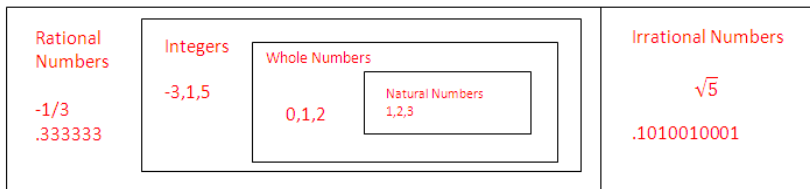Algebra 1A Final Review

Answers to suggested problems can be found in the virtual library using your Learning Coach's Login or in the resource packet.

Unit 1
- Create expressions
    - From word problems
    - From given situations
- Evaluate expressions
    - Negative numbers
    - Fractions (only add/subtract if you have a common denominator)
    - Decimals

Rational Numbers	Integers	Whole Numbers	Natural Numbers	Irrational Numbers
-1/3 .333333	-3,1,5	0,1,2	1,2,3	$\sqrt{5}$ .1010010001

1. List some words that might be used to convey the following symbols:

$=$ _____

$+$ _____

$-$ _____

$\times$ _____

$\div$ _____

2. Define the following properties

	Addition	Multiplication
Associative		
Commutative		
Identity		
Inverse		
Distributive		

3. What does PEMDAS stand for?

Ex: Evaluate: $(5 - 3) \cdot 5^2 + 4 \div 2$

Suggested Problems: Pg 73: 5,6,9,18,19

- Identify solutions of equations
- Create and solve equations from word problems

1. How do we determine if a point or value is a *solution* to an equation ?

Ex : Which of the following points are solutions to $y = 7 + 3x$?
{(-5,0), (-3,-2) (2,13)}

2. What steps do you use to solve equations?

Examples

1.　　$x + 5 = 10$	2.　　$5q - 13 = 37$
3.　　$4(2a - 1) = -10(a - 5)$	4.　　$4m = 52$
5.　　$\dfrac{x}{3} = 15$	6.　　$\dfrac{2}{3}p = \dfrac{4}{5}$

3. What kind of problem would have infinitely many solutions? No solutions?

Unit 3
- Identify solutions of inequalities
- Using Set Notation to write answers of inequalities
- Identify subsets and compliments of sets
- Solve compound inequalities and absolute value equations

1. How is solving inequalities different from solving a regular linear equation?

   Examples: Solve and graph the solution set:
   $$d - 5 < 2d - 14 \qquad\qquad -22b \geq 99$$

2. How do you know when to use an open circle (o) or a closed circle (●) on your graph?

3. What is the trick for solving compound inequalities and absolute value equations?

   Examples: Solve the following problems
   $$-1 < p + 3 < 5 \qquad\qquad |x - 2| = 5$$

4. What is the *complement* of a set and what is the notation?

Set Example: Suppose U = {1,2,5} and A = {1,2}. List all the subsets of U and find A'.
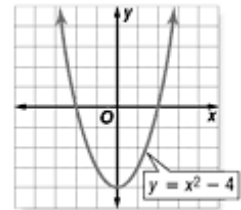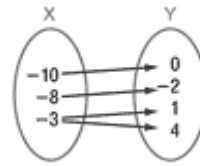
Unit 4

- Graph relationships and functions
- Identify functions using sets of ordered pairs, scatter plots, and tables
- Find function rules
- Identify an arithmetic sequence

1. How do we determine if a relation is a *function*?

Ex: Circle any that are functions

{(0,2), (-3,3) (0,4)}

x	y
1	2
3	2
5	-5

2. How do we determine if a function is *linear*?

Ex: Is the following relationship a linear function?

x	y
1	2
3	6
5	10

3. What is *function notation*?

Ex 5: If $f(x) = 2x + 1$ and $g(x) = 2x^2 - 5$ find $f(5)$ and $g(3)$.

