**First Chapter** **Name** _____

**Linear Forms / Linear Inequalities / Linear Piece wise Functions**

**Slope-Intercept Form** (e.g. $y = \frac{2}{3}x + 5$ , or $y = 7x - 5$)

1. $3x - 2y = 8$ 1._____

2. $5x + 3y = 22$ 2._____

3. $7x - 3y = -11$ 3._____

**Standard Form Equation**

Put each equation in the $Ax + By = C$

4. $y = \frac{2}{5}x - 3$ 4._____

5. $y = -\frac{1}{2}x - 7$ 5._____

6. $y = \frac{5}{2}x + 3$ 6._____

Write the equation in the indicated form.

9. $(3,-2)$, $(5,-5)$ Slope Int_____

10. $(-2,3)$, $(-5,7)$ Standard_____

Write the slope, y intercept as an ordered pair, and x intercept as an ordered pair

11. $4x + 3y = -12$ m = _____ y - int = _____ x - int = _____

12. $y = \frac{2}{7}x + 5$ m = _____ y - int = _____ x - int = _____

Write the following equations.

13. Parallel to $y = \frac{2}{5}x - 4\frac{1}{9}$ through ( 2 , –3 ) in standard form.

13._____

14. Perpendicular to $3x + 4y = -30$ through ( 6 , –1 ) in slope intercept form.

14._____

15. Parallel to $3x - 7y = 145$ through ( –7 , 2 ) in slope intercept form.

15._____

**Function Notation**

$f(x) = 3x^2 - 2x + 9$ $\quad g(x) = 3x - 2$ $\quad p(x) = 2x + 8$ $\quad h(x) = x^2 + 2x + 7$

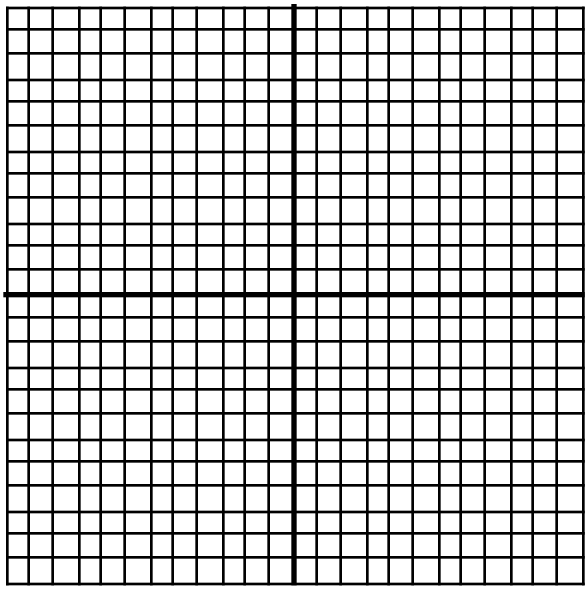
16. Solve $3\left[g(w+2)\right] - p(w) = \frac{3}{4}\left[p(2w)\right]$

17. Solve to four decimal places $\quad f\left(g(t)\right) = h\left(g(t-3)\right)$

Graph Each of the following

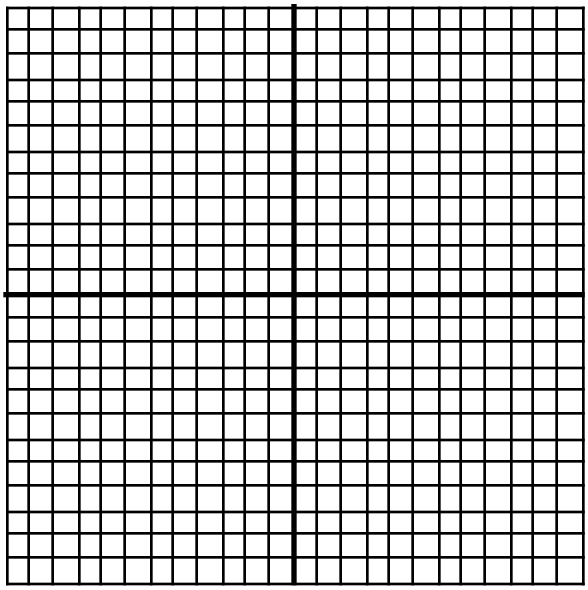
18. $y = -\frac{2}{3}x - 1$ m = _____ $\frac{steep\_or\_shallow}{incline\_or\_decline}$ _____ y - int = _____

| x | y |
|---|---|
| | |



19. $4x + 3y = 9$ m = _____ $\frac{steep\_or\_shallow}{incline\_or\_decline}$ _____ y - int = _____

