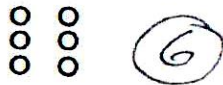


Math 7 Notes
 Multiplying and Dividing Integers
 (Sections 3.4 and 3.5)

○ = +
 ● = -

One meaning of multiplication is making groups.

2(3) means 2 groups of 3



2(-3) means 2 groups of -3



$$-4(2) = 2(-4) = \textcircled{-8}$$

$$\begin{array}{l} -2(4) \\ 4(-2) \end{array} = \textcircled{-8}$$

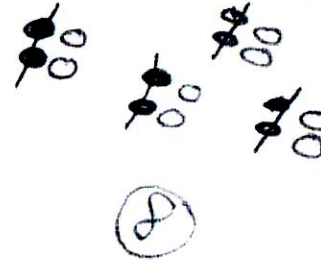


How do we model these problems with counters?

$$-4(-2)$$

Remove 4 groups of -2

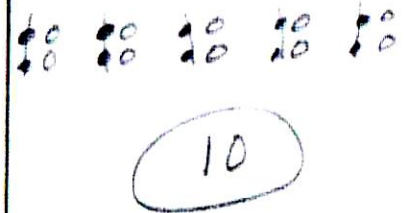
Start with zero pairs



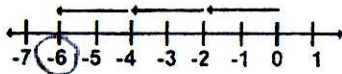
$$(-5)(-2)$$

Remove 5 groups of -2

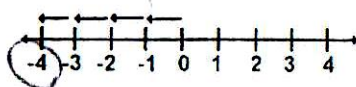
Start with zero pairs



On the number line $3(-2)$ looks like this:



On the number line $4(-1)$ looks like this:



Multiplication and Division of Integers have the same rules.

For two numbers:

SAME Signs Answer is POSITIVE +

$$(-7)(-2) = \textcircled{14}$$

DIFFERENT Signs Answer is NEGATIVE -

Examples:

$$(-7)(2) = \textcircled{-14}$$

$$7(-2) = \textcircled{-14}$$

$$\frac{16}{-2} = \textcircled{-8}$$

$$-20 \div -10 = \textcircled{2}$$

When you multiply more than two numbers together, the sign can be determined by the number of negative factors.

Odd # NEGATIVE

Ex. $(2)(-1)(-2)(3)(-1) = -12$
pos

Even # POSITIVE

Ex. $(-2)(3)(-1)(-2)(4)(-2) = 96$
pos pos

$(-3)^2$	$(-2)^3$	$(-5)^2$
$(-3)(-3)$	$(-2)(-2)(-2)$	$(-5)(-5)$
<u>9</u>	<u>-8</u>	<u>25</u>

Evaluate: $4^2 - (-3)^2$
 $4 \cdot 4 - (-3)(-3)$
 $16 - 9$
7

Evaluate if $a = 12$ $b = -3$ $c = -6$

$\frac{a+c}{b}$	$\frac{-a}{b}$	$\frac{a-b}{3}$
$\frac{12 + -6}{-3}$	$\frac{-12}{-3}$	$\frac{-12 - -3}{3}$
<u>-2</u>	<u>4</u>	$\frac{-12 + 3}{3}$
		<u>-3</u>

same signs

<u>pos</u>	pos · pos	} <u>Pos</u>
<u>neg</u>	neg · neg	

different signs

neg · pos	} <u>Neg</u>
pos · neg	
<u>pos</u>	<u>neg</u>
<u>neg</u>	<u>pos</u>

→ 1 neg
3 neg
5 neg ...