LESSON 2.3c

Yours Is to Reason Why!

6.NS.1

Objective: Fractions by Fractions Division

Warm-Up

Calculate each quotient.

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

Sample worked out

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

Keep value: $\frac{3}{8}$

Change operation: $\div \rightarrow \times$

Use the reciprocal: $\frac{3}{4} \rightarrow \frac{4}{3}$

$\frac{3}{8} \times \frac{4}{3} = \frac{12}{24}$ ← Simplify

$= \frac{1}{2}$ ← Solution

3. $\frac{6}{7} \div \frac{1}{5}$

2. $\frac{1}{3} \div \frac{7}{9}$

4. $\frac{3}{7} \div \frac{2}{9}$

EXPLORE 5

Dividing with Mixed Numbers

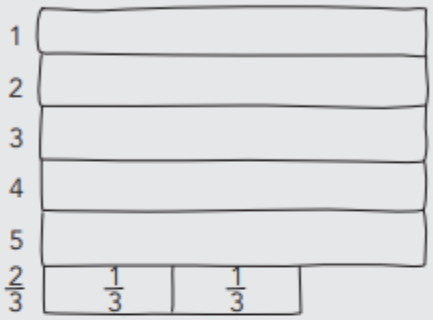
Let's consider how to make a bag of trail mix that has a weight greater than 1 pound.

If you have $5\frac{2}{3}$ pounds of trail mix, how many bags can you make so that each bag contains $1\frac{5}{6}$ pounds?

Analyze each student's method.

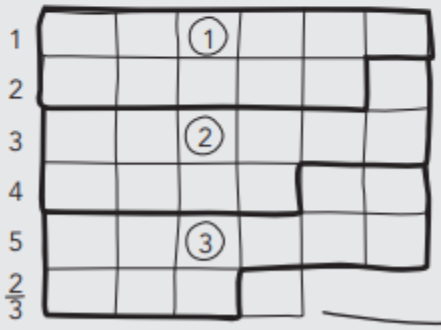
Carla

I drew a model for $5\frac{2}{3}$.



I knew that I needed $1\frac{5}{6}$ groups, so I divided my model to show $\frac{1}{6}$'s. Because $1\frac{5}{6} = \frac{11}{6}$,

I then marked off groups of $\frac{11}{6}$.



3 groups of $\frac{11}{6}$ and one $\frac{1}{6}$ part left over.

The remaining $\frac{1}{6}$ part is actually $\frac{1}{11}$ of a group.

So, I can make $3\frac{1}{11}$ bags of trail mix.

Karen

I wrote a division sentence, and then converted both mixed numbers to improper fractions.

$$5\frac{2}{3} \div 1\frac{5}{6} = \frac{17}{3} \div \frac{11}{6}$$

$$= \frac{17}{\cancel{3}_{1}} \cdot \frac{\cancel{6}^{2}}{11} = \frac{34}{11}$$

$$= 3\frac{1}{11}$$

So, I can make $3\frac{1}{11}$ bags of trail mix.

1. Karen converted the mixed numbers to improper fractions. How did Carla represent this same step?

2. Describe how Karen changed from division to multiplication.

Solve each problem. Show your work and be sure to label your answer.

3. The cook in the school cafeteria made $47\frac{1}{2}$ cups of mashed potatoes. If there are $1\frac{1}{4}$ cups of mashed potatoes in a serving, how many servings did she make?

4. One of the most beautiful hiking trails in the United States is Glacier Gorge in Rocky Mountains National Park. The hiking trail through Glacier Gorge is $9\frac{3}{5}$ miles round trip. If you hike $1\frac{3}{5}$ miles an hour, how many hours will the round trip take

Going (Almost) Numberless

1. Complete each statement with greater than, less than, or the same as.

a. If a quantity greater than 1 is divided by a value between 0 and 1, the quotient will be _____ the original quantity.

b. If a quantity between 0 and 1 is divided by a value greater than 1, the quotient will be _____the original quantity.

c. If a quantity between 0 and 1 is divided by a value between 0 and 1, the quotient will be _____the original quantity.

2. Complete each statement with always, sometimes, or never.

a. If a mixed number is divided by another mixed number, the quotient will _____ be greater than 1.

b. If a fraction between 0 and 1 is multiplied by another fraction between 0 and 1, the product will _____be less than 1.

c. If a whole number is divided by a fraction between 0 and 1, the quotient will _____be less than 1.

d. If a fraction between 0 and 1 is multiplied by a mixed number, the product will _____ be greater than 1.

3. Consider the quotients $\frac{5}{6} \div \frac{1}{2}$ and $\frac{5}{6} \div 2$.

a. Describe how these quotients are different.

b. Write a real-world problem that can be solved using each division.

Name: _____ Date: _____ Class: _____

Homework HW

LESSON 2.3c

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Objective

Fractions by Fractions Division

Practice

Calculate each quotient.

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

2. $\frac{7}{8} \div \frac{1}{4}$

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

4. $\frac{15}{16} \div \frac{3}{4}$

5. $\frac{7}{12} \div \frac{1}{3}$

6. $1\frac{1}{8} \div \frac{5}{6}$

7. $5\frac{3}{8} \div \frac{1}{4}$

8. $7\frac{1}{3} \div 1\frac{2}{3}$