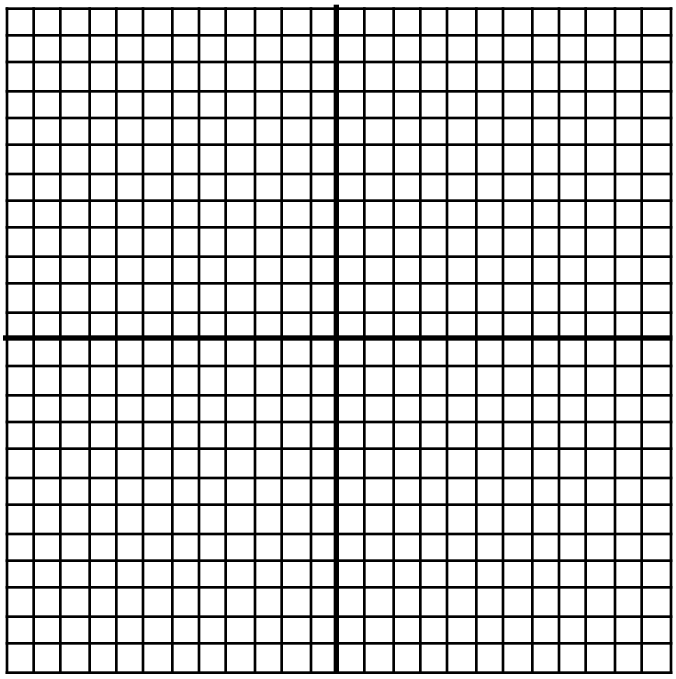
| x | y |
|---|---|
| | |



Graph The System of Inequalities (**Only shade the region that solves the system**)

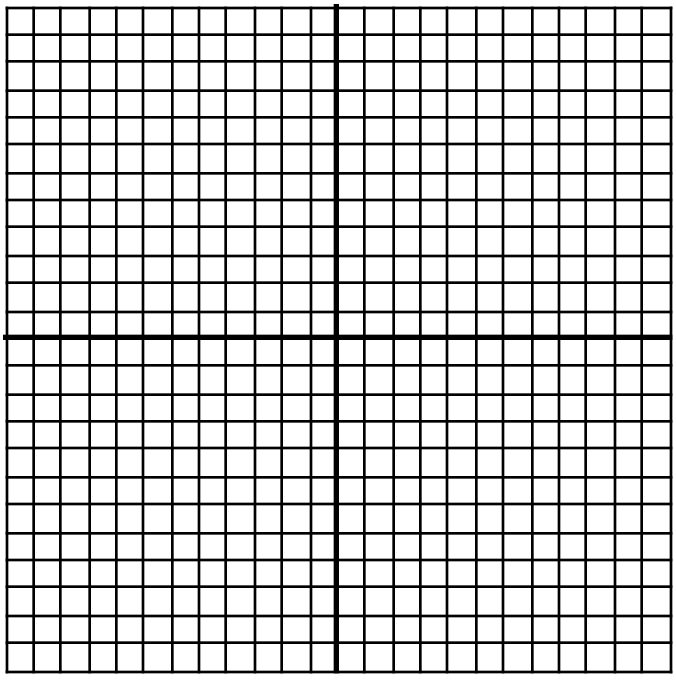
20. $y \geq \frac{1}{3}x + 2$

$y < \frac{-3}{4}x - 1$



21. $y \geq \frac{1}{2}x - 3$

$2x - 3y < 12$



Graph The System of Inequalities (**Only shade the region that solves the system**)

22.

