

Name \_\_\_\_\_

**Resources:**Math Dictionary: [http://www.mathwords.com/a\\_to\\_z.htm](http://www.mathwords.com/a_to_z.htm)Video Tutorials: There are a selection of videos for each lesson on Mrs. Jamison's Honors Algebra 2 Website (<https://sites.google.com/site/mrsjamisonswebsite/honors-algebra-ii>) or you can search your own on Youtube or Khan Academy.**1.1 Apply Properties of Real Numbers (CALCULATOR ALLOWED)**

1. Operations and Unit Analysis. Solve the problem. Use unit analysis to check your work.
  - A. You work 10 hours and earn \$85. What is your pay per hour?
  
  - B. You drive for 3 hours at 65 miles per hour. How far did you go?
  
2. Conversions of measurement. Perform the indicated conversion. If necessary, look up any conversions you do not know.
  - A. 7 quarts = \_\_\_\_\_ gallons
  
  - B. 56 ounces = \_\_\_\_\_ tons
  
3. Conversion of rates. Convert the rate into the given units. If necessary, look up any conversions you do not know.
  - A. 20 miles per hour = \_\_\_\_\_ feet per second
  
  - B. 50 km per hour = \_\_\_\_\_ miles per hour

**1.2 Evaluate and Simplify Algebraic Expressions (NO CALCULATOR)**

4. Order of Operations. Evaluate the expression for the given value of the variable.
  - A.  $-10f + 15$ ;  $f = 2$
  - B.  $5j - 3j \cdot 5$ ;  $j = 10$
  
  - C.  $8m + (2m - 9)^3$ ;  $m = 6$
  - D.  $2x^4 - 4x^3$ ;  $x = -1$

E.  $x^3 + 5y$ ;  $x = -2$ ,  $y = -3$

F.  $\frac{x-y}{x+y}$ ;  $x = 10$ ,  $y = -8$

**1.3 Solve Linear Equations (NO CALCULATOR)**

5. Solve each equation. Check your answer.

A.  $2(b + 3) = 4b - 2$

B.  $3(m - 5) = 6(m + 1)$

$b = \underline{\hspace{2cm}}$

$m = \underline{\hspace{2cm}}$

C.  $3(2x - 5) = -7(x + 3)$

D.  $0.4k - 0.6 = 1.3k + 1.2$

$x = \underline{\hspace{2cm}}$

$k = \underline{\hspace{2cm}}$

E.  $\frac{1}{2}t + \frac{1}{3}t = 10$

F.  $\frac{3}{7}w - \frac{2}{9} = \frac{4}{9}w + \frac{1}{7}$

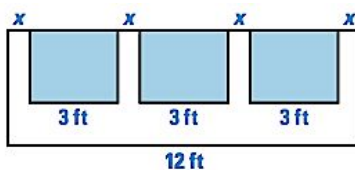
$t = \underline{\hspace{2cm}}$

$w = \underline{\hspace{2cm}}$

**1.4 Rewrite Formulas and Equations (NO CALCULATOR)**6. Solve for  $y$  in each equation.

A.  $3xy - 28 = 16x$

B.  $y - 2xy = 15$

**1.5 Use Problem Solving Strategies and Models (NO CALCULATOR)**7. Using Diagrams. Write and solve an equation to find  $x$ .

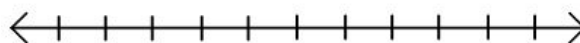
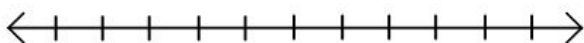
8. Wood Shop. You have a piece of wood that is 72 inches long. You cut the wood into three pieces. The second piece is 6 inches longer than the first piece. The third piece is 6 inches longer than the second piece. Draw a diagram and then write an equation to find the lengths of the three pieces.
9. A moving company weighs 20 boxes you have packed that contain either books or clothes and says the total weight is 404 pounds. You know that a box of books weighs 40 pounds and a box of clothes weighs 7 pounds. Write and solve an equation (or system of equations) to find how many boxes of books and how many boxes of clothes you packed.

