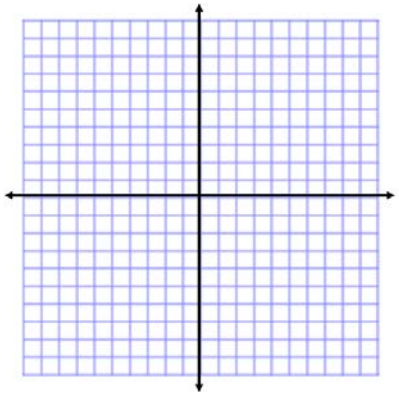
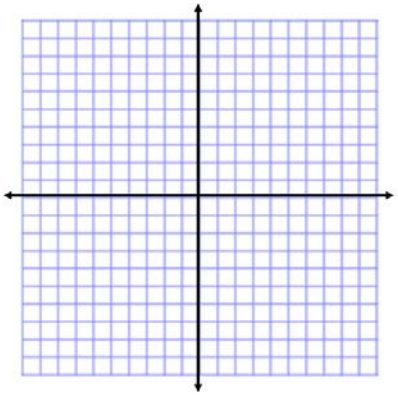
Inequalities:

1. Linear:
    a. One variable:
        i. Solving:
            1. Solve normally by getting the variable by itself.
            2. If you multiply or divide by a negative number, change the inequality sign
        ii. Graphical Solution
            1. > and < produce an open circle, test a point above and below the line to determine a TRUE value
            2. $\geq$ and $\leq$ produce a closed circle, test a point above and below the line to determine a TRUE value
        iii. Examples:
            1. $3x - 4 \leq 5$
            2. $-2x + 3 > 7$

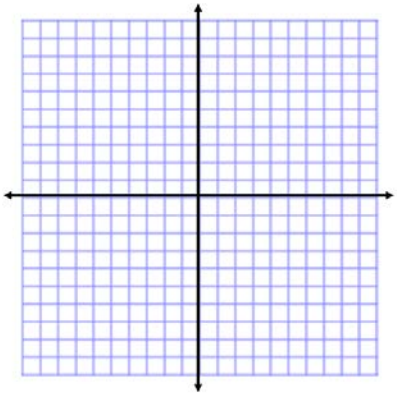
    b. Two variables:
        i. Graphical Solution
            1. > and < produce a dotted line, test a point above and below the line to determine a TRUE value
            2. $\geq$ and $\leq$ produce a solid line, test a point above and below the line to determine a TRUE value
        ii. Examples
            1. $y \geq -4x + 7$



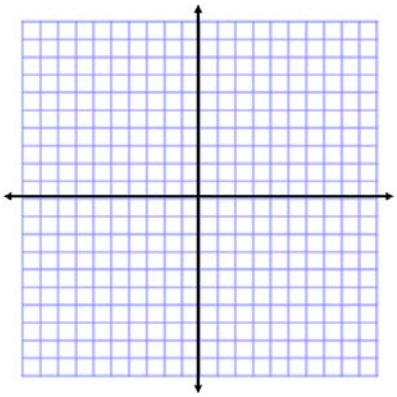
            2. $y < x - 5$



2. Polynomials:
    a. Graphical Solution
        i. Calculate the zeroes
        ii. Perform sign analysis to determine the TRUE values
            1. If it is $\leq$, the negative values are TRUE
            2. If it is $\geq$, the positive values are TRUE
        iii. Examples:
            1. $y > x^4 - 8x^2 + 16$