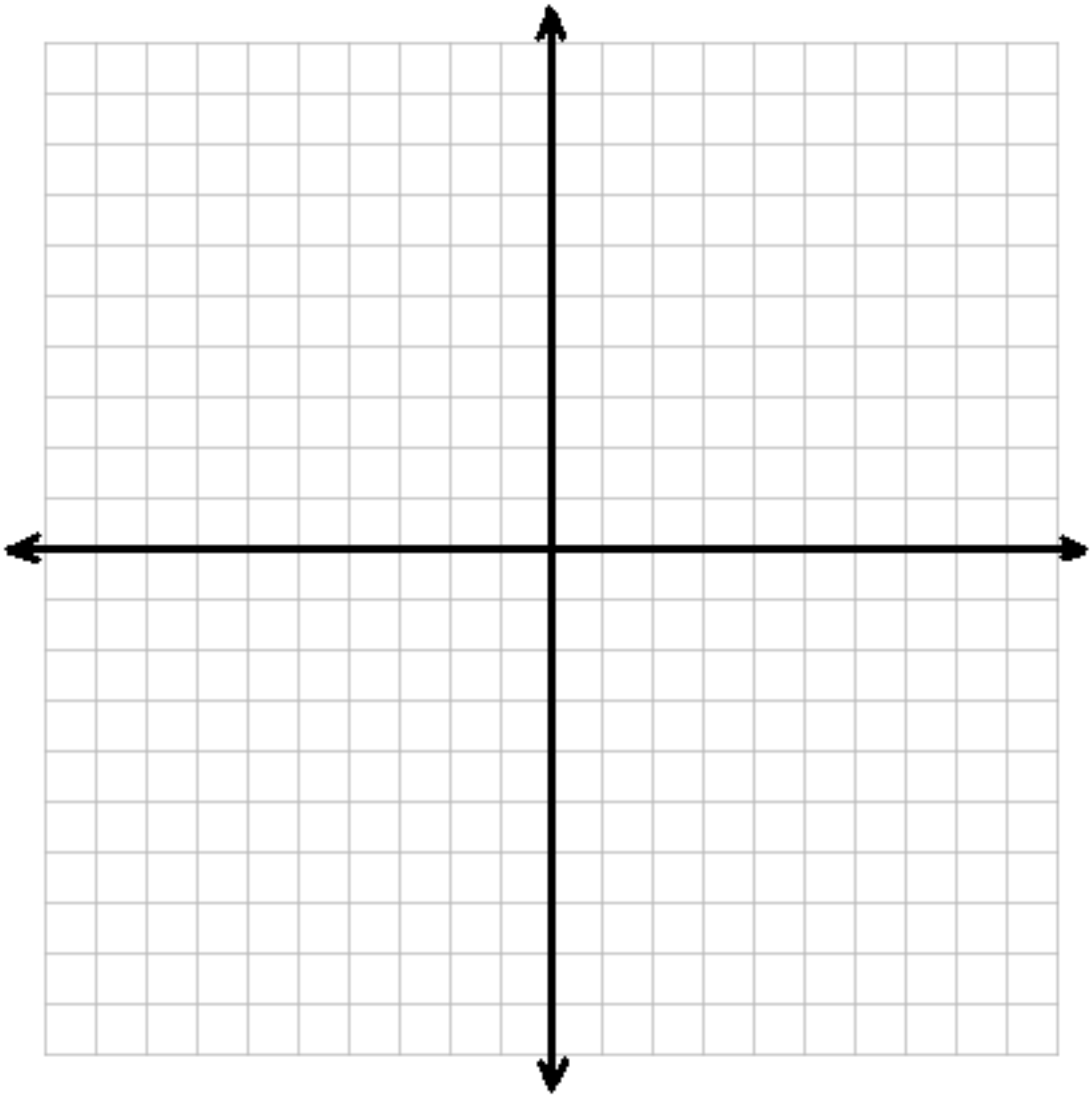
$y \geq \frac{1}{2}x - 1$

$y > -\frac{1}{3}x - 2$

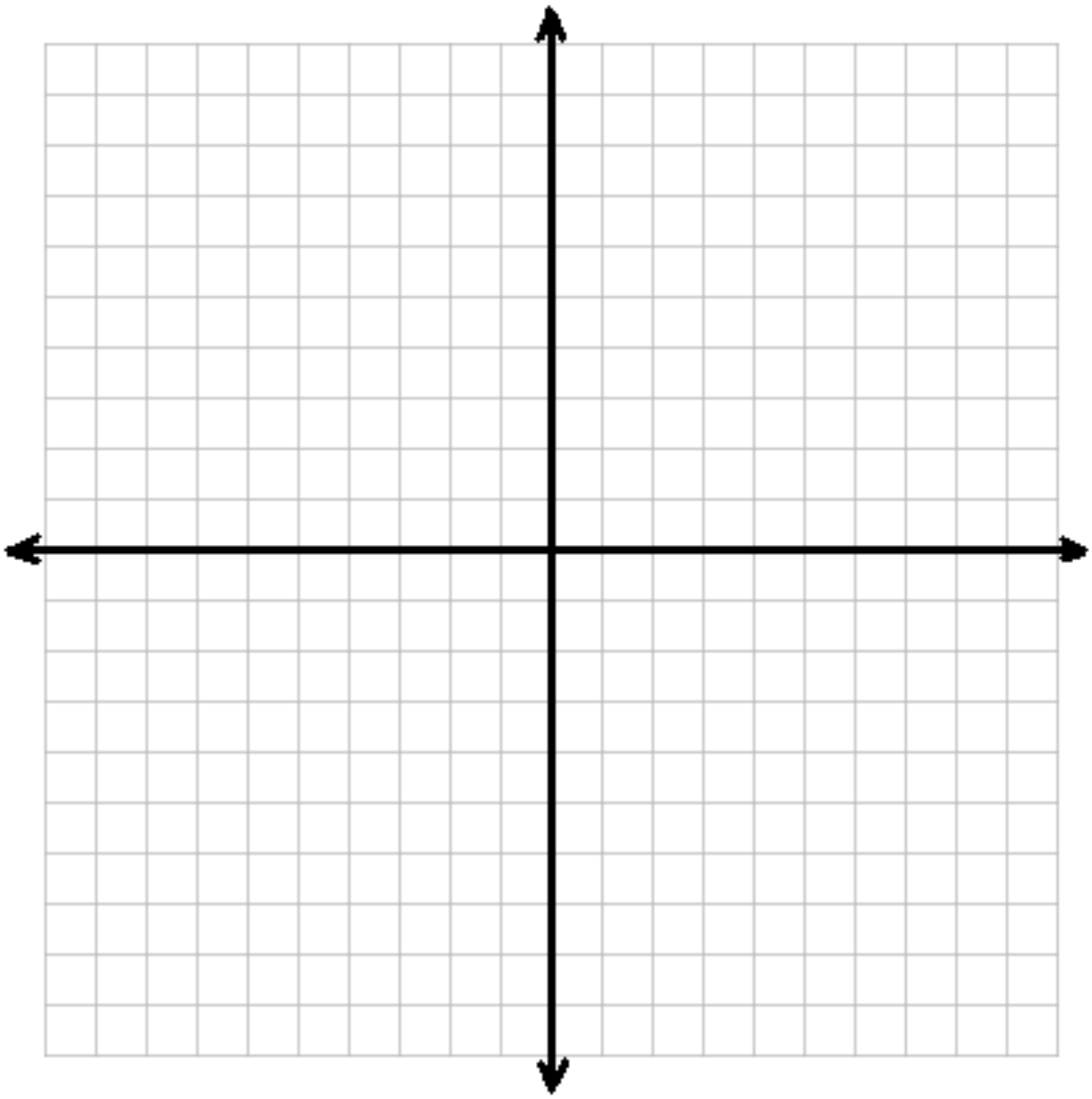
$2x - y \geq -15$

$x \leq 7$

$y < 6$



23. $h(x) = \begin{cases} \lfloor x \rfloor + 2\_ \; for \ldots (-\infty < x < -7) \\ -\frac{1}{2}x - 5\frac{1}{2}, \ldots -7 \le x \le -3 \\ x + 4, \_ \; for \ldots (-3, 0] \\ |2x - 4|, \ldots 0 < x \le 3 \\ 4, \_ \; for \ldots (3, 5] \\ -2\lceil x \rceil + 14 \ldots 5 < x \le \infty \end{cases}$



Graph each system independently (create the four regions for solutions)