**1.6 Solve Linear Inequalities (NO CALCULATOR, EXCEPT #12)**

10. Solving Inequalities. Solve each inequality. Then, graph the solution on a number line.

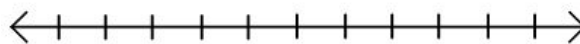
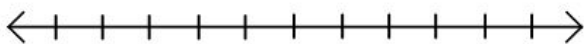
A.  $4x + 14 < 3x + 6$

B.  $18 + 2x \leq 9x + 4$



C.  $-3 < 4 - x \leq 3$

D.  $x - 4 \geq -6$  or  $-x + 2 > 5$



11. Solve the inequality. If there is no solution, write **no solution**. If the inequality is always true, write **all real numbers**.

A.  $2(x - 4) > 2x + 1$

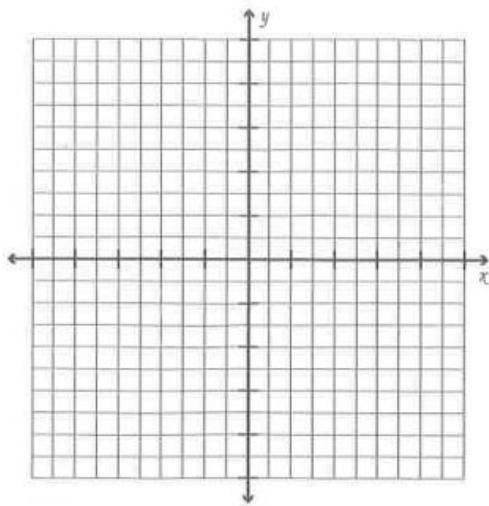
B.  $4x - 5 \leq 4(x + 2)$

12. Video Contest. You and some friends have raised \$250 to help make a video for a contest. You need \$35 to buy supplies. It costs \$45 per day to rent the video equipment. Write and solve an inequality to find the possible number of days you can rent the video camera. Assume if you keep the equipment for part of a day, you must pay for the full day.

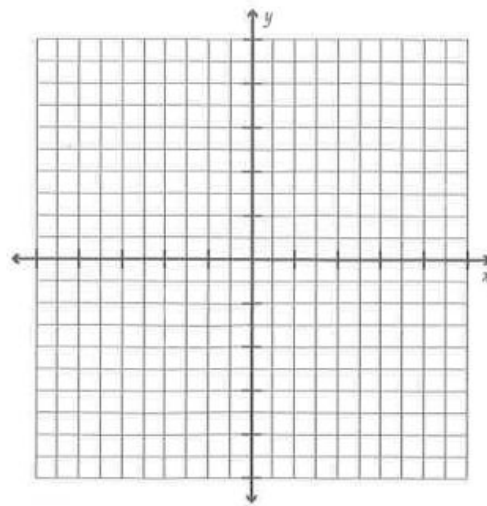
**2.1 Represent Relations & Functions (NO CALCULATOR)**