            2. $y \leq -(x + 4)(x^2 + 5x + 6)$



Directions: Solve the following

1. $4x + 8 \leq 16$

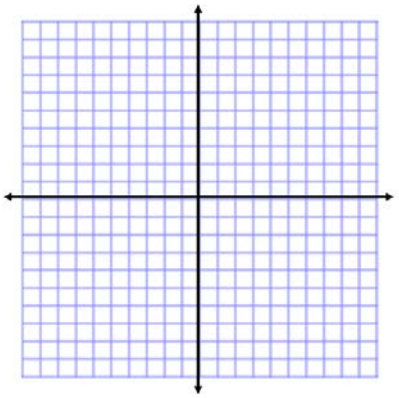
2. $4x + 7 > 2x - 5$

3. $-x + 4 \geq 20$

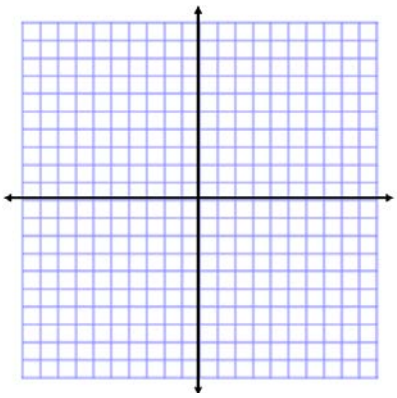
4. $-2x + 3 < 5 - 3x$

Directions: Graph the solutions to the following

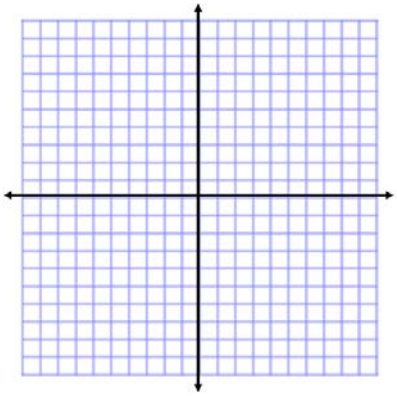
1. $y \geq -2x + 5$



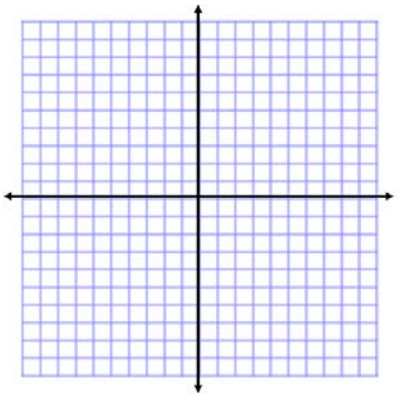
2. $y < 3x - 4$



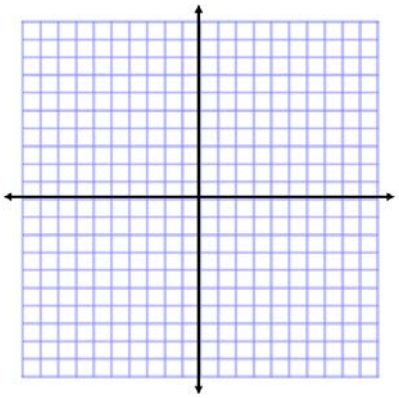
3. $y \leq -x - 3$



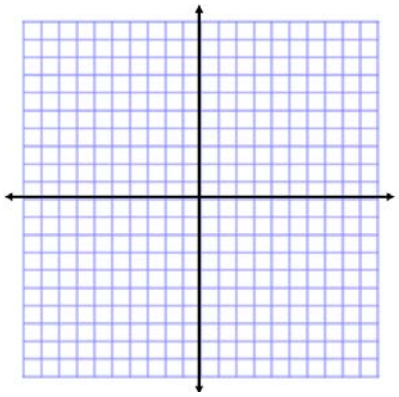
4. $y > x + 2$



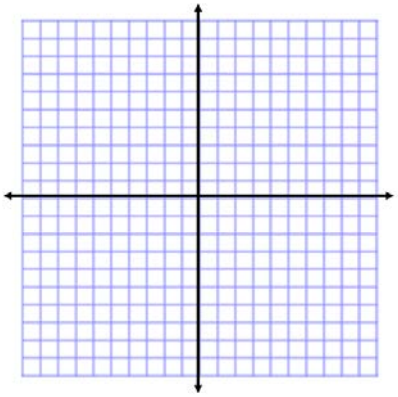
5. $y \geq -x^2 + 6x - 5$



6. $y < x(x-3)(x-4)$



7. $y \leq -(x^2-4)(x^2-16)$



8. $y > x(x^2+x-2)(x^2+x-6)$