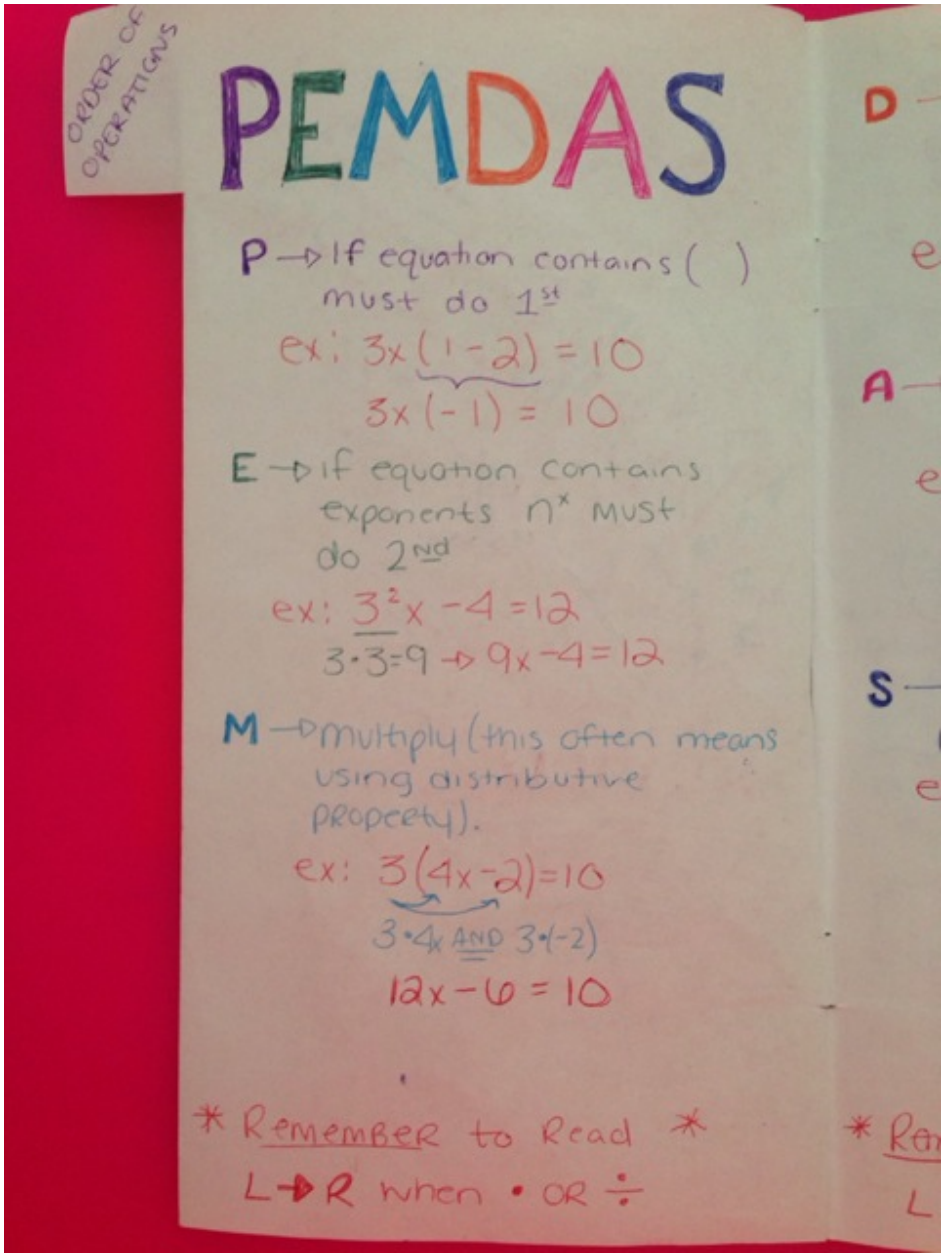
