May 24th, 2022

Dear 7th Grade Accelerated Math parents,

 This year has been another wonderful year with your child in Math. I truly feel so blessed to get to work with your child. Next year your child will be in 8th grade accelerated math which is an Algebra 1 course. Next May, your child will be taking the Ohio High School End of Course Algebra 1 test. If your student passes the Algebra 1 AIR test, they may be eligible to receive high school credit or to place into a higher math course. Specific policies vary by high school.

 To ensure that we cover all the material for your child to be ready for the Algebra 1 End of Course test, otherwise known as the AIR Test, it is important that your student continues to practice their mathematical skills this summer. Students will be expected to complete a summer work packet adapted from "Algebra 1 Readiness the Top 20 Skills A Student Needs to be Proficient in before Entering Algebra 1." Your child received this packet on the last day of Math Class. The summer work packet will be due on **the first day of school.**

 In addition, your child took a computation test assessing core skills. Skills such as integers, one and two step equations and fractions are expected for students to understand prior to beginning Algebra 1 material. Based on your child's needs, I assigned them review videos and assignments on Khan Academy. Additionally, these skills will be important for your student's success on the High School Placement Test. **Calculators are not permitted for Khan Academy assignments.** Information for logging into Khan Academy was reviewed with your student and is on the back of this letter.

 If your student finds he or she is struggling with any of the concepts they are more than welcome to email me at peloquin@saintantoninus.org. I will not be checking my email daily in the months of June and July but will check it periodically. On the back of this letter, I am also including a list of resources that your student may find helpful if they are struggling or want to further review any concepts. I hope you all have a wonderful and blessed summer!

Sincerely,
Mrs. Meghan Peloquin

Math Resources for Pre-Algebra and Algebra 1

- YouTube Channels
  - iteachalgebra - YouTube - Good for Pre-Algebra and Algebra Concepts
  - mathantics - YouTube
  - Math with Mr. J
  - Mario's Math Tutoring - YouTube
  - MathTV
  - TeacherTube Math - YouTube
  - Mashup Math - YouTube
  - PBS Math Club - YouTube
  - Math Songs by NUMBEROCK - YouTube
  - Middle School Math TikTok Curriculum - YouTube
  - MooMooMath and Science
  -
- Websites
  - Math is Fun
  - Khan Academy
  - Learning IXL
  - Corbett Maths
  - PBS Math Club
  - Mathletics – Your child will still have access to this website over the summer. They used it in Math Class this past year to continue practicing concepts we learned in class. If they have lost their login, please feel free to reach out.
- Books
  - "The Big Fat Middle School Math Workbook" – Additional Practice, Examples and Explanations
  - "Everything You Need to Ace Math in One Big Fat Notebook"
  - "Everything You Need to Ace Pre-Algebra and Algebra 1 in One Big Fat Notebook"

Logging into Khan Academy
- Sign-in with Google, use school email.
- Note **beginning May 30th or 31st** – Mrs. Hartfiel will be resetting computer passwords. The new password for all incoming 8th graders will be Jaguar8*.

Adding & Subtracting positive and negative numbers

SAME SIGN ADD

DIFFERENT SIGN SUBTRACT

$5 + 3$ *same sign add* $= 8$

$-5 - 3$ *same sign add* $= -8$

$-5 + (-3)$ *same sign add* $= -8$

$-5 + 3$ *different sign subtract* $= -2$
(the sign on the bigger number = sign of answer)

$5 - (-3)$ *same sign add* $= 8$
$5 + +3$ *same sign add, equals positive 8*

$5 - 3$ *different sign subtract* $= 2$
(the sign on the bigger number = sign of answer)

$-5 - (-3)$ *different sign subtract* $= -2$
$-5 + +3$ diff sign subtract, larger number (-), ans (-)

$5 + -3$ *different sign subtract* $= 2$
(the sign on the bigger number = sign of answer)

Multiplying & Dividing positive and negative numbers

SAME SIGN POSITIVE +

DIFFERENT SIGN NEGATIVE -

6×7 *same sign* $+ = +42$

-6×-7 *same sign* $+ = +42$

6×-7 *different sign* $- = -42$

-7×6 *different sign* $- = -42$

$42 \div 7$ *same sign* $+ = +6$

$-42 \div -7$ *same sign* $+ = +6$

$42 \div -7$ *different sign* $- = -6$

$42 \div -6$ *different sign* $- = -7$

|Absolute Value|

DISTANCE from ZERO
ALWAYS POSITIVE +++

$|8| = +8$ $|125| = +125$

$|-8| = +8$ $|-125| = +125$

The only possible negative outcome is if it is out in FRONT of the absolute value

$-|8| = -8$ $-|125| = -125$

$-|-8| = -8$ $-|-125| = -125$

Distributive Property

Distribute (or multiply) the term outside the parentheses times EACH TERM INSIDE THE PARENTHESES.

$5(x +1) = 5•x + 5•1 = 5x + 5$

$y(2y - 3) = y•2y + y•(-3) = 2y^2 - 3y$

$12(a^2 + 5b) = 12•a^2 + 12•5b = 12a^2 + 60b$

Order of Operations

PEMDAS
Please (Parentheses)
Excuse (Exponents)
My (Multiplication)
Dear (Division)
Aunt (Addition)
Sally (Subtraction)

Multiplication and Division are done left to right.

Addition and Subtraction are done left to right.

Evaluate Algebraic Expressions

Plug in the given variables, solve!