13. Graphing Equations. Graph each linear equation.

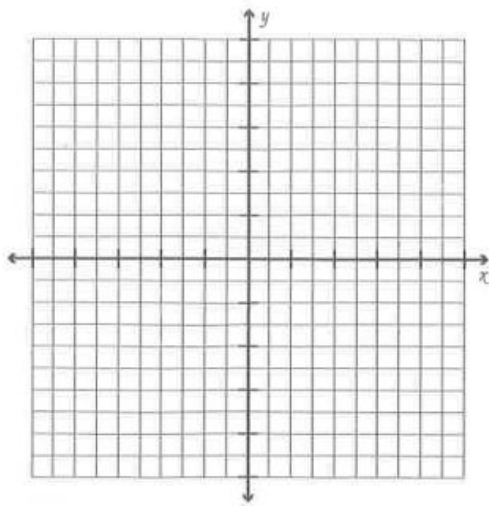
A.  $y = -x + 2$



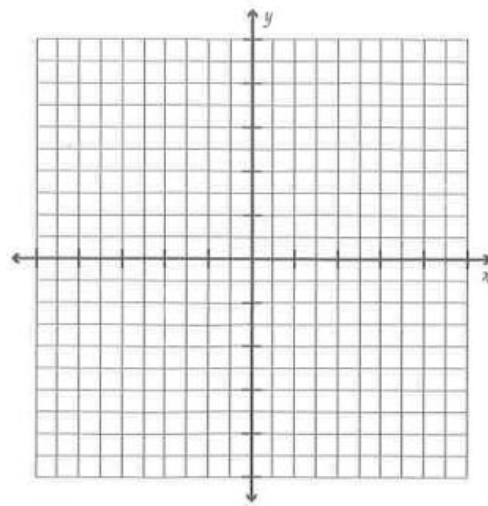
B.  $y = 3x - 5$



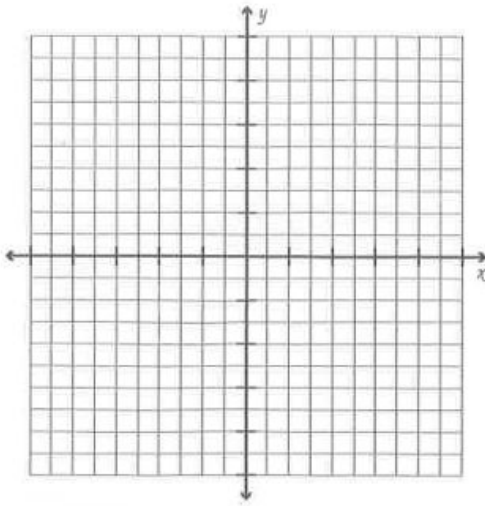
C.  $y = \frac{1}{2}x + 4$



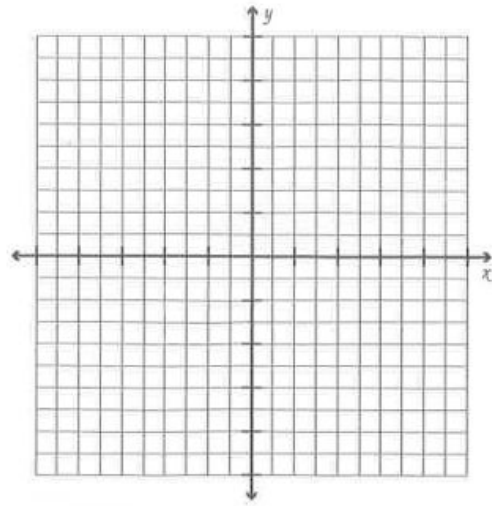
D.  $y = -\frac{3}{4}x$



E.  $y = -7$



F.  $x = 5$



**2.2 Find Slope & Rate of Change (NO CALCULATOR)**

14. Finding Slope. Find the slope of the line passing through the given points. Then tell whether the line is **horizontal**, **vertical**, or **oblique**.

A.  $(2, -4)$  and  $(4, -1)$

B.  $(-6, 5)$  and  $(-6, -1)$

C.  $(0, -3)$  and  $(4, -3)$

15. Classifying Lines. Use the slope of each line to tell whether the lines are **parallel**, **perpendicular**, or **neither**.