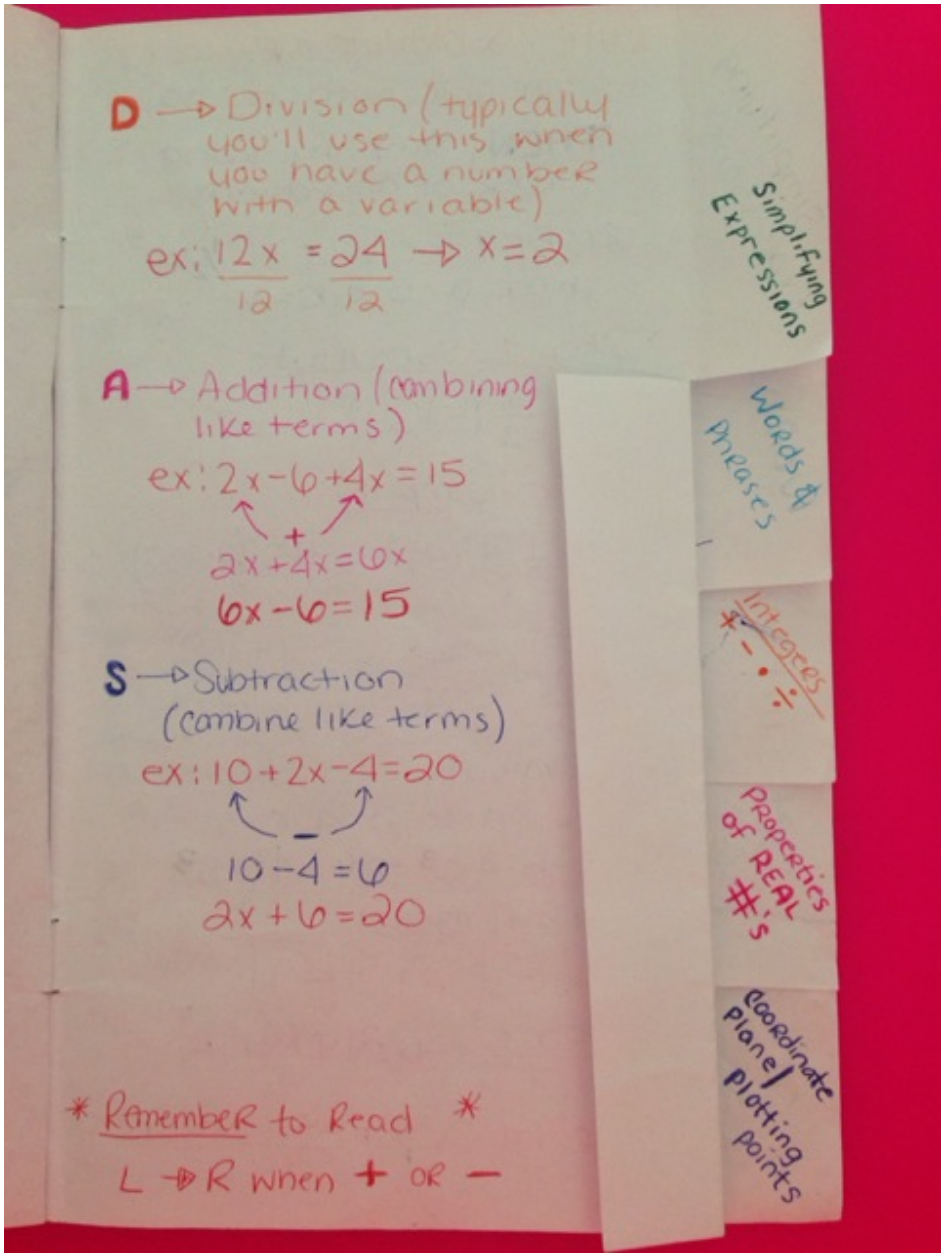