4. How do we identify an *arithmetic sequence*?

Unit 5
- Identify graphs of given relations
- Identify types of correlation

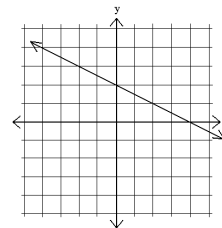1. Define the following terms or draw a picture:

  o *linear equation*

  o *x-intercept*

  o *y-intercept*

  o *slope*

  o *slope-intercept form*

  o *point-slope form*

  o *standard form*

2. How do we find the slope between two points?

   Ex 1: Find the slope between (1,3) and (-2,6)

3. How do we find the slope of a graph?

   Ex 2: What is the slope of the following graph?

   Ex 3: Draw a sketch of the following slopes
   Positive   negative   zero   undefined

4. How do we graph equations in slope intercept form?

       Ex. 4: Graph $y = -3x + 5$

5. How do we come up with an equation for a graph?

   Ex 5: What would be the equation for ex 2?

6. How do I write an equation in slope-intercept form?

       Ex 6: Write an equation in slope-intercept form for a line passing through (-3,3) with a slope of 1.

       Ex 7: Write an equation for the line passing through (-4,2) and (1,12).

7. How do I write an equation in point-slope form if I'm given a point and a slope?

       Ex 8: Write an equation in point-slope form for the line passing through (5,-3) with a slope of ½.
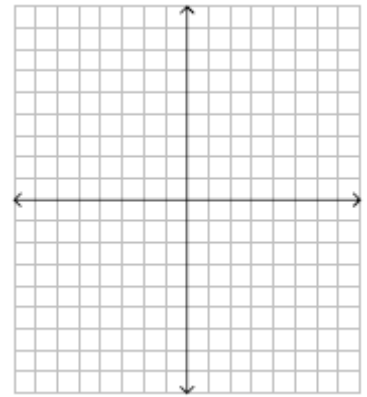
8. How do I write an equation in standard form if it is given to me in slope-intercept form?

Ex 9: Write $\dfrac{2}{3}y = -\dfrac{1}{4}x + 1$ in Standard Form using integers.
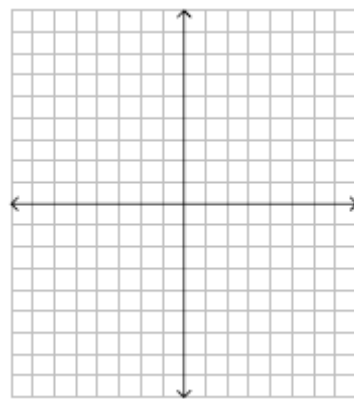
9. Parallel lines have _____ slope.

10. Perpendicular lines have _____ slope.

11. How do I do problems involving parallel and perpendicular lines?

Ex 10: Write the slope-intercept form of the line that is perpendicular to y = -2x – 7 and goes through the point (0, -3)

12. How do I graph using the x and y intercepts?

Ex 11: Graph 2x – 3y = 12
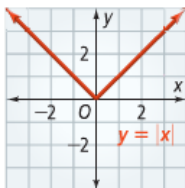
13. What is *Direct Variation*?

14. Below is the graph of y = |x|.
    What would make that graph shift up and down? Left or right? Flip it?
    Ex. Sketch y = -|x+2| - 1

Unit 6
- Identify solutions to systems of equations
- Graph inequalities
- Use graphing to solve systems of equations and systems of Inequalities

1. When is it easiest to use Substitution?

2. When is it easiest to use Elimination?

3. Graph sample systems of equations representing the following scenarios:
   a. One Solution   b. No Solutions   c. Infinitely Many Solutions

4. For linear inequalities, how do you know when to use a dashed line vs. a solid line?

Example problems:

Solve the systems:

1. $3x + 2y = 20$
    $x = -4y$

2. $x - y = 1$
    $x + y = 3$

Graph the following systems of inequalities:

1. $y < x + 4$
    $y \geq 2x - 1$

2. $4x + 4 > 2y$
    $-3x - 4y \geq 12$