A. Line 1: through  $(3, -1)$  and  $(6, -4)$   
Line 2: through  $(-4, 5)$  and  $(-2, 7)$

B. Line 1: through  $(-1, 4)$  and  $(2, 5)$   
Line 2: through  $(-6, 2)$  and  $(0, 4)$

C. Line 1: through  $(1, 5)$  and  $(3, -2)$   
Line 2: through  $(-3, 2)$  and  $(4, 0)$

**2.3 Graph Equations of Lines (NO CALCULATOR)**

16. Finding intercepts. Find the x- and y-intercepts of each line.

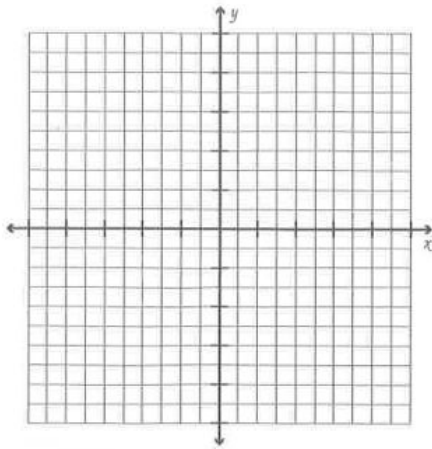
A.  $x + 5y = -15$

B.  $2x - y = 10$

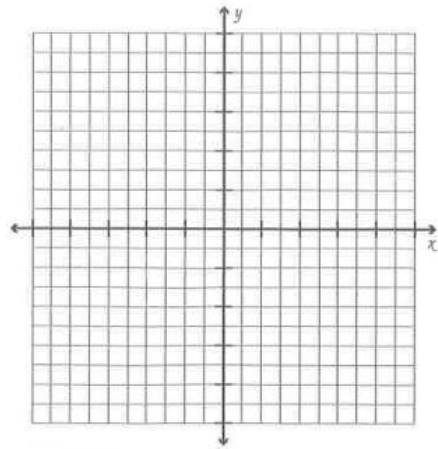
C.  $-6x + 8y = -36$

17. Graph each equation using any method. (Intercepts, plotting points, or rewriting in slope-intercept form.)

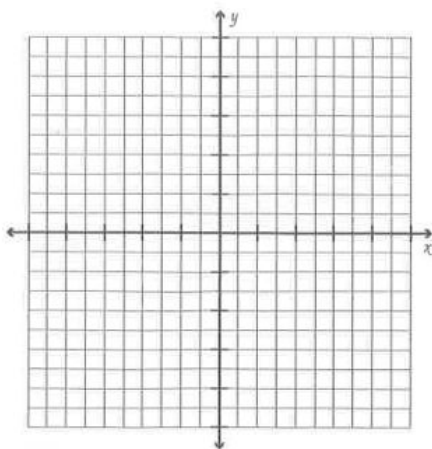
A.  $6y = 3x + 6$



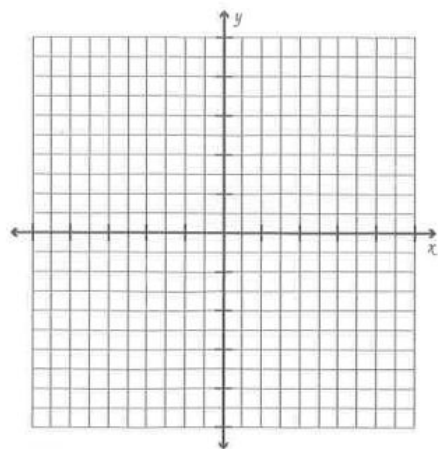
B.  $y + 7 = -2x$



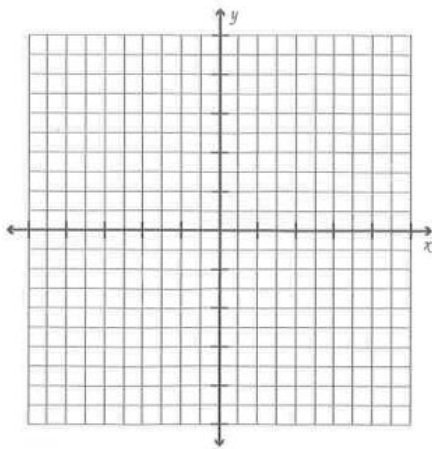
C.  $8y = -2x + 20$



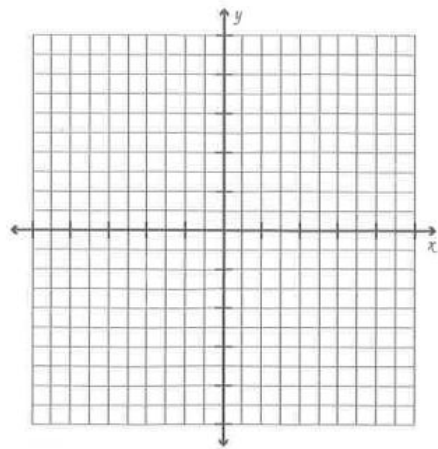
D.  $-4x = 8y + 12$



E.  $y - \frac{1}{2}x = 6$



F.  $2y - 5 = 0$



**2.4 Write Equations of Lines (NO CALCULATOR)**

18. Point Slope Form. Write the equation of the line in point-slope form,  $y - y_1 = m(x - x_1)$ , for the line with the given characteristics.