Order of Operations
Simplifying Expressions
Words & Phrases
Integers
+ - • ÷
Properties of REAL #'s
Coordinate Plane/ Plotting points
MATH
REVIEW


ORDER OF OPERATIONS
PEMDAS
P → If equation contains ( ) must do 1st
ex: 3x(1-2) = 10
3x(-1) = 10
E → if equation contains exponents n^x must do 2nd
ex: 3^2x -4 = 12
3·3=9 → 9x-4=12
M → multiply (this often means using distributive propeety).
ex: 3(4x-2)=10
3·4x AND 3·(-2)
12x-6 = 10
* Remember to Read *
L → R when · OR ÷
D
e
A
e
S
e
* Re
L


D → Division (typically you'll use this when you have a number with a variable)
ex: 12x/12 = 24/12 → x=2
A → Addition (combining like terms)
ex: 2x-6+4x=15
+
2x+4x=6x
6x-6=15
S → Subtraction (combine like terms)
ex: 10+2x-4=20
-
10-4=6
2x+6=20
* Remember to Read *
L → R when + OR -
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Simplifying Expressions

Rule: Substitute (Replace) variable with its value

THEN, simplify using order of operations

ex: Find the value of $\frac{1}{2}ab^3$ when $a=5$ & $b=2$

Step 1: Substitute

$\frac{1}{2}(5)(2)^3$

Step 2: Simplify

$\frac{1}{2}(5)(2)^3 \rightarrow \frac{1}{2}(5)(2\cdot2\cdot2)$

$\boxed{20} \leftarrow \frac{40}{2} \leftarrow \frac{(5)(8)}{2}$

EX: Evaluate each expression if $a=6, b=4, c=3$

① $a+b^2+c^3 \rightarrow 6+4^2+3^3$

$6+(4\cdot4)+(3\cdot3\cdot3)$

$6+16+27 = \boxed{49}$

② $\frac{2ab-c^3}{7} \rightarrow \frac{2(6)(4)-3^3}{7}$

$\frac{2\cdot6\cdot4-(3\cdot3\cdot3)}{7} \rightarrow \frac{48-27}{7} = \frac{21}{7} \rightarrow \boxed{3}$

ex: Find the perimeter of the figure when $x=9$ & $y=4$

* Perimeter is the distance around the object (Add all sides)

$6+6+7+x+y$

$6+6+7+9+4$

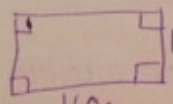
Simplify: $12+16+4$

$12+20 = \boxed{32}$

Words & Phrases

ex: Billy is putting molding around the ceiling of his bedroom. If the room measures 12ft by 16ft how many feet of molding is needed?

Draw a picture



*Assume the room has 90° corners

$16+16+12+12$

$32 + 24$

$= \boxed{56\text{ft of molding}}$

REMEMBER TO LABEL

Integers

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WORDS & PHRASES

Symbol	Word/Phrases
+	Adding, Addition, Plus, Sum, Increase by, More than, In all, added to, exceeds
−	Less than, Minus, decreased by, Subtraction, take away, difference, subtracted from
×	Multiplication, Product, Multiplied by, Times, of
÷	Division, divided by, quotient, per, the Ratio of

Miscellaneous

=	equals, equivalent to
$\sqrt{\ }$	square root
≠	NOT equal to
<	Less than
≤	Less than OR equal to
>	greater than
≥	greater than OR Equal to

W
exp
ver
① T
② T
③ T
④ A
⑤ T

Write an algebraic expression for each verbal expression.