Evaluate $x^2 - 5y$ for **x = 2** and **y = -1**

$x^2 - 5y = (2)^2 - 5(-1) = 4 - (-5) = 9$

Evaluate $3x^2 + 2y$ for **x = 5** and **y = -4**

$3x^2 + 2y = 3(5)^2 + 2(-4) = 75 - 8 = 67$

Adding and Subtracting Variables

Only add and subtract LIKE TERMS
Examples of "like terms":

	"like term"
$4x, -10x, 100x, -3x$	x
$4ab, -10ab, 100ab, -3ab$	ab
$4y, -10y, 100y, -3y$	y
$4x^2, -10x^2, 100x^2, -3x^2$	x^2

$4x - 10x = -6x$

$4x - 10y = NOT\ POSSIBLE$

$4ab + 100ab = 104ab$

$4y - 10y + 100y = 94y$

$4x^2 + 100x = NOT\ POSSIBLE$

$4x^2 - 3x^2 = 1x^2$

Slope

m = slope

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$

b = y-intercept

Slope-Intercept Form

$y = mx + b$

$(x_1, y_1)\ (x_2, y_2)$ = given points

Point-Slope Form

$y - y_1 = m(x - x_1)$

Mulitplying and Dividing Variables

UNlike terms can be multiplied and divided. Multiply and divide whole numbers separate of the variable.

ADD exponents when multiplying
SUBTRACT exponents when ÷

@CuteCalculus

$2x • 3x^2 = 2 • 3 • x^{1+2} = 6x^3$

$5y^4 • 6x^2y^3 = 5 • 6 • x^2 • y^{4+3} = 30x^2y^7$

$4a^3 ÷ a^2 = 4a^{3-2} = 4a^1$

$8x^5 ÷ 2x^3 = 4x^{5-3} = 4x^2$

$18x^2y^3 ÷ 3y = 6x^2y^{3-1} = 6x^2y^2$

Simplifying Fractions

Find a number that can be divided evenly in both numerator and denominator. Keep doing this until you can no longer divide, that's when it is simplified.

$\dfrac{10 ÷5}{25 ÷5} = \dfrac{2}{5}$ $\dfrac{6 ÷2}{8 ÷2} = \dfrac{3}{4}$ $\dfrac{8 ÷8}{24 ÷8} = \dfrac{1}{3}$

Multiplying Fractions

Multiply top • top, bottom • bottom.

$\dfrac{5}{6} \times \dfrac{4}{7} = \dfrac{20 ÷2}{42 ÷2} = \dfrac{10}{21}$

$\dfrac{2}{9} \times \dfrac{3}{8} = \dfrac{6 ÷6}{72 ÷6} = \dfrac{1}{12}$

Dividing Fractions

Flip the second fraction and multiply.

$\dfrac{6}{7} ÷ \dfrac{3}{5} = \dfrac{6}{7} \times \dfrac{5}{3} = \dfrac{30 ÷3}{21 ÷3} = \dfrac{10}{7} = 1\dfrac{3}{7}$

$\dfrac{8}{9} ÷ \dfrac{4}{7} = \dfrac{8}{9} \times \dfrac{7}{4} = \dfrac{56 ÷4}{36 ÷4} = \dfrac{14}{9} = 1\dfrac{5}{9}$

Exponents

ADD exponents, → **multiplying**
SUBTRACT exponents → **dividing**

$(-2)^3 = (-2)•(-2)•(-2) = -8$

$8x^2 • 3x^5 = 8 • 3 • x^{2+5} = 24x^7$

$\dfrac{12a^5}{3a^2} = 4a^{5-2} = 4a^3$

Exponents Raised to Exponents

MULTIPLY exponents when raised to another exponent.

$(4x^3)^2 = 4^2 • x^{3•2} = 16x^6$

$(8y^5)^3 = 8^3 • y^{5•3} = 512y^{15}$

NEGATIVE Exponents

If a term has a negative exponent and is in the numerator, move it to the denominator to become positive. If the term with the negative exponent is in the denominator, move it to the numerator to become positive.

$x^{-2} = \dfrac{1}{x^2}$ $y^{-3} = \dfrac{1}{y^3}$ $\dfrac{1}{a^{-5}} = a^5$

$(-2a^3)^{-2} = \dfrac{1}{(-2a^3)^2} = \dfrac{1}{(-2)^2 • a^{3•2}} = \dfrac{1}{4a^6}$

7th Grade Math
Number Sense Cheat Sheet

Integers

Operations on Integers

Integers

Adding

$$\boxed{+} + \boxed{+} = \boxed{+}$$

$$\boxed{-} + \boxed{-} = \boxed{-}$$

$$\boxed{+} + \boxed{-} = \boxed{+}$$

$$\boxed{+} + \boxed{-} = \boxed{-}$$

Greater Abs. Value

Subtracting

$$\boxed{+} - \boxed{+} = \boxed{+} + \boxed{-}$$

$$\boxed{+} - \boxed{-} = \boxed{+} + \boxed{+}$$

$$\boxed{-} - \boxed{-} = \boxed{-} + \boxed{+}$$

$$\boxed{-} - \boxed{+} =$$

$$\boxed{-} + \boxed{-}$$

Integers

Multiplying & Dividing

$$\boxed{+} \times \div \boxed{-} = \boxed{-}$$

$$\boxed{-} \times \div \boxed{-} = \boxed{+}$$

$$\boxed{-} \times \div \boxed{+} = \boxed{-}$$

$$\boxed{+} \times \div \boxed{+} = \boxed{+}$$

Fractions

Fractions

Multiplying
Multiply across!

