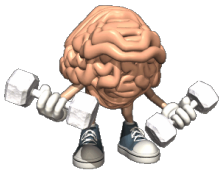
## Curriculum Outcome

**N1: Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers; solving problems that involve arithmetic operations on rational numbers.**

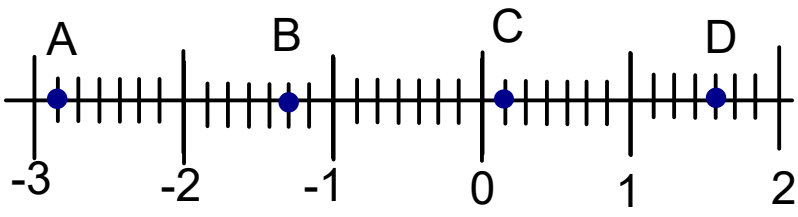
**Student Friendly:**
**"Multiplying fractions and decimals "**



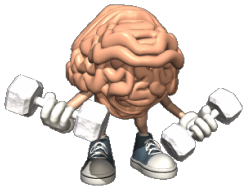
Warm Up

1) 6.8 - (2.77 - 3.8) - (7.6 -2.8 ) + 5.3

2)




3) $\frac{-1}{8} + \left(\frac{7}{2} - \frac{3}{5}\right) - \frac{5}{4}$



Warm Up

1) $6.8 - (2.77 - 3.8) - (7.6 - 2.8) + 5.3$

$6.8 - (-1.03) - (4.8) + 5.3$

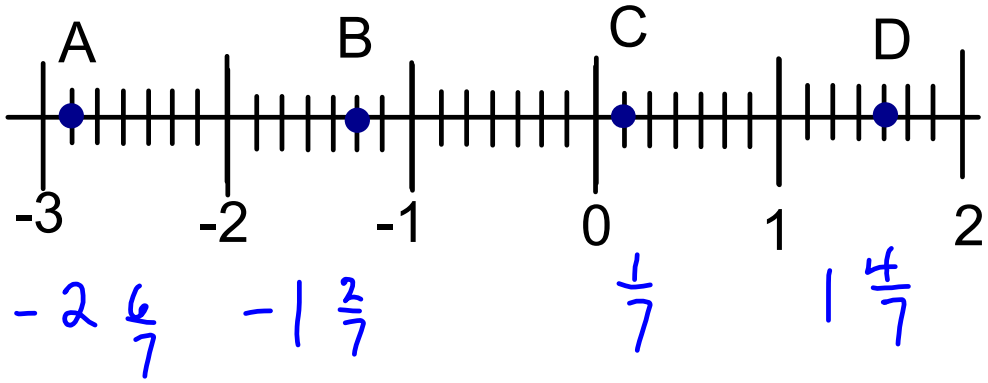
$7.83 - (4.8) + 5.3$

$3.03 + 5.3$

$8.33$

Warm Up

2)




3) $\frac{-1}{8} + \frac{7}{2} - \frac{3}{5} - \frac{5}{4}$

$\frac{-5}{40} + \frac{140}{40} - \frac{24}{40} - \frac{50}{40}$

$\frac{135}{40} - \left(\frac{24}{40}\right) - \frac{50}{40}$

$\frac{111}{40} - \frac{50}{40}$

$\frac{61}{40}$ $\left| \frac{21}{40} \right.$

# Section 3.4

## Multiplying Rational Numbers

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

(-4) x 3 =

(-3) x (-6) =

2 x 8 =

When multiplying integers , we use the following rules

(-) x (+) = ( -)

Copy down

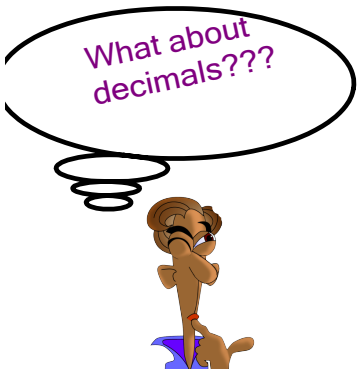
(-) x (-) = (+)

(+) x (+) = (+)

So, when the signs are_____,
the product is _____

and

when the signs are the_____,
the product is _____ !




