

PRINCIPLES - LESSON 1C

MULTIPLYING & DIVIDING REAL NUMBERS

$$2(4) = 8$$

$$2(3) = 6$$

$$2(2) = 4$$

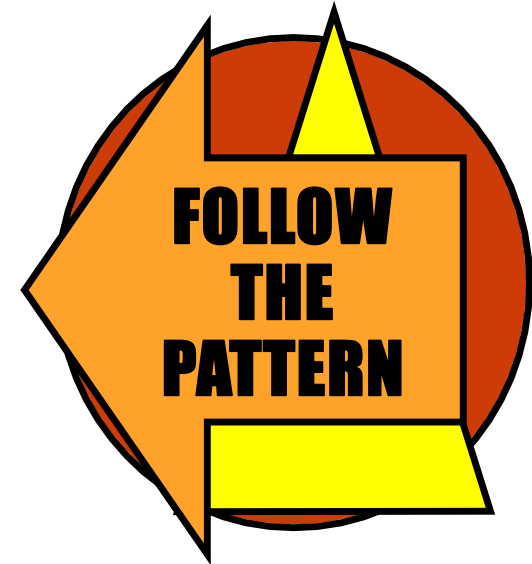
$$2(1) = 2$$

$$2(0) = 0$$

$$2(-1) = -2$$

$$2(-2) = -4$$

$$2(-3) = -6$$



**WHAT DO YOU GET WHEN
YOU MULTIPLY A POSITIVE
BY A NEGATIVE?**

MULTIPLYING A POSITIVE BY A NEGATIVE

POSITIVE • **NEGATIVE** = **NEGATIVE**

Simplify.

ex1) $3(-4) = -12$

ex2) $-8 \cdot 5 = -40$

ex3) $(-3.56)(0.4) = -1.424$



**WHAT DO YOU GET WHEN
YOU DIVIDE ONE POSITIVE
AND ONE NEGATIVE?**

DIVIDING A POSITIVE AND A NEGATIVE

**The sign rules for division are identical to the rules for multiplication.
Dividing one positive and one negative also gives a negative.**

Simplify.

$$\text{ex4) } 6 \div (-2) = (-3)$$

$$\text{ex5) } \frac{-20}{4} = (-5)$$

MULTIPLYING OR DIVIDING TWO NEGATIVES

$$-2 (4) = -8$$

$$-2 (3) = -6$$

$$-2 (2) = -4$$

$$-2 (1) = -2$$

$$-2 (0) = 0$$

$$-2 (-1) = 2$$

$$-2 (-2) = 4$$

$$-2 (-3) = 6$$



**FOLLOW
THE
PATTERN**

**WHAT DO YOU GET WHEN
YOU MULTIPLY OR DIVIDE A
NEGATIVE BY A NEGATIVE?**

MULTIPLYING OR DIVIDING TWO NEGATIVES

NEGATIVE • **NEGATIVE** = **POSITIVE**

Simplify.

ex6) $-5(-8) = 40$

ex7) $\left(-3\frac{1}{2}\right)\left(-1\frac{1}{2}\right) = \frac{-7}{2} \cdot \frac{-3}{2} = \frac{21}{4}$

ex8) $\frac{-6}{-2} = 3$

Reduced
✓ improper
fractions are
fine. No need to
convert to a mixed
number.



**DIVIDING TWO NEGATIVES
ALSO GIVES A POSITIVE RESULT.**

MULTIPLYING OR DIVIDING MORE THAN TWO NEGATIVES

$$(-1)(-1) = 1$$

$$(-1)(-1)(-1) = -1$$

$$(-1)(-1)(-1)(-1) = 1$$

$$(-1)(-1)(-1)(-1)(-1) = -1$$

$$(-1)(-1)(-1)(-1)(-1)(-1) = 1$$

What is the rule for multiplying or dividing more than two negative numbers?

MULTIPLYING OR DIVIDING MORE THAN TWO NEGATIVES

ex9) $3 \underline{(-2)} \underline{(-8)} (9) = 432$

even number of negatives (+)

ex10) $\underline{-6} \underline{(-1)} (4) \underline{(-3)} (5) = -360$

odd number of negatives (-)

ex11) $5 \underline{(-3)} \underline{(-6)} \underline{(-10)} \underline{(0)} (4) \underline{(-14)} = 0$

0 ruins the whole thing

DIVISION AND ZERO

Try both of these problems in your calculator.



$$\frac{0}{15}$$

or

$$0 \div 15$$

= 0

$$\frac{15}{0}$$

or

$$15 \div 0$$

undefined

We can NEVER
divide by zero.

PROPERTIES OF ZERO

THE PROPERTIES OF ZERO

1. Zero multiplied by anything is zero. $0 \cdot 27 = 0$

2. Zero divided BY anything is zero. $\frac{0}{27} = 0$

3. Anything divided BY ZERO is **undefined**. $\frac{27}{0}$ is undefined.