Example:

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

If possible reduce!

Dividing
Change to multiplication & take reciprocal of second fraction!

Example:

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$$

Reduce!

Fractions

Adding & Subtracting
Need common denominators!

Example:

$$\frac{a}{b} + \frac{c}{d} = \frac{d}{d} \cdot \frac{a}{b} + \frac{c}{d} \cdot \frac{b}{b} = \frac{ad}{bd} + \frac{bc}{bd}$$

$$= \frac{ad+bc}{bd}$$

Decimals

Decimals

Adding & Subtracting
Line up the decimals!

Example:

0.005 + 1.3 becomes

```
  0.005
+ 1.300
  1.305
```

Multiplying
Multiply as normal & look at signs!

Dividing
Divisor needs to be a whole number!

Example:

55 ÷ 5.5 becomes

550 ÷ 55

Operations on Decimals

	ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
D E C I M A L S	When adding decimals, ALWAYS line up your decimal points, use place holders if necessary Add, then drop the decimal point straight down. Example: $4.05 + 2.2 =$ $\begin{array}{r} 4.05 \\ +\ 2.20 \\ \hline 6.25 \end{array}$	When subtracting decimals, ALWAYS line up your decimal points. Subtract, then drop the decimal point straight down. Example: $16.21 - 3.015$ $\begin{array}{r} 16.210 \\ -\ 3.015 \\ \hline 13.195 \end{array}$	Treat the numbers like whole numbers, then multiply. Once you have an answer count how many numbers are to the RIGHT of the decimal point and put that many numbers to the RIGHT of the decimal point in the answer. Example: 8.8×7.42 $\begin{array}{r} 7.42 \\ \times\ 8.8 \\ \hline 65.296 \end{array}$	We can't divide by a decimal, convert it to a whole number. The # of spaces you moved the decimal in the divisor is the same amount you should move it in the dividend, use place holders if necessary. Then divide like usual. $2.75\overline{)38.5} = 275\overline{)3850}$ ... $\begin{array}{r} 0014 \\ \hline 3850 \\ -275\downarrow \\ \hline 1100 \\ -1100 \\ \hline 0 \end{array}$ The answer is 14
F R A C T I O N S	Find the least common denominator of all fractions, convert, then add numerators. Keep the denominator or change to a mixed number if necessary. $\frac{2}{3} + \frac{5}{7}$ $\downarrow \quad \downarrow$ $\frac{14}{21} + \frac{15}{21} = \frac{29}{21} = 1\frac{8}{21}$	Find the least common denominator of all fractions, convert, then subtract numerators. Borrow or change to impropers if necessary. Keep the denominator or change to a mixed number if necessary. $3\frac{1}{3} - 1\frac{2}{3}$ $\downarrow$ $2 + \frac{3}{3} + \frac{1}{3} - 1\frac{2}{3}$ $\downarrow$ $2\frac{4}{3} - 1\frac{2}{3} = 1\frac{2}{3}$	Multiply straight across. $8 \cdot \frac{5}{6}$ $\downarrow \quad \downarrow$ $\frac{8}{1} \cdot \frac{5}{6} = \frac{40}{6} = 6\frac{4}{6} = 6\frac{2}{3}$	Change the SECOND fraction ONLY to its reciprocal, THEN you may multiply straight across. $\frac{9}{13} \div \frac{7}{10}$ $\downarrow \quad \downarrow$ $\frac{9}{13} \cdot \frac{10}{7} = \frac{90}{91}$
I N T E G E R S	Same signs add and keep their sign, different signs subtract and keep the sign of the greater absolute value. $2 + 3 = 5 \qquad -5 + 6 = 1$ $-2 + (-3) = -5 \qquad 11 + (-13) = -2$	Change difficult subtraction problems to addition by adding the opposite and then follow the rules for adding integers. $-4 - 9 = -4 + (-9) = -13$ $3 - (-7) = 3 + (+7) = 10$	For any two integers, SAME signs equal a positive answer, DIFFERENT signs equal a negative answer. $6(8) = 48$ $-6(-8) = 48$ $-4(5) = -20$ $4(-5) = -20$	For any two integers, SAME signs equal a positive answer, DIFFERENT signs equal a negative answer. $50/5 = 10$ $-50/-5 = 10$ $-60/12 = -5$ $60/-12 = -5$

VARIABLES & EXPRESSIONS

Translate each algebraic expression or verbal expression.

VERBAL EXPRESSION	ALGEBRAIC EXPRESSION
8 times a number x is subtracted by 4	
	$6x^2 + 7$
5 increased by the product of -3 and a number x	
	$3x + 4y - 2$
3 times the sum of a number x and 7	
	$\frac{x}{2} + 4x$
A number y cubed plus x squared decreased by 7	
	$5(x - 4) + 2$
the difference of x and y is divided by 3 and added by 8	
	$-2(x + 4)^2 - 1$

ORDER OF OPERATIONS

Simplify each expression using the order of operations.

1. $5 - 6 + 2(3)$	2. $4 + 5(7 - 1) + \dfrac{8}{2}$
3. $-9(4 + 2) - 2(3) + 4^2$	4. $7 - 2[-6 - (3 + 1)] - \dfrac{8 + 7}{3}$
5. $0.5(-8 - 4) + 3(8 - 2^2)$	6. $3 - 5(2) - 7(5^2 - 4^2)$
7. $2(3)^2 - 4(3) + 1$	8. $4(3 - 5)^3 + 5$

THE NUMBER PROPERTIES

Match each expression with the property that it shows.