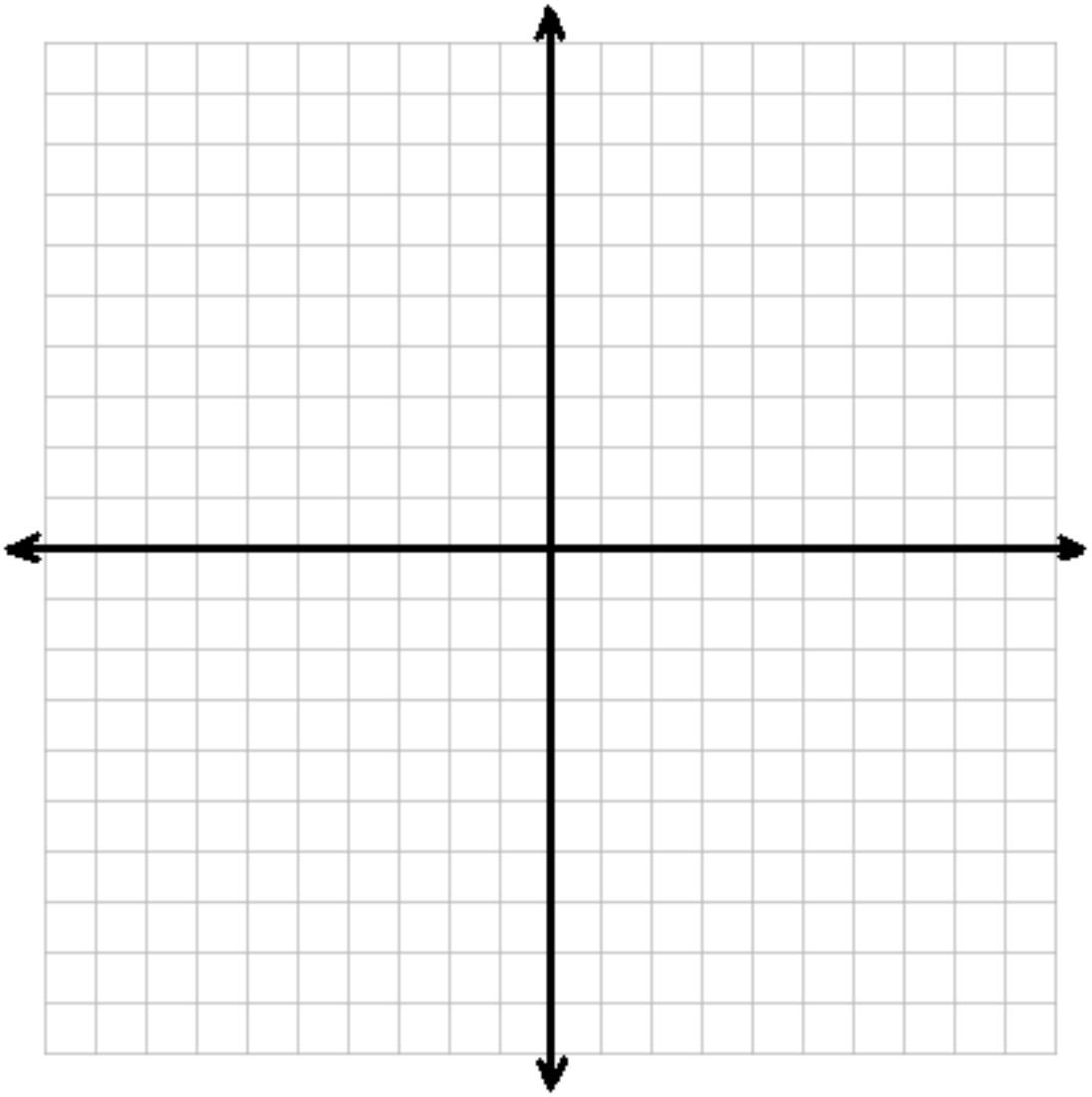
24.

$$\left.\begin{array}{l} b(x) < -|x+8|+6 \\ c(x) \geq 2x+16 \end{array}\right\} for\ldots(-\infty,-6)$$

$$\left.\begin{array}{l} f(x) < -\frac{1}{2}x+6 \\ g(x) \geq \lfloor x+5 \rfloor^2+2 \end{array}\right\} for\ldots[-6,-2)$$

$$\left.\begin{array}{l} h(x) < 6 \\ k(x) > \left|\frac{1}{2}x-1\right|+1 \end{array}\right\} for\ldots[-2,4]$$

$$\left.\begin{array}{l} m(x) \geq |x-7|-3 \\ p(x) \leq \lceil x-7 \rceil^2+5 \end{array}\right\} for\ldots(4,9]$$



$f(x) = 5x^2 - 2x + 7$ $g(x) = 3x - 2$ $p(x) = 4x + 13$ $h(x) = x^2 + 3x + 5$

25. Solve to four decimal places $h\left(p\left(\frac{3}{4}z - 2\right)\right) = 5\left[f(z)\right] - 7\left[g(z)\right] - 6$