A.  $(8, 13)$ ,  $m = -9$

B.  $(7, -3)$ ,  $m = -\frac{4}{7}$

C.  $(-9, 5)$ ,  $m = \frac{3}{2}$

19. Parallel and Perpendicular Lines. Write an equation of the line that passes through the given point and satisfies the given condition. You may write the equation in point-slope form,  $y - y_1 = m(x - x_1)$ , or slope-intercept form,  $y = mx + b$ .

A.  $(-3, -5)$ , parallel to  $y = -4x + 1$

B.  $(7, 1)$ , parallel to  $y = -x + 3$

C.  $(3, -1)$ , perpendicular to  $y = 4x + 1$

D.  $(4, 1)$ , perpendicular to  $y = \frac{1}{3}x + 3$

20. Writing Equations. Write an equation of the line that passes through the given points. You may write the equation in point-slope form,  $y - y_1 = m(x - x_1)$ , or slope-intercept form,  $y = mx + b$ .

A.  $(4, -1)$  and  $(6, -7)$

B.  $(0, 7)$  and  $(3, 5)$

C.  $(-5, -2)$  and  $(-3, 8)$

21. Standard Form. Write an equation in standard form,  $Ax + By = C$ , of the line that satisfies the given conditions.  $A$ ,  $B$ , and  $C$  must be integers and  $A$  must be positive.

A.  $m = 4$ ,  $b = -3$

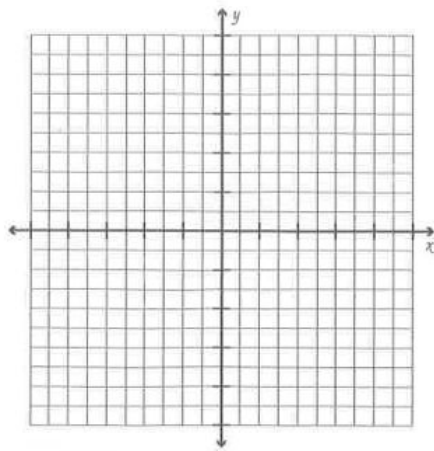
B.  $m = \frac{4}{5}$ , passes through  $(2, 3)$

C. Passes through  $(2, 8)$  and  $(-4, 16)$

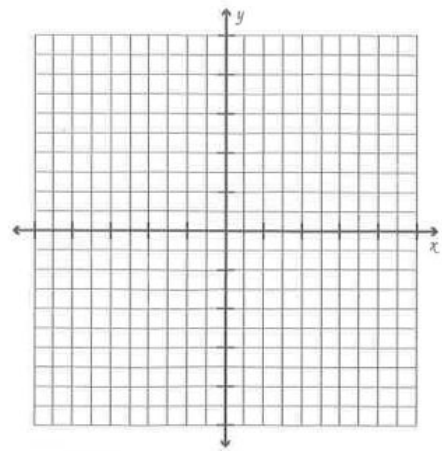
**2.8 Graph Linear Inequalities in Two Variables (NO CALCULATOR)**