$5 + 0 = 5$ Commutative Property
                                of Addition

$5(1) = 5$ Associative Property
                                of Addition

$5(0) = 0$ Additive Identity

$2 + 3 = 3 + 2$ Distributive Property

$2(3) = 3(2)$ Commutative Property
                                of Multiplication

$2 + (3 + 4) = (2 + 3) + 4$ Associative Property
                                of Multiplication

$2(3 \cdot 4) = (2 \cdot 3)4$ Zero Product Property

$3(2 + 5) = 6 + 15$ Multiplicative Identity

EVALUATING EXPRESSIONS

Evaluate each expression given the following values for each variable.

a = 2	b = -3	c = 4	d = -5	e = 6	f = -7

1. $2a + 3d$

2. $b^2 - e^2$

3. $-3c - (a + d) + f$

4. $2(b - e) + (f + c)^2$

5. $\dfrac{d - c}{3} - 4(ab + f)$

6. $c(ab - 1) + de - f^2$

ADDING & SUBTRACTING FRACTIONS

Add or subtract the fractions. Simplify your answer.

$\dfrac{1}{2} + \dfrac{1}{2} =$ 　　　　　$\dfrac{1}{3} + \dfrac{1}{3} =$ 　　　　　$\dfrac{1}{4} + \dfrac{2}{4} =$

$\dfrac{2}{5} - \dfrac{1}{5} =$ 　　　　　$\dfrac{3}{6} - \dfrac{5}{6} =$ 　　　　　$\dfrac{1}{7} - \dfrac{8}{7} =$

$\dfrac{5}{8} - \dfrac{7}{8} =$ 　　　　　$-\dfrac{5}{9} - \dfrac{1}{9} =$ 　　　　　$-\dfrac{3}{10} + \dfrac{7}{10} =$

$\dfrac{1}{2} + \dfrac{5}{4} =$ 　　　　　$\dfrac{2}{9} + \dfrac{1}{3} =$ 　　　　　$\dfrac{1}{4} + \dfrac{2}{16} =$

$\dfrac{2}{3} - \dfrac{1}{5} =$ 　　　　　$\dfrac{3}{6} - \dfrac{5}{4} =$ 　　　　　$\dfrac{1}{2} - \dfrac{8}{7} =$

$\dfrac{5}{8} - \dfrac{7}{5} =$ 　　　　　$-\dfrac{5}{4} - \dfrac{1}{9} =$ 　　　　　$-\dfrac{3}{10} + \dfrac{7}{3} =$

MULTIPLYING & DIVIDING FRACTIONS

Multiply or divide the fractions. Simplify your answer.

$\dfrac{5}{2} \bullet \dfrac{1}{2} =$

$\dfrac{1}{3} \bullet \dfrac{1}{3} =$

$\dfrac{1}{4} \bullet \dfrac{2}{4} =$

$-\dfrac{2}{5} \bullet \dfrac{3}{5} =$

$\dfrac{3}{6} \bullet -\dfrac{5}{6} =$

$-\dfrac{1}{4} \bullet -\dfrac{8}{7} =$

$4\left(\dfrac{5}{8}\right) =$

$-3\left(\dfrac{2}{3}\right) =$

$-2\left(\dfrac{4}{9}\right) =$

$\dfrac{1}{2} \div \dfrac{5}{4} =$

$\dfrac{2}{9} \div \dfrac{1}{3} =$

$\dfrac{1}{4} \div \dfrac{2}{5} =$

$-\dfrac{2}{3} \div \dfrac{1}{5} =$

$\dfrac{3}{6} \div -\dfrac{5}{4} =$

$-\dfrac{1}{2} \div -\dfrac{8}{7} =$

COMBINING LIKE TERMS

Combine like terms for each expression.

EXPRESSION	SIMPLIFIED
$x + x + 3x + y$	
$y + 2y + 5x + x$	
$5 + z + z + 4z - 6$	
$3x + 4x - 5$	
$5c + 2b - 3c$	
$x + y + 2x$	
$6a - 5b + a$	
$4 + 3x - 7 - 8x$	
$3(x + 2) - 4$	
$-5(x - 3) + 7x$	
$5m - 6n - 9m$	
$-8a - 9b - 10a + 9b$	
$2(x + 4) + 5x - 3$	
$-10(2 + x) - 3x$	

SOLVING ONE-STEP EQUATIONS

Solve the one-step equations.

$x + 7 = 9$ $5 + x = -3$ $6 = x + 8$

$x - 9 = 1$ $-5 + x = -2$ $4 = x - 7$

$5x = 75$ $-2x = -64$ $-7.5 = 1.25x$

$\frac{x}{4} = 7$ $-\frac{x}{2} = 8$ $-3 = -\frac{x}{9}$

$\frac{3}{4}x = 7$ $-\frac{1}{2}x = 8$ $-5 = -\frac{2}{9}x$

SOLVING TWO-STEP EQUATIONS

Solve the two-step equations. Leave your answer as a simplified fraction.

$2x + 7 = 9$

$5 + 4x = -3$

$6 = 2x + 8$

$4x - 9 = 1$

$-5 + 3x = -2$

$4 = -x - 7$

$5x + 10 = 75$

$-2x + 8 = -64$

$-7.5 = 1.25x + 2.5$

$\frac{x}{4} - 6 = 7$

$-\frac{x}{2} + 3 = 8$

$-3 = 8 - \frac{x}{9}$

$\frac{3}{4}x + 5 = 7$

$-\frac{1}{2}x - 4 = 8$

$-5 = -\frac{2}{9}x + 2$

RATIOS

Create the ratios for each situation.

