7 Multiplication and Division Fractions

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Math 9 Name: _____

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Multiplying and Dividing Fractions (3.4 and 3.5)

Multiplying Fractions (3.4):

Example 1: You had $\frac{1}{2}$ of a chocolate bar. You ate $\frac{1}{3}$ of what you had. How much of the whole chocolate bar did you eat? Draw a picture!

X

$\frac{1}{2}$

$\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$

Example 2:

$$\frac{2}{5} \times \left(-\frac{1}{2}\right)$$

Multiplying & Dividing fractions DO NOT NEED a common denominator!

$\frac{2}{5} \times \left(\frac{-1}{2}\right) = \frac{1(-1)}{5(1)} = \frac{-1}{5}$

Method 1: 1. Reduce the fractions!

Reduce!
POW!
POW!

2. Multiply the numerators
3. Multiply the denominators

Method 2: 1. Multiply the numerators
2. Multiply the denominators
3. Reduce the fraction.

$\frac{2}{5} \times \left(\frac{-1}{2}\right) = \frac{2(-1)}{5(2)} = \frac{-2}{10}$

Example 3. Determine each product.

a) $\left(-\frac{3}{4}\right)\times\left(-\frac{4}{5}\right)=\frac{3}{5}$ **b)** $\left(-\frac{2}{3}\right)\times\left(\frac{5}{4}\right)=\frac{-5}{6}$

c) $\left(\frac{10}{7}\right)\left(-\frac{13}{8}\right)$

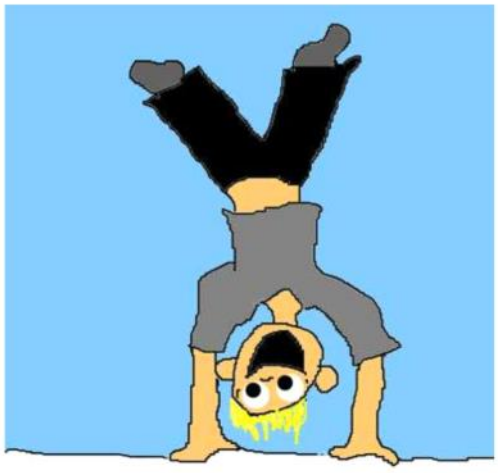
$=-\frac{65}{28}$

$=-2\frac{9}{28}$

d) $\left(-4\frac{13}{5}\right)\left(-2\frac{5}{12}\right)$

$\left(\frac{-33}{5}\right)\left(\frac{-29}{12}\right)=\frac{667}{60}$

Dividing Rational Numbers (3.5)



What do handstands have in common with division of fractions? When you're dividing fractions, flip the second one and multiply!

$$\frac{2}{3} \div \left(\frac{-5}{7}\right)$$

Keep: Copy the first fraction

Kiss: Change the division (÷) to a multiplication (×).

Flip: Write the reciprocal of the 2nd fraction (flip it!)

$$\frac{2}{3} \div \left(\frac{-5}{7}\right) = \frac{2}{3} \times \left(\frac{-7}{5}\right) = \frac{-14}{15} = \frac{14}{-15} = -\frac{14}{15}$$

Example 4: Reciprocal of:

a) $\frac{-4}{5}$? $\frac{-5}{4} = \frac{5}{-4} = -\frac{5}{4}$ b) $\frac{5}{1}$? $\frac{1}{5}$

Example 5: Divide the following fractions.

a) $\frac{1}{8} \div \frac{2}{1} =$ $\frac{1}{8} \times \frac{1}{2} = \frac{1}{16}$

b) $\left(\frac{-4}{9}\right) \div \frac{2}{3} =$ $\frac{-4}{9} \times \frac{3}{2} = \frac{-2}{3}$

c) $\left(-2\frac{2}{5}\right) \div \left(-\frac{8}{15}\right) =$ $\left(\frac{-12}{5}\right) \div \frac{8}{15}$

$\frac{-12}{5} \times \frac{15}{8} = \frac{-9}{2} = -4\frac{1}{2}$

Example 6: More practice - divide the following fractions:

a) $\left(-1\frac{1}{8}\right) \div \left(2\frac{3}{4}\right)$

$\frac{-9}{8} \div \frac{11}{4}$

$-\frac{9}{8} \times \frac{4}{11} = -\frac{9}{22}$

b) $\left(-2\frac{6}{7}\right) \div \left(-3\frac{1}{3}\right)$

$\left(\frac{-20}{7}\right) \div \left(\frac{-10}{3}\right)$

$\left(\frac{-20}{7}\right) \times \left(\frac{3}{-10}\right) = \frac{6}{7}$

Assignment:

- ★★ "What did the dentist…" Worksheet (multiplication)
- ★★ "The moral of the story" Worksheet (division)
- ★★ Why did the build a gym on Wall Street?" Worksheet (division with mixed numbers)
- ★★★ Sec. 3.4, p. 129 #16bd, Sec. 3.5, p. 135 #20