22. Graph each inequality.

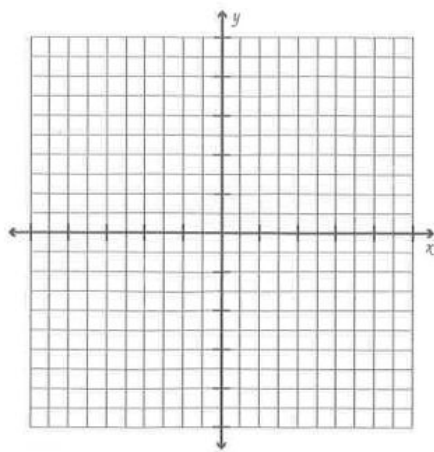
A.  $x < 3$



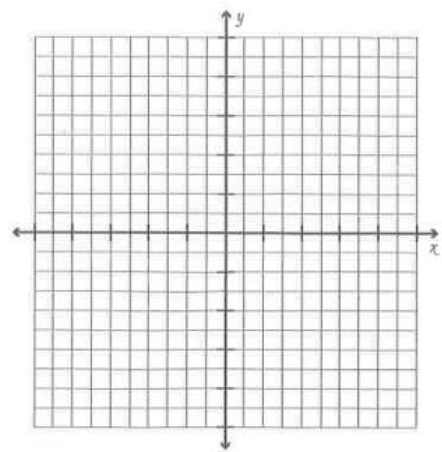
B.  $y \geq -2$



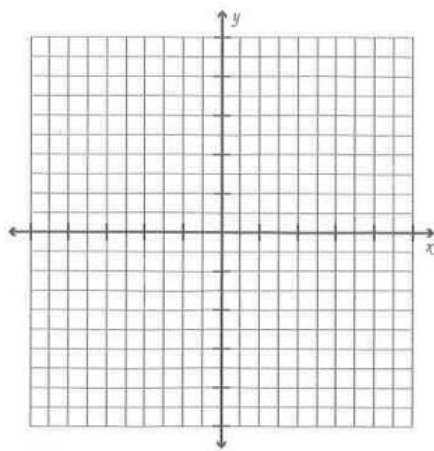
C.  $y > -2x - 1$



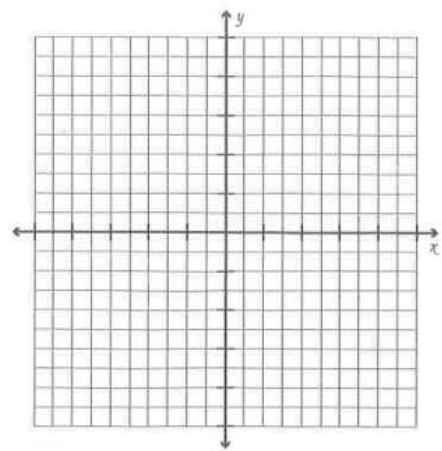
D.  $y \leq \frac{3}{4}x + 1$



E.  $2x + y < 6$



F.  $3x - y \geq 1$

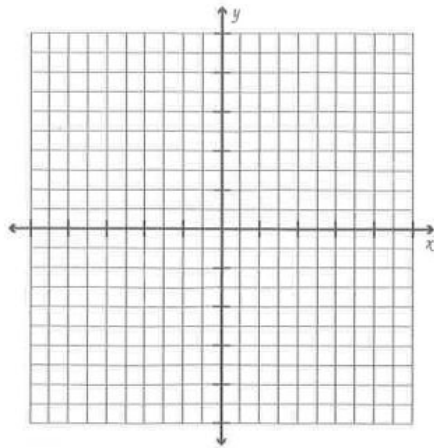




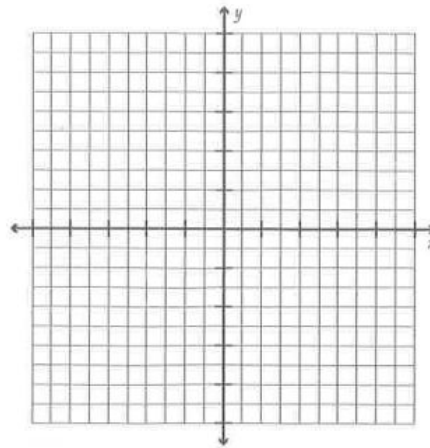
**3.1 Solve Linear Systems by Graphing (NO CALCULATOR)**