To create a perfect fruit smoothie for you and your friends, you must use 5 strawberries, 9 blueberries, 1 banana, 4 slices of pineapple, and 3 slices of mango.	
FRUIT	**RATIO**
strawberries to blueberries	
strawberries to pineapple	
pineapple to mango	
mango to banana	
banana to blueberries	
mango to blueberries	
pineapple to berries	
mango to the smoothie	
pineapple to the smoothie	
berries to the smoothie	
berries to non-berries	
smoothie to blueberries	
smoothie to mango	

SOLVING PROPORTIONS

Solve each proportion. Leave your answer as a simplified fraction or decimal.

$$\frac{x}{3} = \frac{4}{6}$$

$$\frac{6}{5} = \frac{x}{4}$$

$$\frac{3}{5} = \frac{6}{x}$$

$$\frac{x}{7} = \frac{1}{6}$$

$$\frac{6}{x} = \frac{2.5}{2}$$

$$\frac{4.5}{3} = \frac{9}{x}$$

$$\frac{x}{3} = \frac{4.2}{10}$$

$$\frac{11}{x} = \frac{2.5}{5.5}$$

$$\frac{6}{5} = \frac{12}{x}$$

@iteachalgebra

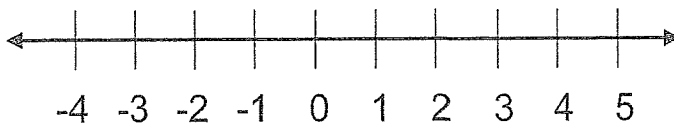# GRAPHING INEQUALITIES

Graph each inequality on the number line shown.

$x > 2$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```

$x < -3$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```

$x \geq -1$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```

$x \leq 4$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```

$x < 0$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```

$x \geq 0$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```

$x > -2$

```
<----+---+---+---+---+---+---+---+---+---+--->
    -4  -3  -2  -1   0   1   2   3   4   5
```
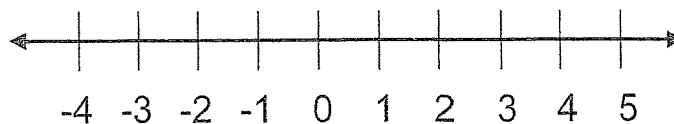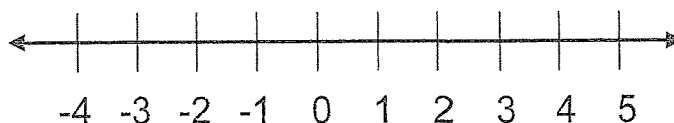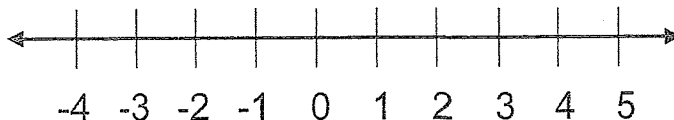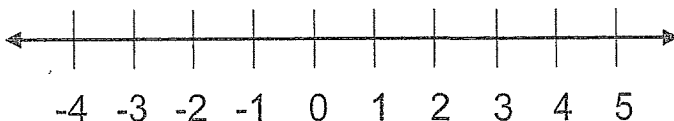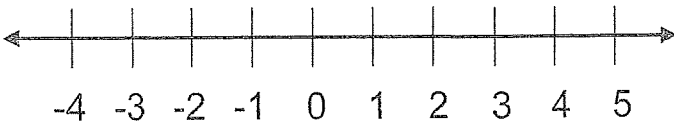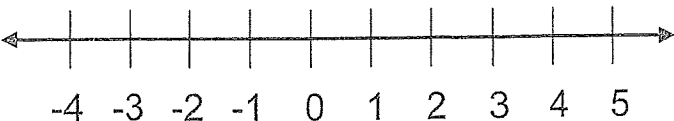
THE COORDINATE PLANE

Plot each point on the coordinate plane and name the quadrant the point is in.

POINT	QUADRANT
A(3, 4)	
B(5, -7)	
C(0, -5)	
D(-9, 2)	