## When we have decimals use a calculator!

| Example 1 | Example 2 |
| --- | --- |
| 0.7 x (-1.5) = -1.05 | (-1.45) x (-3.56) = 5.162 |

Now, let's take a look at Fractions.

What rules do we use to multiply fractions?

Copy Down

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

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!

Don't forget to ALWAYS reduce if possible!

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

| | | |
|---|---|---|
| $\left(\frac{7}{-4}\right) \times \frac{9}{2}$ <br> $-\frac{63}{8}$ | $9 \times (-3)$ <br> $-27$ | $\frac{9}{2} \times \left(\frac{-3}{10}\right)$ <br> $-\frac{27}{20}$ |
| (-1.5) x (-1.8) <br> 2.7 | 0.2 x (-0.4) <br> $-0.08$ | $\left(-\frac{8}{7}\right) \times \left(-\frac{6}{5}\right)$ <br> $\frac{48}{35}$ |

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 $(-1.5)(1.8)$

$\left(\frac{-3}{5}\right)\left(\frac{3}{16}\right)$

$= \frac{-3 \times 3}{5 \times 16}$

$\frac{-9}{80}$

Multiplying Rational Numbers in Fraction Form

We should always try to reduce before we start the questions so we keep our numbers small

Look for common factors in the numerators and denominators.
11 and 44 have a common factor 11.
7 and 21 have a common factor 7.
Divide numerator and denominator by their common factors.

Determine the product:

$\left(-\frac{\cancel{11}^{1}}{\cancel{7}_{1}}\right)\left(-\frac{\cancel{21}^{3}}{\cancel{44}_{4}}\right)$ $\frac{231}{308}$

First, we simplify:

$= \left(-\frac{11}{7}\right)\left(-\frac{21}{44}\right)$

Then start multiplying

So, our new expression, looks like this:

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

$= \frac{3}{4}$

$\left(\frac{-\cancel{16}^{4}}{\cancel{5}_{1}}\right)\left(\frac{\cancel{35}^{7}}{\cancel{12}_{3}}\right) = -\frac{28}{3}$

$\frac{560}{60}$

$= \frac{56}{6}$

$= \frac{28}{3}$

## Multiplying Rational Numbers in mixed number Form

Determine the product.

$$\left(2\tfrac{2}{3}\right)\left(-1\tfrac{3}{4}\right)$$

Write the mixed numbers as improper fractions:

$$= \left(\tfrac{8}{3}\right)\left(-\tfrac{7}{4}\right)$$

$$-\tfrac{14}{3}$$

$$\left(-4\tfrac{2}{7}\right)\left(-5\tfrac{2}{3}\right)$$

$$\left(-\tfrac{30}{7}\right)\left(-\tfrac{17}{3}\right)$$

$$\tfrac{170}{7}$$

$$= \frac{(-10)(-17)}{(7)(1)}$$

$$= \frac{170}{7}$$

$$= \mathbf{24\tfrac{2}{7}}$$

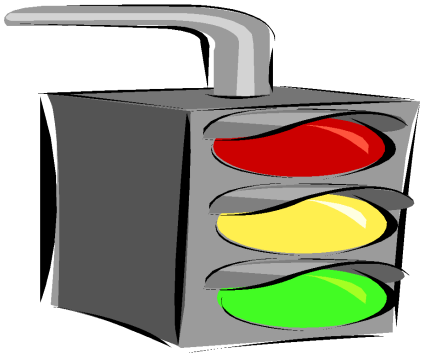
# Multiplying Rational Numbers to Solve Problems

The price of a share in CIBC changed by -$1.57 on March 4th, 2008.
Linda owns 43 shares.
By how much did Linda's shares change on that day?

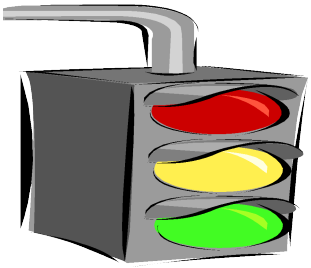
$43(-1.57) = -67.51$

The change in value is represented by this expression:

Use a calculator.



Now it is time for Home Learning




# Practice Questions
# p. 128-129

## Questions

**3, 4, 5abcd, 6,7, 9,**
**11, 12, 14,15ab, 16ab**

Do not just write down answers show work. You don't have to rewrite word problems but for 11, 12 write out the questions (NOT JUST THE ANSWERS)