① The product of x & 7
$x \cdot 7 = 7x$

② The quotient of R & S
$\frac{R}{S}$ OR $R \div S$ OR R/S

③ The sum of a & 19
$a + 19$

④ A number n decreased by 4
$n - 4$

⑤ Twice the sum of 15 and a number
$2(15+n)$

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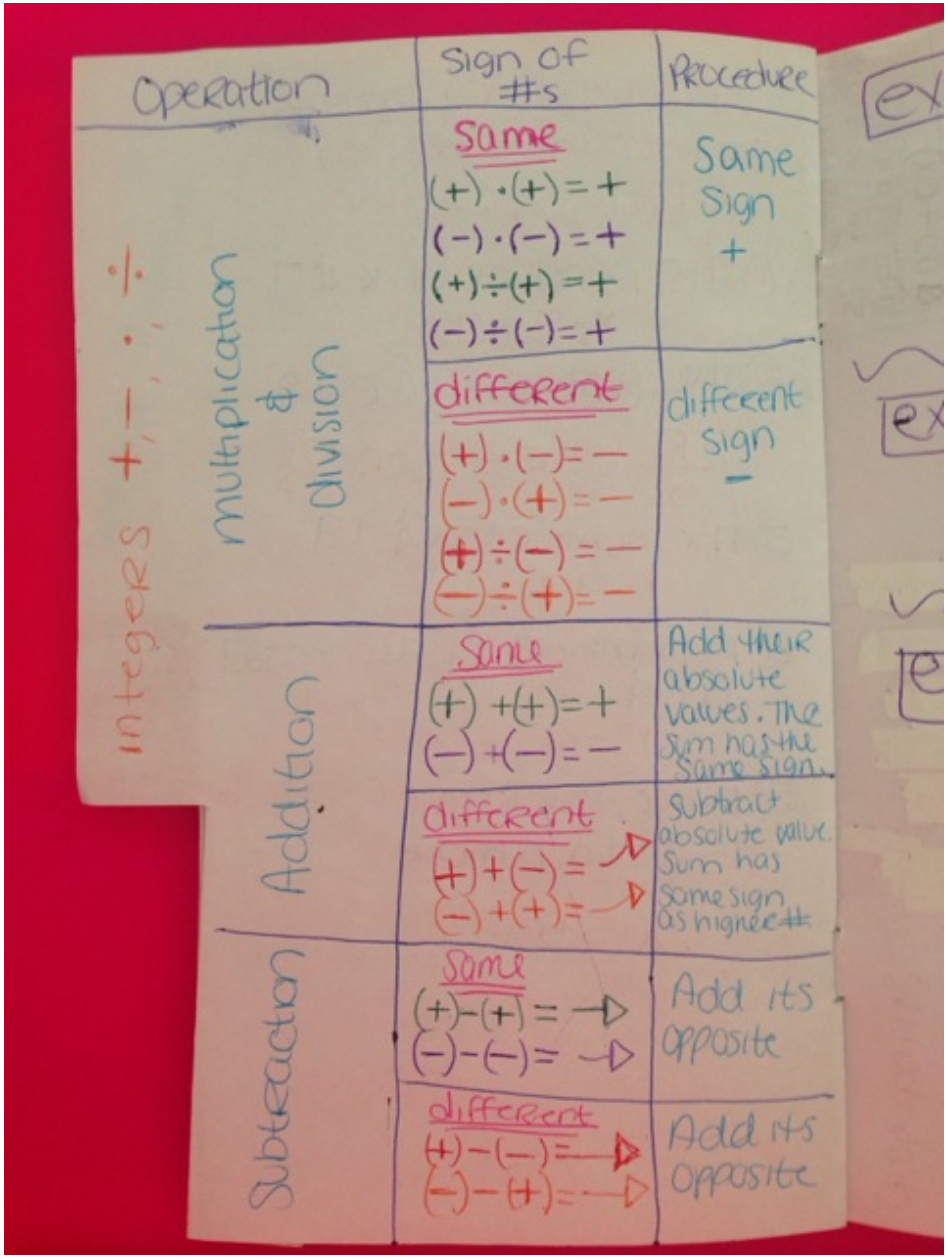
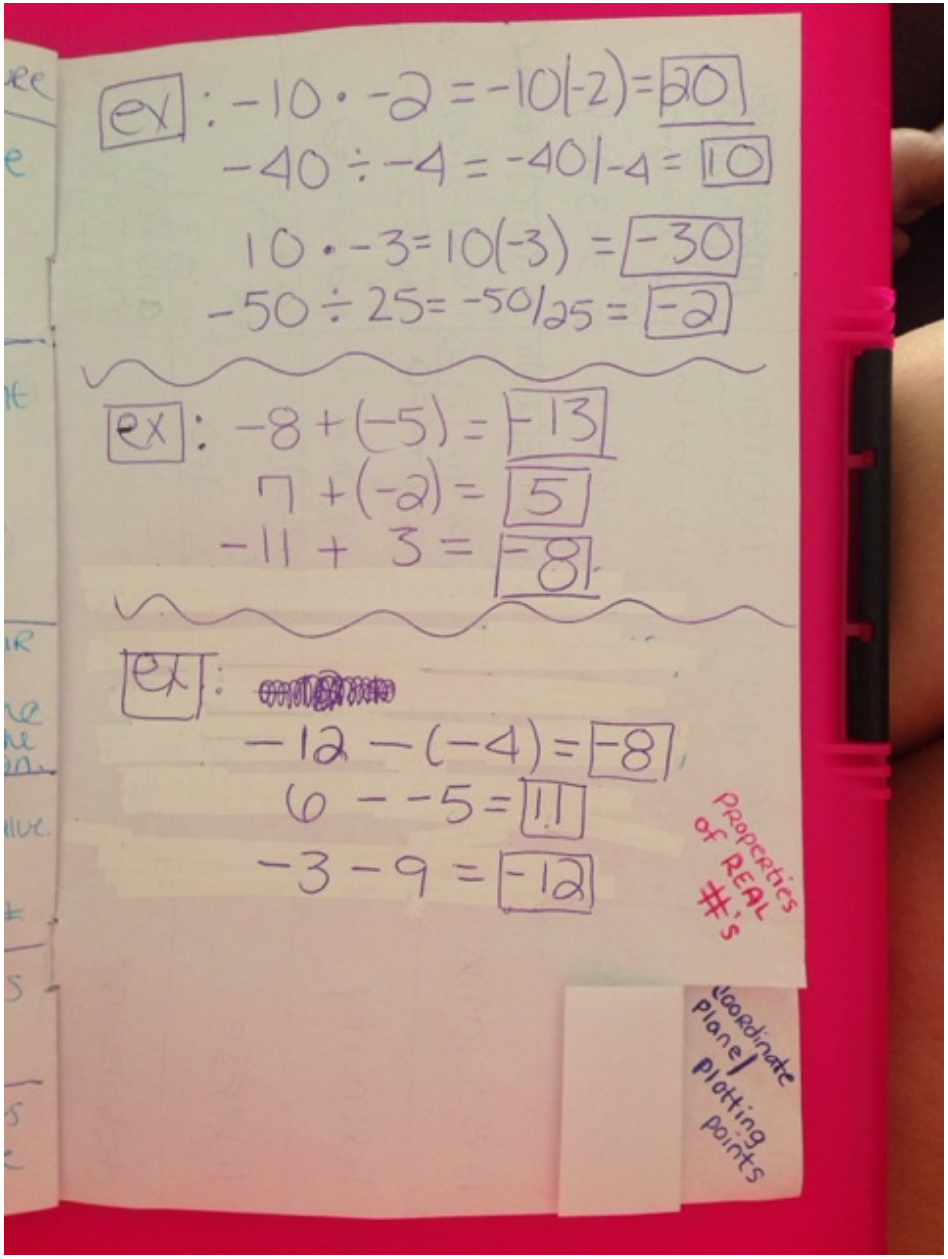