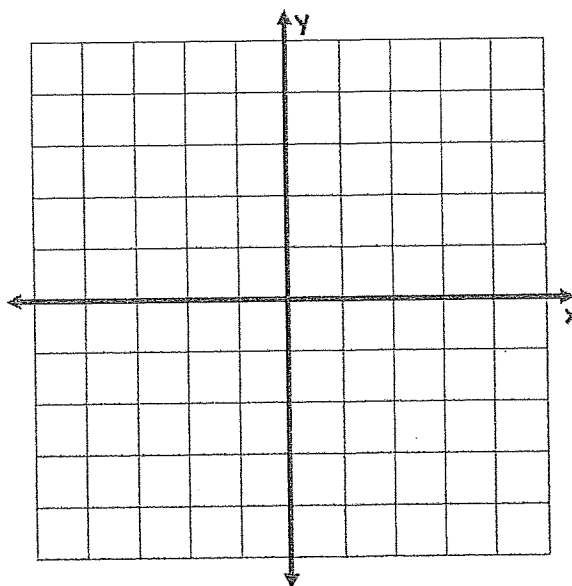| POINT	QUADRANT
E(-1, -2)	
F(-8, 0)	
G(10, 3)	
H(-4, 8)	
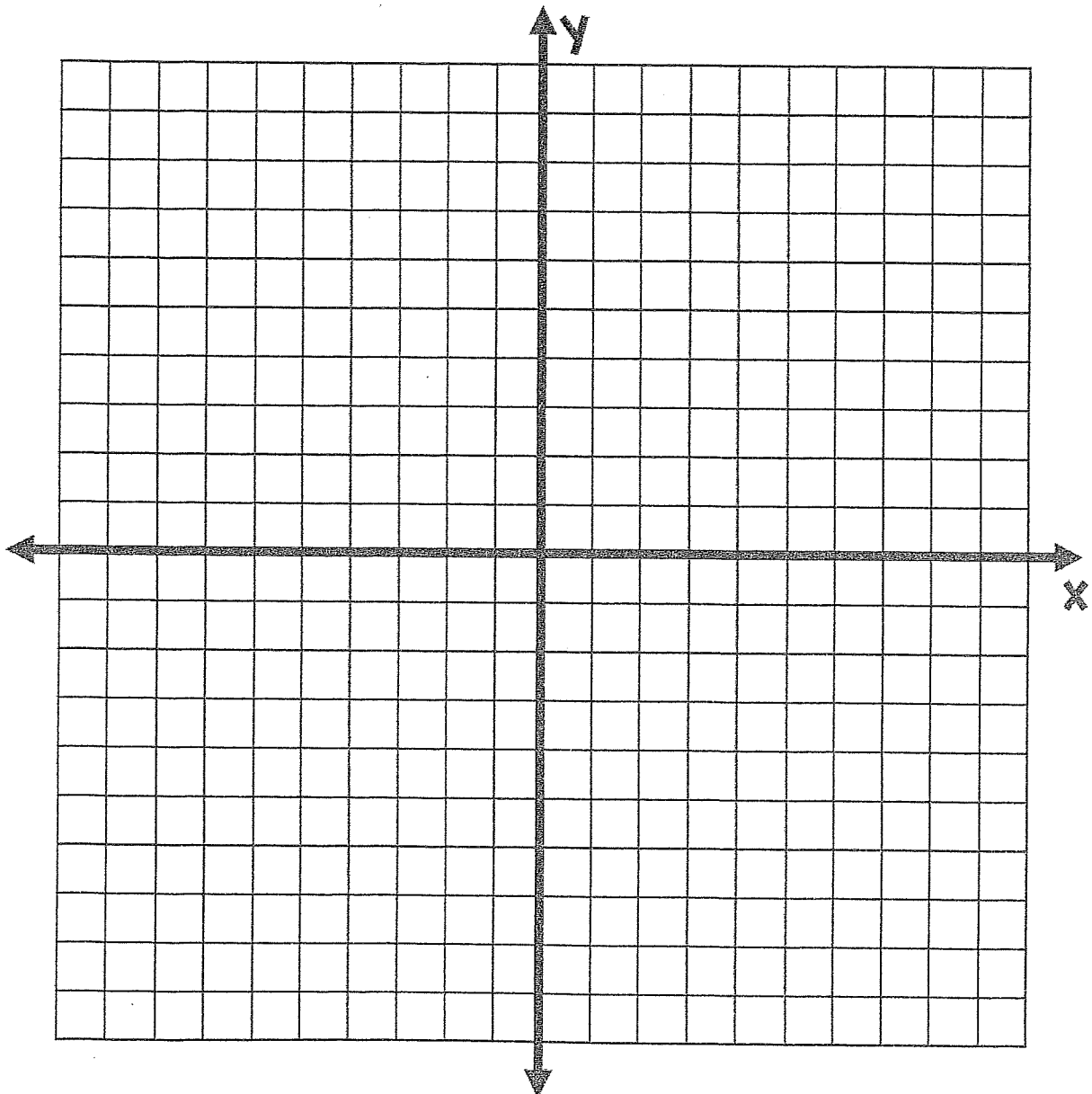
GRAPHING BY MAKING A TABLE

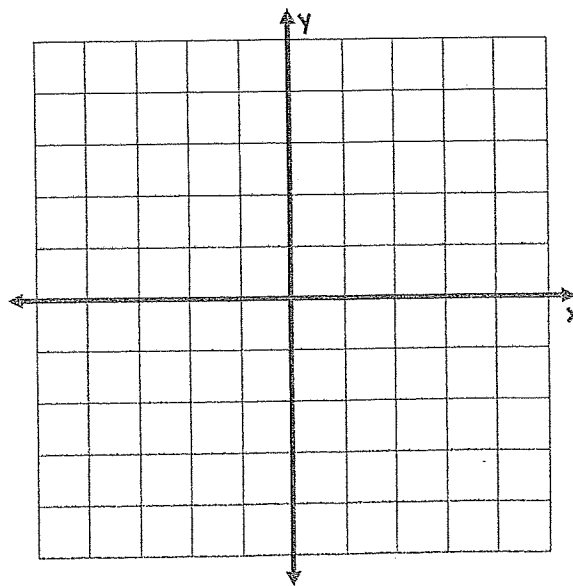Graph the equations by using substitution to complete a table of values.
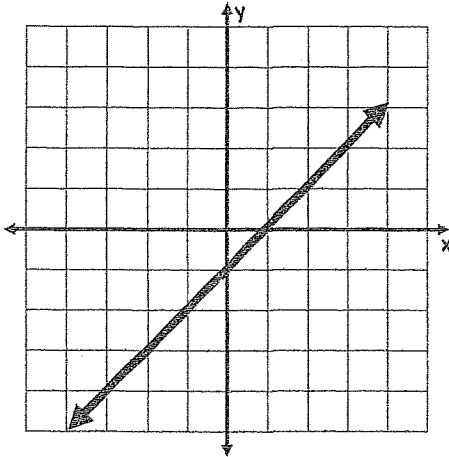
$y = x + 2$

x	y
-2	
-1	
0	
1	
2	

$y = 2x - 1$

x	y
-2	
-1	
0	
1	
2	

SLOPE & y-INTERCEPT

Determine the slope and the y-intercept of each graph.

