dfrac{2}{5} = \dfrac{47}{20}$

$\dfrac{14}{5} \div \dfrac{7}{1}$

$\dfrac{14}{5} \cdot \dfrac{1}{7}$

$\dfrac{47}{20}$

$2\dfrac{7}{20}$

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Homework

No Homework

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Tomei - Period - 4