Operation	Sign of #s	Procedure
Integers +, −, ·, ÷ — Multiplication & Division	**Same** (+)·(+) = + (−)·(−) = + (+)÷(+) = + (−)÷(−) = +	Same Sign +
	different (+)·(−) = − (−)·(+) = − (+)÷(−) = − (−)÷(+) = −	different sign −
Addition	**Same** (+) + (+) = + (−) + (−) = −	Add their absolute values. The sum has the same sign.
	different (+) + (−) = → (−) + (+) = →	Subtract absolute value. Sum has same sign as highest #
Subtraction	**Same** (+) − (+) = → (−) − (−) = →	Add its opposite
	different (+) − (−) = → (−) − (+) = →	Add its opposite



ex: $-10 \cdot -2 = -10(-2) = \boxed{20}$

$-40 \div -4 = -40/-4 = \boxed{10}$

$10 \cdot -3 = 10(-3) = \boxed{-30}$

$-50 \div 25 = -50/25 = \boxed{-2}$

ex: $-8 + (-5) = \boxed{-13}$

$7 + (-2) = \boxed{5}$

$-11 + 3 = \boxed{-8}$

ex:

$-12 - (-4) = \boxed{-8}$

$6 - -5 = \boxed{11}$

$-3 - 9 = \boxed{-12}$

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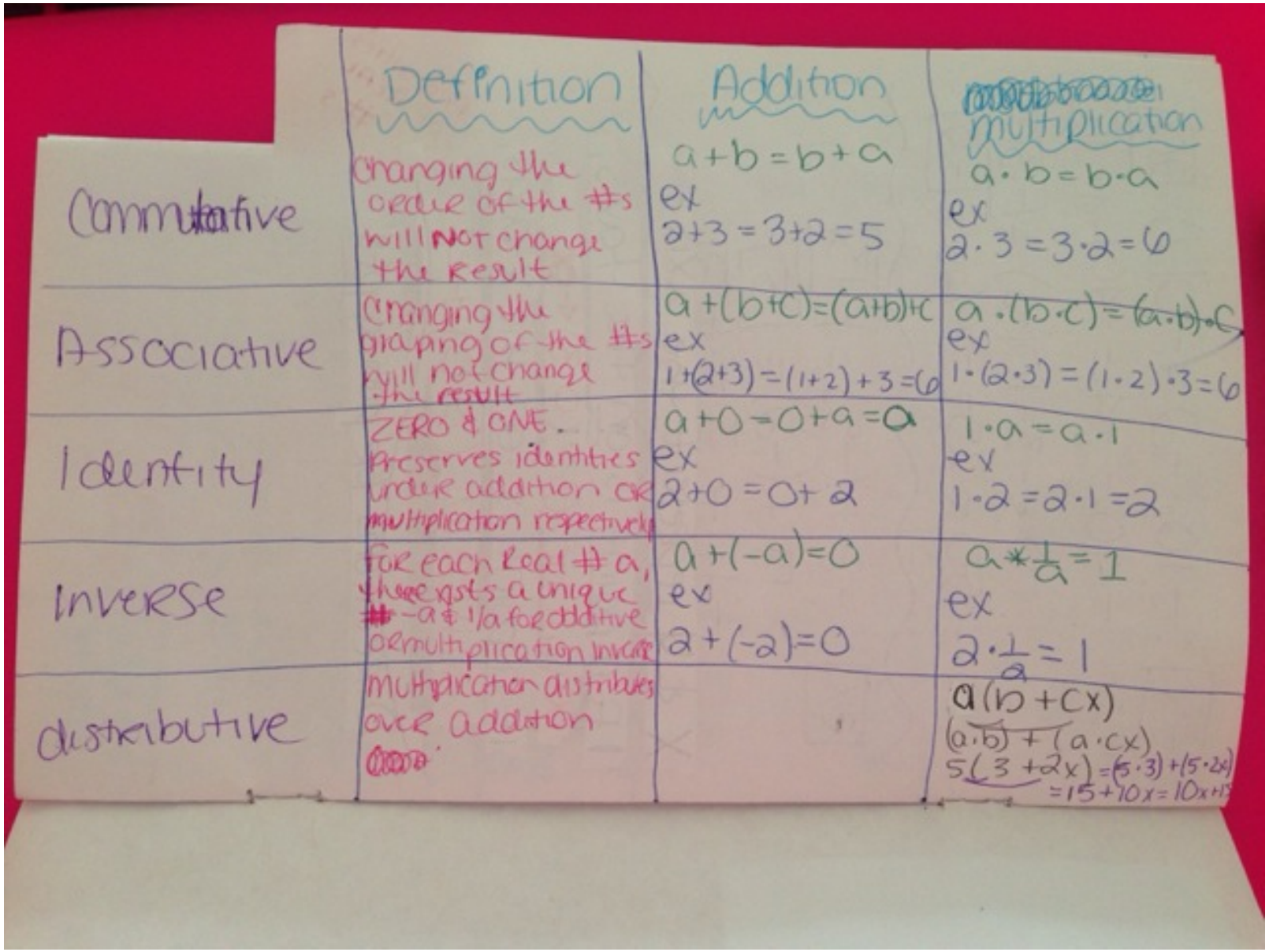
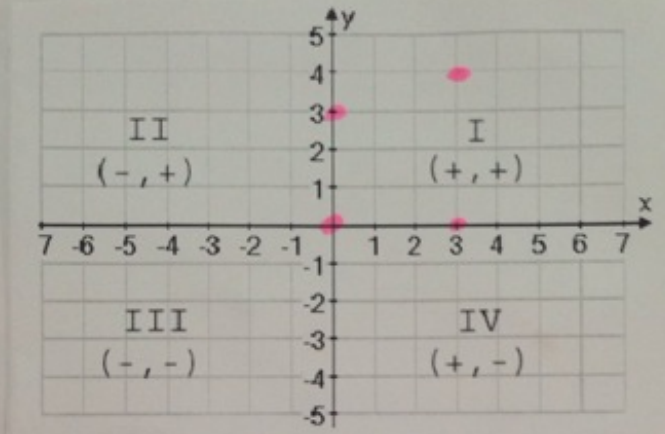


