1-0A: Graphing, Quadratics, Systems, and Radicals
"I WILL…
…review concepts from Algebra I.
…graph and solve quadratics
…solve for systems.
…simplify and solve radicals."

I. Solving Quadratics

A. With the equation, $Ax^2 + Bx + C = 0$, determine if there is a GCF. If there is, take it out.
B. Make sure the equation equals to zero.
C. Determine the Target Product and Target Sum of the equation
    1. Multiply the First and Last Term
    2. Ensure the terms adds to the middle and multiplies the end
    3. Rewrite the problem with the new middle terms
    4. Make sure that one of the binomials is the same on both sides
D. Factor by Grouping by Splitting the Terms
E. Combine like terms and multiply
F. Put each equation to zero and solve
G. If there are any answers that repeat, they are known as multiple roots. (i.e. Double Root, Triple Root, etc…)

Ex 1: Solve $0 = x^2 - 5x + 6$	Ex 2: Solve, $27 = x^2 + 6x$	Your Turn: Solve, $x^2 - 64 = 0$
Ex 3: Solve $4x^2 - 4x - 48 = 0$	Ex 4: Solve, $2x^2 + 5x + 2 = 0$	

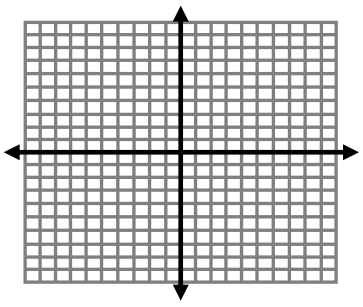
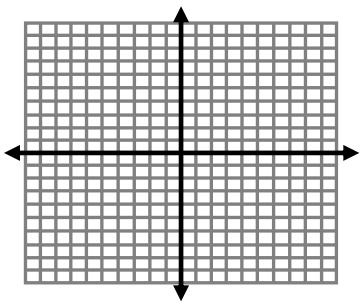
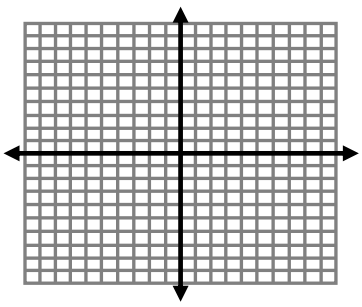
Ex 5: Solve, $5x^2 - 27x = 18$	Your Turn: Solve, $4x^2 - 10x + 15 = 10x - 10$

II. Graphing Linear Functions

A. Slope equation: $m = \frac{\triangle y}{\triangle x} = \frac{y_2 - y_1}{x_2 - x_1}$

B. Slope-intercept equation is $y = mx + b$

1. m = Slope
2. b = y-intercept

Ex 6: Graph $3x + 4y = 12$ and establish the slope and y-intercept.	Ex 7: Graph $x = 2$ and establish the slope and y-intercept.	Your Turn: Graph $7y - 4x = -14$ and establish the slope and y-intercept.
		

III. System of Equations

A. _____ lines have the SAME slope

B. _____ lines have the OPPOSITE SIGN RECIPROCAL slope

C. _____ lines are two lines that lie on top of each other

D. _____ lines are two lines that intersect at a 90° angle

Ex 8: Use slopes to tell whether the lines are parallel, perpendicular, coinciding, or intersecting. $\begin{cases} y = \frac{1}{2}x + 4 \\ y = 2x - 6 \end{cases}$	Ex 9: Use slopes to tell whether the lines are parallel, perpendicular, coinciding, or intersecting. $\begin{cases} 5x - y = -4 \\ x + 5y = 30 \end{cases}$
Ex 10: Use slopes to tell whether the lines are parallel, perpendicular, coinciding, or intersecting. $\begin{cases} -2x + 3y = -3 \\ 4x - 6y = 6 \end{cases}$	Your Turn: Use slopes to tell whether the lines are parallel, perpendicular, coinciding, or intersecting. $\begin{cases} 3x - y = -4 \\ 9x - 3y = -6 \end{cases}$

IV. Substitution Steps

A. SOLVE for one equation into one variable
B. REPLACE one equation into other equation
C. SUBSTITUTE the value into either equation
D. CHECK the solution

HINT: BEST TIME TO USE SUBSTITUTION IS WHEN AN EQUATION HAS AN *ISOLATED* VARIABLE

V. Elimination Steps

A. ARRANGE equations in like terms and multiply a term to attempt to cancel out a variable
B. ADD the variables where at least one variable cancels out
C. REPLACE the value into either equation
D. CHECK the solution

Ex 11: Solve using Substitution: $\begin{cases} 2x + y = 9 \\ 3x - 4y = 8 \end{cases}$	Ex 12:Solve using Elimination: $\begin{cases} 2x + y = 9 \\ 3x - 4y = 8 \end{cases}$
Ex 13: Solve using Elimination, $\begin{cases} -2x + 7y = 10 \\ x - 3y = -3 \end{cases}$	Your Turn: Solve using Elimination, $\begin{cases} 8x + 2y = 4 \\ -2x + 3y = 13 \end{cases}$

VI. Steps for Radicals

A. Identify the root and the base
B. Breakdown the base to prime and group them into roots OR perfect roots into radical form
C. Combine all the same radicals
D. Multiply the bases and radicals together

Ex 14: Simplify $\sqrt{48}$	Ex 15: Simplify $5/6\ \sqrt{45}$
Ex 16: Simplify $\sqrt{(288x^7)}$	Your Turn: $11\sqrt{(45x^5)}$