slope:	
y-intercept:	
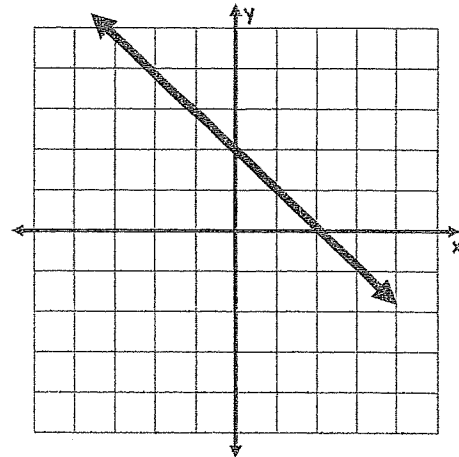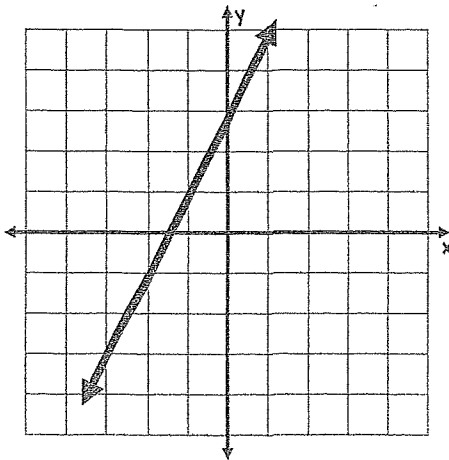
slope:	
y-intercept:	
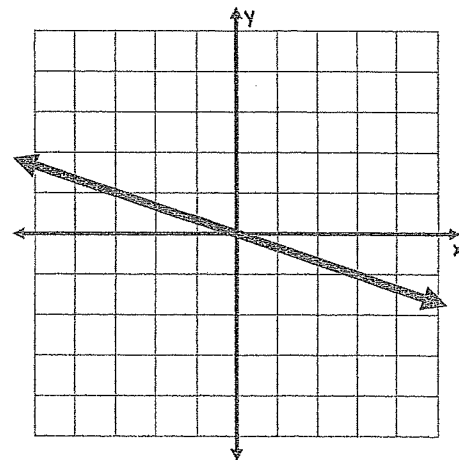
slope:	
y-intercept:	

slope:	
y-intercept:	

BASIC EXPONENT RULES

Simplify each expression using exponent rules.

EXPRESSION	SIMPLIFIED
$x \cdot x$	
$y \cdot y \cdot y \cdot y$	
$x \cdot x \cdot y \cdot y \cdot y$	
$y \cdot z \cdot z \cdot z \cdot z \cdot z$	
$x^2 \cdot x^3$	
$x^5 \cdot x^4$	
$y^6 \cdot y$	
$(x^4)^3$	
$(y^3)^2$	
$x^2 \cdot x \cdot y^3 \cdot y^4$	
$a^4 \cdot b^8 \cdot a^5 \cdot b^2$	
$c^3 \cdot d \cdot c^4 \cdot b$	
$\dfrac{x^5}{x^2}$	
$\dfrac{y^8}{y^3}$	

SEQUENCES & PATTERNS

Determine the pattern of each sequence and find the next 3 terms.

2, 4, 8, 16, 32, _____, _____, _____

5, 10, 15, 20, 25, _____, _____, _____

-5, -3, -1, 1, 3, _____, _____, _____

0.4, 0.2, 0, -0.2, -0.4, _____, _____, _____

3, -6, 12, -24, 48, _____, _____, _____

$\frac{3}{9}, \frac{4}{9}, \frac{5}{9}, \frac{6}{9}, \frac{7}{9},$ _____, _____, _____

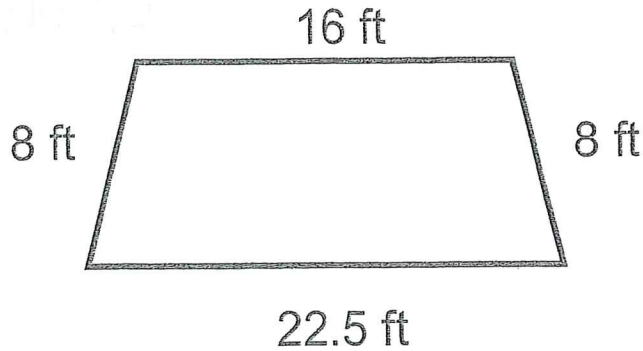$\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32},$ _____, _____, _____