	Definition	Addition	multiplication
Commutative	changing the order of the #s will NOT change the result	$a+b=b+a$ ex $2+3=3+2=5$	$a \cdot b = b \cdot a$ ex $2 \cdot 3 = 3 \cdot 2 = 6$
Associative	changing the grouping of the #s will not change the result	$a+(b+c)=(a+b)+c$ ex $1+(2+3)=(1+2)+3=6$	$a \cdot (b \cdot c) = (a \cdot b) \cdot c$ ex $1 \cdot (2 \cdot 3) = (1 \cdot 2) \cdot 3 = 6$
Identity	ZERO & ONE. preserves identities under addition OR multiplication respectively	$a+0=0+a=a$ ex $2+0=0+2$	$1 \cdot a = a \cdot 1$ ex $1 \cdot 2 = 2 \cdot 1 = 2$
Inverse	FOR each Real # a, there exists a unique # $-a$ & $1/a$ for additive OR multiplication inverse	$a+(-a)=0$ ex $2+(-2)=0$	$a * \frac{1}{a} = 1$ ex $2 \cdot \frac{1}{2} = 1$
distributive	multiplication distributes over addition		$a(b+cx)$ $(a \cdot b) + (a \cdot cx)$ $5(3+2x) = (5 \cdot 3) + (5 \cdot 2x)$ $= 15 + 10x = 10x + 15$



X & Y represent the axis
If a point is on the Y-axis
X will be Ø (0,3) ← ex
If a point is on the X-axis
Y will be Ø (3,0) ← ex

Directions for plotting pts
① Start @ origin
② Find X by moving L or R from (0,0)
③ Then move ↑ OR ↓ from there to find Y. ex: (3,4)