

Multiplying Rational Numbers

What rules do we use to multiply integers?

Indicate if the answer will be **negative** or **positive**. How do you know?

$(-4) \times 3 =$ negative 

$(-3) \times (-6) =$ positive

$2 \times 8 =$ positive

When multiplying integers, we use the following rules:

a **negative** \times a **positive** \neq a **negative** \neq (and vice versa)
a **negative** \times a **negative** \neq a **positive** \neq
a **positive** \times a **positive** \neq a **positive** \neq

So, when the signs are **opposite**,
the product is **negative**

and

when the signs are **same**,
the product is **positive**

NOW, LET'S TAKE A LOOK AT
FRACTIONS

WHAT RULES DO WE USE TO MULTIPLY FRACTIONS?

Evaluate the following expression.

$$\frac{6}{5} \times \frac{8}{7} = \frac{6 \times 8}{5 \times 7} = \frac{48}{35}$$

** Then, of course, REDUCE!! (if possible)

Try these out!

Use what you know about multiplying integers & fractions to evaluate the following expressions.

$$\left(\frac{7}{-4}\right) \times \frac{9}{2}$$

$$= \frac{63}{-8} = -\frac{63}{8}$$

$$9 \times (-3)$$

$$-27$$

$$\frac{9}{2} \times \left(\frac{-3}{10}\right)$$

$$\frac{-27}{20}$$

Don't forget to **ALWAYS** reduce if possible!

$$(-1.5) \times (-1.8)$$

$$\left(\frac{-8}{\cancel{12}}\right) \times \left(-\frac{\cancel{6}}{5}\right)^2$$

$$+ \frac{8 \times 6}{3 \times 5}$$

$$= \frac{48}{15} = \boxed{\frac{16}{5}}$$

$$(-3.5)(2.8)$$

$$3\frac{2}{3} \times -\frac{5}{4}$$

$$-3\frac{1}{3} \cdot 5\frac{1}{2}$$

$$\frac{1}{5} \times 2\frac{1}{3} \times \frac{1}{7}$$

**WHEN WE USE BRACKETS TO WRITE A PRODUCT,
WE DO NOT NEED THE MULTIPLICATION SIGN!**

WE CAN WRITE

$$\frac{3}{2} \times \left(-\frac{1}{5}\right) \text{ as } \left(\frac{3}{2}\right)\left(-\frac{1}{5}\right)$$



AND

$$(-1.5) \times 1.8 \text{ as } (-1.5)(1.8)$$

Practice Questions

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Chef Flipsburger goofed and added $1\frac{3}{4}$ teaspoons of baking soda. Change the amount of each ingredient to salvage the recipe!

Banana Bread

- 2 cups all-purpose flour
- 1 teaspoon baking soda
- $\frac{1}{4}$ teaspoon salt
- $\frac{1}{2}$ cup butter
- $\frac{3}{4}$ cup brown sugar
- 2 eggs, beaten
- $2\frac{1}{3}$ cups mashed overripe bananas