6, -3, -12, -21, -30, _____, _____, _____
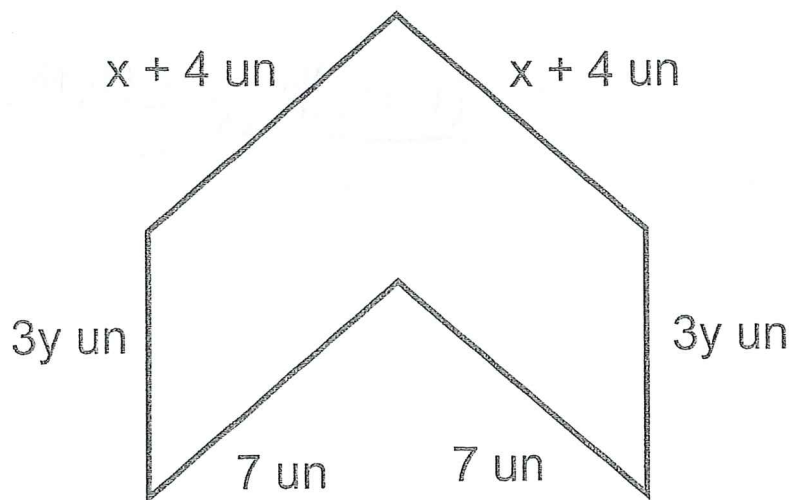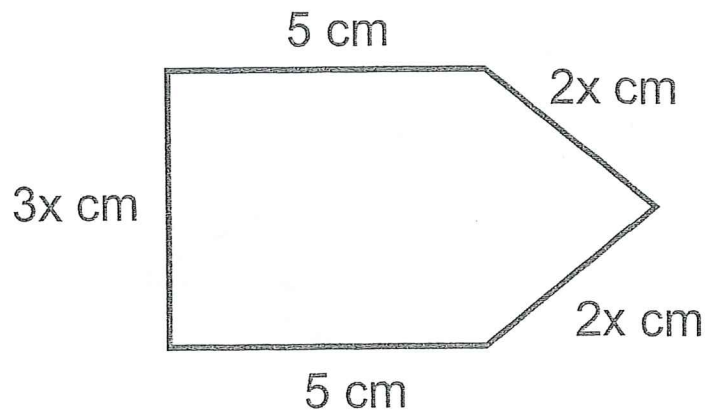
2, 5, 12.5, 31.25, 78.125, _____, _____, _____

@iteachalgebra

b = base
b = height

CALCULATING PERIMETER

Determine the perimeter of each figure.

16 ft

8 ft   8 ft

22.5 ft

P =

P =

5 cm

2x cm

3x cm

2x cm

5 cm

x + 4 un   x + 4 un

P =

3y un   3y un

7 un   7 un

@iteachalgebra

CALCULATING AREA

Determine the area of each figure.

Formulas:
$$a = bh$$

2 cm

x + 3 cm

$A =$

3 in

2x − 4 in

$A = \frac{1}{2}bh \ or \ \frac{bh}{2}$

5 cm

2 cm

x + 6 cm
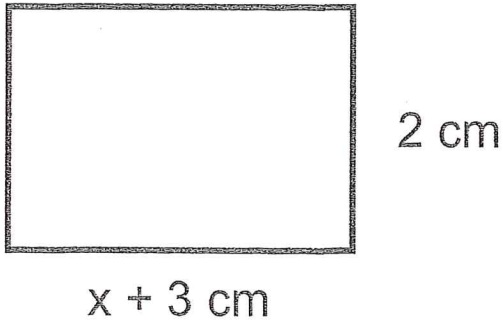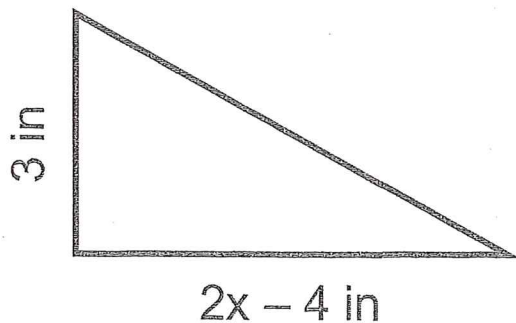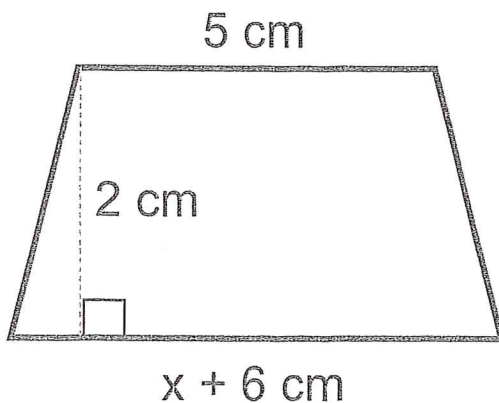
$A = \frac{(b_1 + b_2)h}{2} \ or \ \frac{1}{2}(b_1 + b_2)h$

PERFECT SQUARE NUMBERS

Complete the perfect squares chart. Fill in as many as you can without a calculator.

$1^2 =$		$16^2 =$	
$2^2 =$		$17^2 =$	
$3^2 =$		$18^2 =$	
$4^2 =$		$19^2 =$	
$5^2 =$		$20^2 =$	
$6^2 =$		$21^2 =$	
$7^2 =$		$22^2 =$	
$8^2 =$		$23^2 =$	
$9^2 =$		$24^2 =$	
$10^2 =$		$25^2 =$	
$11^2 =$		$30^2 =$	
$12^2 =$		$40^2 =$	
$13^2 =$		$50^2 =$	
$14^2 =$		$60^2 =$	
$15^2 =$		$70^2 =$	