

Week 5: Mini Lesson #1

Sept. 22, 2014 Sept. 28, 2015

Nov. 17, 2020

Oct. 24, 2018

For Tasks #2 & 3

(others may listen if you find it helpful to you!)

- **Multiplication**

Math 9A Notes (Week 5) Multiplying & Dividing Rational Numbers

Name: _____

Section 3.4: Multiplying Rational Numbers

When multiplying or dividing rational numbers, the rules for the positive and negative signs are the same as with integers.

Multiplying Integers

*** Be careful of the signs.

a). $(-6) \times (-3) = 18$

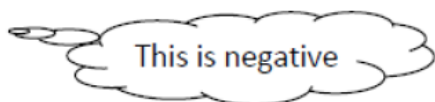
b). $20 \times (-2) = -40$

Multiplying and Dividing	
$\left. \begin{array}{l} + \text{ and } + = + \\ - \text{ and } - = + \end{array} \right\}$	same signs is POSITIVE
$\left. \begin{array}{l} - \text{ and } + = - \\ + \text{ and } - = - \end{array} \right\}$	opposite signs NEGATIVE

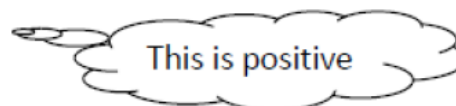
Multiplying Decimals

To multiply decimals without a calculator, line-up the last decimal place. The number with the most digits should go on top. Don't worry about the sign until your final answer.

a). $(-1.5) \times 1.8 = -2.70$



b). $(-2.6) \times (-3.25) = 8.45$

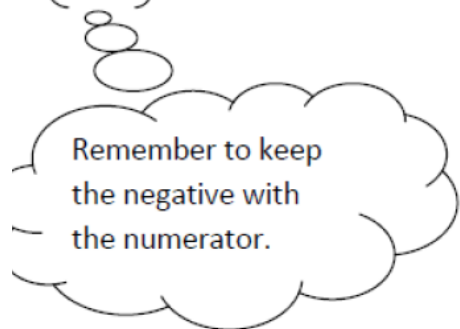


Multiplying Fractions

To multiply fractions, multiply straight across.

$$\frac{\text{Numerator} \times \text{Numerator}}{\text{Denominator} \times \text{Denominator}}$$

$$a). \left(-\frac{2}{5}\right) \times \frac{3}{8} = \frac{-2 \times 3}{5 \times 8} = \frac{-6}{40}$$



Reduce Lowest terms $\frac{-6 \div 2}{40 \div 2} = \frac{-3}{20}$

$$b). 2\frac{1}{4} \times \left(-\frac{2}{3}\right)$$

$$\begin{aligned} & \frac{9}{4} \times \left(-\frac{2}{3}\right) \\ & = -\frac{18}{12} \div 6 \\ & = -\frac{3}{2} \end{aligned}$$

$$c). 3 \times \frac{5}{8}$$

$$\begin{aligned} & \frac{3}{1} \times \frac{5}{8} \\ & = \frac{15}{8} \end{aligned}$$

Always reduce answers to lowest terms. The most common way is to multiply first then simplify the answer. There is another way!

You Can simplify the fractions first before you multiply:

Determine each product. Be sure to simplify your answer.

$$\frac{-11}{7} \times \frac{-21}{44}$$

** it would be easier to reduce first before multiplying since the numbers are so big.

** because we are multiplying, you can reduce either numerator with either denominator.

Can $\frac{-11}{7}$ reduce? No, so try the other denominator.

$$\frac{-11}{7} \times \frac{-21}{44} = \frac{231}{308} = \frac{3}{4}$$

$$-\frac{1}{1} \times -\frac{3}{4} = \frac{3}{4}$$

Try These! Simplify first, then multiply.

14: 1 ②, 7/4

a). $\frac{8}{3} \times \frac{-7}{4} = -\frac{56}{12}$

$\frac{2}{3} \times -\frac{7}{1} = -\frac{14}{3}$

b). $\frac{9}{16} \times \frac{14}{2} = \frac{126}{32}$

$\frac{3}{8} \times \frac{7}{1} = \frac{21}{8}$

MULTIPLYING Rational Numbers

Multiplying Rational Numbers with the SAME Sign

Words

The product of two rational numbers with the same sign is **POSITIVE**.

Numbers

$$-8.2 \times (-1.7) = 13.94$$

Multiplying Rational Numbers with DIFFERENT Signs

Words

The product of two rational numbers with different signs is **NEGATIVE**.

Numbers

$$\frac{8}{15} \left(-\frac{2}{3}\right) = -\frac{16}{45}$$

PRACTICE



Multiply. Write each answer in simplest form.

EXAMPLE 1

$$\begin{aligned} &-\frac{6}{7} \left(-\frac{5}{2}\right) \\ &= 30 \\ &= \frac{15}{7} \text{ or } 2\frac{1}{7} \end{aligned}$$

EXAMPLE 2

$$\begin{aligned} &2(-3.4) \\ &= -6.8 \end{aligned}$$

EXAMPLE 3

$$\begin{aligned} &\left(-\frac{2}{5}\right)^2 \\ &= \left(\frac{-2}{5}\right)\left(\frac{-2}{5}\right) \\ &= \frac{4}{25} \end{aligned}$$

WORD PROBLEM

The cell phone company will add -\$3.85 to your next bill for each of the 5 months you were overcharged. How much will be added to your next bill?

$$\begin{aligned} &(-3.85) \times 5 \\ &= -\$19.25 \end{aligned}$$

