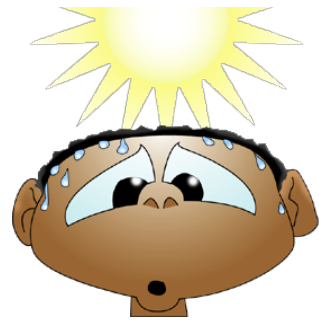


# Warm-Up



Evaluate the following expressions:

$$\frac{3}{5} - \left(-\frac{1}{2}\right) + \frac{2}{3}$$

$$\begin{array}{l} \frac{3}{5} + \frac{1}{2} + \frac{2}{3} \\ \frac{18}{30} + \frac{15}{30} + \frac{20}{30} \\ \frac{53}{30} \end{array}$$

$$23.5 + (-12.61) - 3.2$$

$$\begin{array}{l} 23.5 - 12.61 - 3.2 \\ 7.69 \end{array}$$

## Multiplying Rational Numbers

What rules do we use to multiply integers?

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

$$(-4) \times 3 = \quad \text{negative} \quad \img alt="green envelope icon" data-bbox="505 395 568 415"/>$$

$$(-3) \times (-6) = \quad \text{positive}$$

$$2 \times 8 = \quad \text{positive}$$

When multiplying **integers**, we use the following rules:

a **negative**  $\times$  a **positive**  $\#$  a **negative**  $\#$  (and vice versa)

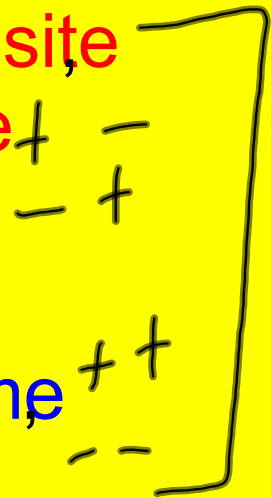
a **negative**  $\times$  a **negative**  $\#$  a **positive**  $\#$

a **positive**  $\times$  a **positive**  $\#$  a **positive**  $\#$

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

and

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





What about  
decimals???

If you are given an expression with rational numbers in decimal form:

Determine the sign of the product

then...

find the numerical value by estimating to place the decimal point

OR

by using a calculator!

### Example 1

$$0.7 \times (-1.5)$$

The rational numbers have opposite signs,  
so the product will be negative!

Use mental math to determine the product:

$$7 \times (-15) = -105$$

Estimate to place the decimal point:

Since 0.7 is close to 1,  
and -1.5 is close to -2,  
then  $0.7 \times (-1.5)$  is close to  $1 \times (-2) = -2$

So, place the decimal point after the 1 in -105.

$$0.7 \times (-1.5) = -1.05$$

### Example 2

$$(-1.45) \times (-3.56)$$

When there are more than 2 digits  
in both numbers being multiplied,  
use a calculator!

The rational numbers have the same sign,  
so the product will be positive.

Punch in  $1.45 \times 3.56$  to display: 5.162

$$(-1.45) \times (-3.56) = 5.162$$

Now, let's take a look at **Fractions** .

What rules do we use to multiply fractions?

Evaluate the following expression.

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

How did you get your answer?

When multiplying fractions, we use this rule:

Multiply the **numerator** by the **numerator**  
then

Multiply the **denominator** by the **denominator**

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

## Try these out!

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

$$\left(\frac{7}{-4}\right) \times \frac{9}{2}$$
$$\frac{63}{-8}$$

$$9 \times (-3)$$
$$-27$$

$$\frac{9}{2} \times \left(\frac{-3}{10}\right)$$
$$-\frac{27}{20}$$

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

$$(-1.5) \times (-1.8)$$
$$2.7$$

$$\left(-\frac{8}{3}\right) \times \left(-\frac{6}{5}\right)$$
$$\frac{48}{15} = \frac{16}{5} \text{ or } 3\frac{1}{5}$$

When we use brackets to write a product,  
we do not need the multiplication sign!

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



**AND**

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



# Practice Questions

## p. 127-128

# 3 Indicate which will be + or - then calculate each product (please write out the questions not just the answer)

#4 Indicate which will be + or - then calculate each product (please write out the questions not just the answer)

# 5 Write out the question then answer

# 7 (a,b,c,d) show work