1. Write the repeated addition statement as multiplication.

    Remember   GROUPS of a SIZE

    (+5) + (+5)+ (+5)+(+5) = (+4)(+5)

Write the multiplication statement as repeated addition.
GROUPS of a SIZE

(+7)(-6) = (-6)+(-6)+(-6)+(-6)+(-6)+-6)+(-6)

1.1 Write the repeated addition statement as multiplication.

(-2)+(-2)+(-2)+(-2)+(-2) = _____

1.2 Write the multiplication statement as repeated addition.
(+6)(-4) =_____

---

2. Modelling using counters
    Solid/YELLOW - positive
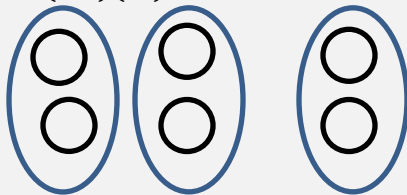   Clear/RED –negative

    In words:
        three groups of negative 2
    Symbolically:
        PUT IN

        (+3)(-2)
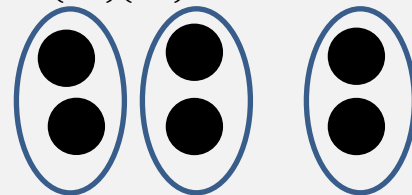
Modelling using counters
    Solid/YELLOW - positive
    Clear/RED –negative

    In words:
        three groups of positive 2
    Symbolically:
        (+3)(+2)

2.1 Model using counters (+4)(+3)

2.2 MODEL using counters (-2)(-5)

2.3 REMOVE ↓ Model using counters (-3)(+2) use ZERO PAIRS Step 1 Step 2 Answer	2.4 REMOVE ↓ Model using counters (-2)(-4) use ZERO PAIRS Step 1 Step 2 Answer

3.1 Multiplying an **EVEN** number of negatives gives a (positive or negative) answer. _____	3.2 Multiplying an **ODD** number of negatives gives a (positive or negative) answer. _____

4. ## MULT and DIVISION only ## SAME signs $(+)(+)=(+)$ $\frac{(+)}{(+)}=(+\ )$ $(-)(-) = (+)$ $\frac{(-)}{(-)}= (+\ )$	$(+3)(+6) = (+18)$
	$\frac{(+28)}{(+7)} = (+4)$
	$(-5)(-6) = (+30)$
	$\frac{(+32)}{(+8)} = (+4)$
	Examples
	4.1 $(+5)(+9) = ($_____$)$
	4.2 $\frac{(+30)}{(+5)} =$ _____
	4.3 $(-7)(-3) =$ _____
	4.4 $\frac{(+56)}{(+8)} =$ _____

5. **MULT and DIVISION only**	$(+3)(-7) = (-21)$
	$\frac{(+50)}{(-10)} = (-5)$
DIFFERENCE <u>signs</u>	
$(+)(-) = (-)$ $\frac{(+)}{(-)} = (-)$	$(+5)(-6) = (-30)$
	$\frac{(+20)}{(-2)} = (-10)$
$(-)(+) = (-)$ $\frac{(-)}{(+)} = (-)$	

Examples

5.1	$(+14)(-2) = ($_____$)$
5.2	$\frac{(-30)}{(+5)} = $ _____
5.3	$(-8)(+3) = $ _____
	$\frac{(+44)}{(-11)} = $ _____

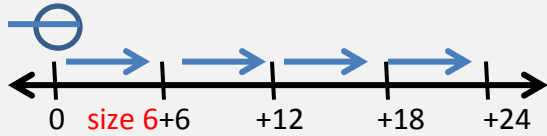| 6. The product of two numbers is 24. The sum is -11. What are the integers?	6.1 The product of two numbers is -30. The sum is -1. What are the integers?
$(-3) + (-8) = (-11)$ $(-3)(-8) = (+24)$ 1 x 24 (+)(+) 2 x 12 (-)(-) 3 x 8 4 x 6	
	6.2 The product of two numbers is +20. The sum is +9. What are the integers?

7. Multiplication on numberline

(facing GROUPS)(f/b SIZE) = product

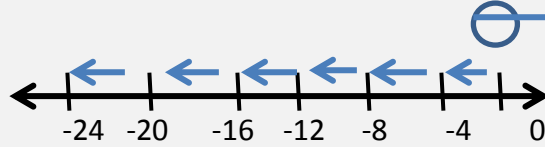$$(-4)(-6) = (+24)$$
SIZE

Backwards 4 steps/GROUPS

0   size 6 +6   +12   +18   +24

Example:

(facing GROUPS)(f/b SIZE) = product

$$(+6)(-4) = (-24)$$
SIZE

Backwards 6 steps/GROUPS

-24 -20   -16   -12   -8   -4   0

(facing GROUPS)(f/b SIZE) = product

$$(+6)(+4) = (+24)$$
SIZE

forwards 6 steps/GROUPS

0 size4 +4   +8   +12   +16   +20   +24

(facing GROUPS)(f/b SIZE) = product

$$(-6)(+4) = (-24)$$
size

forwards 6 steps/GROUPS

-24 -20   -16   -12   -8   -4   0
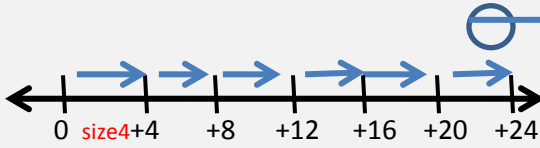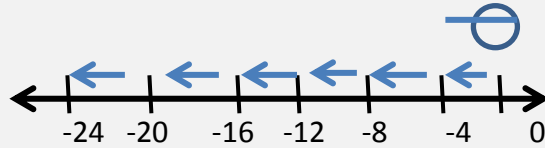
Model the multiplication using a numberline.

