

2.3 Dividing Mixed Numbers

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ESSENTIAL QUESTION

How can you divide mixed numbers?

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COMMON CORE STATE STANDARDS

6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.

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STEPS FOR DIVIDING MIXED NUMBERS

1. **BOUNCE THE BALL** (change mixed number to improper fraction)
2. **KEEP** the first fraction
3. **CHANGE** division to multiplication
4. **FLIP** the second fraction (find the reciprocal)

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EXAMPLE 1 Dividing a Mixed Number by a Fraction

Divide. Write answer in simplest form.

$$2\frac{1}{4} \div \frac{3}{8}$$

$$2\frac{1}{4} \div \frac{3}{8}$$

$$2\frac{2}{8} \div \frac{3}{8}$$

$$3\frac{2}{8} \div \frac{3}{8} = 6$$

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EXAMPLE 2 Dividing Mixed Numbers

Divide. Write answer in simplest form.

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

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

$$\frac{23}{6} \div \frac{5}{3}$$

$$\frac{23}{6} \cdot \frac{3}{5} = \frac{23}{10} \text{ or } 2\frac{3}{10}$$

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On Your Own

Divide. Write answer in simplest form.

$$1\frac{3}{7} \div \frac{2}{3}$$

$$1\frac{3}{7} \div \frac{2}{3}$$

$$1\frac{6}{14} \div \frac{2}{3}$$

$$1\frac{6}{14} \cdot \frac{3}{2} = 1\frac{9}{7} \text{ or } 2\frac{2}{7}$$

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On Your Own

Divide. Write answer in simplest form.

$$2\frac{1}{6} \div \frac{3}{4}$$

$$2\frac{1}{6} \div \frac{3}{4}$$

$$\frac{13}{6} \div \frac{3}{4}$$

$$\frac{13}{6} \cdot \frac{4}{3} = \frac{26}{9} \text{ or } 2\frac{8}{9}$$

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On Your Own

Divide. Write answer in simplest form.

$$8\frac{1}{4} \div 1\frac{1}{2}$$

$$\frac{33}{4} \div \frac{3}{2}$$

$$\frac{33}{4} \cdot \frac{2}{3} = \frac{11}{2}$$

or

$$5\frac{1}{2}$$

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On Your Own

Divide. Write answer in simplest form.

$$6\frac{4}{5} \div 2\frac{1}{8}$$

$$\frac{34}{5} \div \frac{17}{8}$$

$$\frac{34}{5} \cdot \frac{8}{17} = \frac{16}{5}$$


or

$$3\frac{1}{5}$$

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EXAMPLE 4 Real-Life Application

One serving of tortilla soup is $1\frac{2}{3}$ cups. A restaurant cook makes 50 cups of soup. Is there enough to serve 35 people? Explain.



$$50 \div 1\frac{2}{3}$$

$$50 \div \frac{5}{3}$$

$$50 \cdot \frac{3}{5} = 30$$

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No there is not because there are only 30 servings.

EXAMPLE 9 Using Order of Operations

Evaluate the expression. Write answer in simplest form.

$$5\frac{1}{4} \div 1\frac{1}{8} - \frac{2}{3}$$

$$\frac{21}{4} \div \frac{9}{8} - \frac{2}{3}$$

$$\frac{21}{4} \cdot \frac{8}{9} - \frac{2}{3}$$

$$\frac{14}{3} - \frac{2}{3} = \frac{12}{3} = 4$$

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$$\frac{14}{3} - \frac{2}{3} = \frac{12}{3} = 4$$

On Your Own

Evaluate the expression. Write answer in simplest form.

$$1\frac{1}{2} \div \frac{1}{6} - \frac{7}{8}$$

$$\frac{3}{2} \div \frac{1}{6} - \frac{7}{8}$$

$$\frac{3}{2} \cdot \frac{6}{1} - \frac{7}{8}$$

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$$\frac{9 \cdot 8}{1 \cdot 8} - \frac{7}{8}$$

$$\frac{72}{8} - \frac{7}{8} = \frac{65}{8} \text{ or } 8\frac{1}{8}$$

On Your Own

Evaluate the expression. Write answer in simplest form.

$$3\frac{1}{3} \div \frac{5}{6} + \frac{8}{9}$$

$$\frac{10}{3} \div \frac{5}{6} + \frac{8}{9}$$

$$\frac{10}{3} \cdot \frac{6}{5} + \frac{8}{9}$$

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$$\frac{4 \cdot 9}{1 \cdot 9} + \frac{8}{9}$$

$$\frac{36}{9} + \frac{8}{9} = \frac{44}{9} \text{ or } 4\frac{8}{9}$$

On Your Own

Evaluate the expression. Write answer in simplest form.

$$\frac{2}{5} + 2\frac{4}{5} + 1\frac{3}{4}$$

$$\frac{2}{5} + 2\frac{4}{5} + 1\frac{3}{4}$$

$$\frac{2}{5} + \frac{14}{5} + \frac{7}{4}$$

$$\frac{2}{5} + \frac{14}{5} + \frac{7}{4}$$

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$$\frac{2}{5} + \frac{16}{5} = \frac{18}{5} = 3\frac{3}{5}$$

On Your Own

Evaluate the expression. Write answer in simplest form.

$$\frac{2}{3} - 1\frac{4}{7} \div 4\frac{5}{7}$$

$$\frac{2}{3} - 1\frac{4}{7} \div 4\frac{5}{7}$$

$$\frac{2}{3} - 1\frac{4}{7} \cdot \frac{7}{23}$$

$$\frac{2}{3} - 1\frac{4}{23}$$

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$$\frac{2}{3} - 1\frac{4}{23} = \frac{2}{3} - \frac{27}{23} = -\frac{77}{69}$$