23. Graph the linear system and estimate the solution. Then check the solution algebraically.

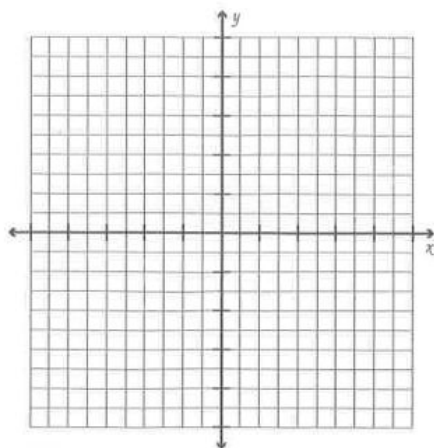
A.  $y = -3x + 2$   
 $y = 2x - 3$



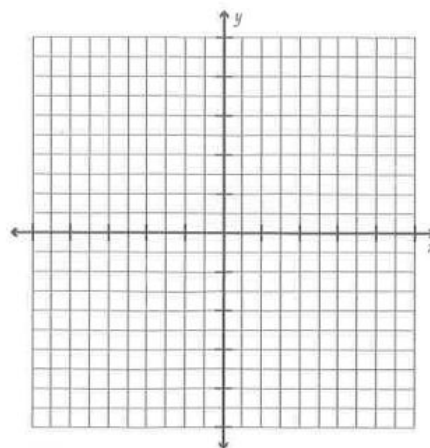
B.  $y = -x + 3$   
 $-x - 3y = -1$



C.  $y = -3x - 2$   
 $5x + 2y = -2$



D.  $y = 4x + 3$   
 $20x - 5y = -15$



**3.2 Solve Linear Systems Algebraically (NO CALCULATOR)**

24. Solve the systems below using the elimination method.

A.  $2x + 6y = 17$   
 $2x - 10y = 9$

B.  $4x - 5y = 13$   
 $6x + 2y = 48$

25. Solve the systems below using the substitution method.

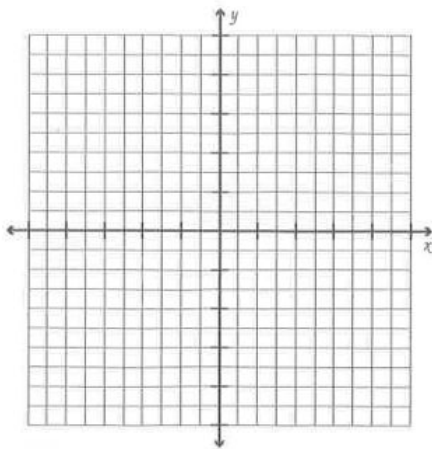
A.  $2x + 5y = 7$   
 $x + 4y = 2$

B.  $6x - 3y = 15$   
 $-2x + y = -5$

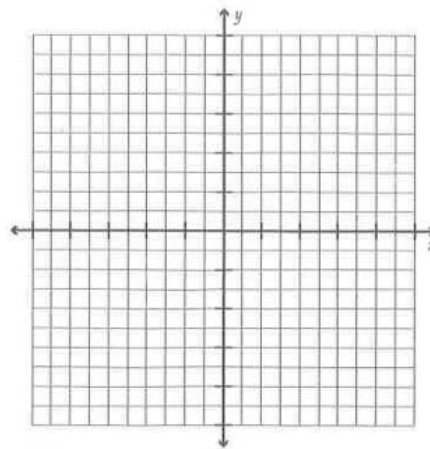
### 3.3 Graph Systems of Linear Inequalities (NO CALCULATOR)

26. Graph the system of linear inequalities.

A.  $4x + y < 1$   
 $-x + 2y \leq 5$



B.  $2x + 3y > 6$   
 $2x - y \leq 8$



### 4.3 Solve $ax^2 + bx + c = 0$ by Factoring (NO CALCULATOR)

27. Solve each equation by factoring.

A.  $x^2 + 5x = 0$

B.  $x^2 - 6x - 27 = 0$

C.  $x^2 + 5x = 24$

D.  $x^2 + 12x - 45 = 0$

E.  $9x^2 - 25 = 0$

F.  $3x^2 - 12x - 36 = 0$