7.1 $(+4)(+5) = (+20)$

7.2 $(-5)(+7) = (-35)$

7.3 $(-3)(-6) = (-18)$

7.4 $(+2)(-6) = (-12)$
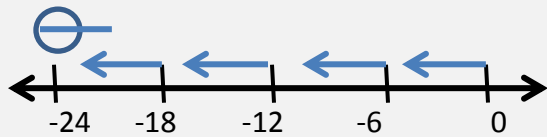
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8. Division on numberline	Division on numberline
Dividend ÷ (f/b SIZE)=(facing STEP)	Dividend ÷ (f/b SIZE)=(facing STEP)

Backward   facing positive

$$(-24) \div (-6) = (+4)$$

SIZE   STEP

Positive   4 steps backwards

-24   -18   -12   -6   0

Backward   facing positive

$$(+32) \div (-8) = (-4)$$

SIZE   STEP

Positive   4 steps backwards

0   +8   +16   +24   +32
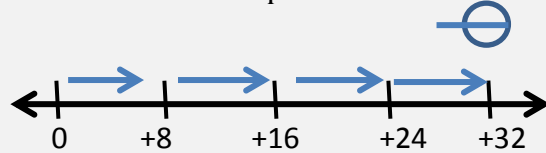
8.1 Show $(+28) \div (+7) = (+4)$ using a numberline

8.2 Show $(-45) \div (+5) = (+9)$ using a numberline

9. Properties

ZERO PROPERTY
8 x 0 = 0
0 x (-8) = 0

MULTIPLICATIVE IDENTITY
8 x 1 = 8
1 x (-8) = (-8)

COMMUTATIVE PROPERTY (ORDER)
6 x (-7) = (-7) x 6
6+7 = 7+6

ASSOCIATIVE PROPERTY (GROUPING)
(2+3)+4 = 2+(3+4)
(2 x 3)x 4 = 2 x (3 x 4)

DISTRIBUTIVE PROPERTY
 2(3+4) = 2x3+2x4
 Multiplier
 2(3 - 4) = 2 x 3 – 2 x 4
 Multiplier

9.1 Identify the property

1.1	$1 \times (-15) = (-15)$
1.2	(-9)(+4) = (-36)
1.3	8 x[(+3) x (+2)]= [8 x (+3)] x (+2)
1.4	(-9) x 0 = 0
7.5	(-5) [4 + (-3)] = (-5)(+4) + (-5)(-3)

---

10. Using Area model, find (-36) x (+53)

	+50	+3	
-30	(-30)(+50) = (-150)	(-30)(+3) = (-90)	(-150) (- 90) (-300)
-6	(-6)(+50) = (-300)	(-6)(+3) = -18	+ (- 18)

(-558)

Using Area model, find (-27) x (-79)

	-70	-9
-20	(-20)(-70) = (+1400)	(-20)(-9) = (+180)
-7	(-7)(-70) = (+490)	(-7)(-9) = (+63)

SUM = (+1400) + (+180)+(+490)+(+63)

= +2133

10.1 Using Area model, find (+41) x (39).	10.2 Using Area model, find (-24) x (-72).

---

11. **BE****D****MAS**
L ⇸R L➔R

Which operation do you do first?

Equation	Operation DO **NOT** EVALUATE!
$(+9)(-4) + (-12) \div (+3)$	
5 -12 +(-8)	
$\dfrac{(-28)\,(-1\,)^2}{(-26) \div (+2)}$	
(-2)+[(+3) +6÷(-2)] -15	

Solving using **BE****D****MAS**
L➔R L➔R

11.1 $-4 + 2[8 - 12]$
=

=

=

11.2 $-3 \cdot (+8) - 10$
=

=

11.3 $\quad \dfrac{-6+(+9)}{-3(+7-8)}$ = = =	11.4 $\quad -64 \div 4 \div (-2)$ = =
11.5 $\quad$ -2 x 5 + 6 x 7 = =	11.6 $\quad$ (-3)(-5)(-6)(-2) =

12. <u>WORD PROBLEMS</u>

12.1 Words to know:

POSITIVE	NEGATIVE

12.2 Temperature raises 2^oC every hour for 4 hours. How much does the temperature go up?

12.3 Temperature drops 3^oC every 2 hour for 12 hours. What is the temperature change?

12.4 Fred deposited $20 for 9 week. How much money has he deposited?	12.5 A submarine dives 24 m in 12 seconds. Write the equation which shows this.

12.6 George drove from Deer Lake to St. John's at an average speed of 100 km/h. After 4 hours of driving Blaine was still 250 km away from St. John's. Using **an equation involving TWO OPERATIONS**, how far apart are Deer Lake and St. John's from one another?