ATM

Kothe

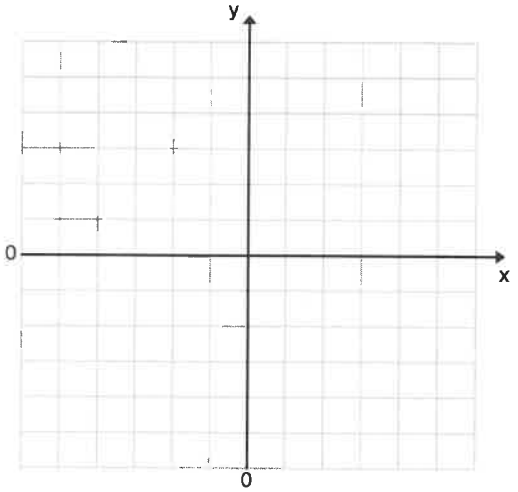
May 11-15

3.2 Graphs of Linear Equations in Two Variables

- Graph a linear equation in two variables

Vocabulary

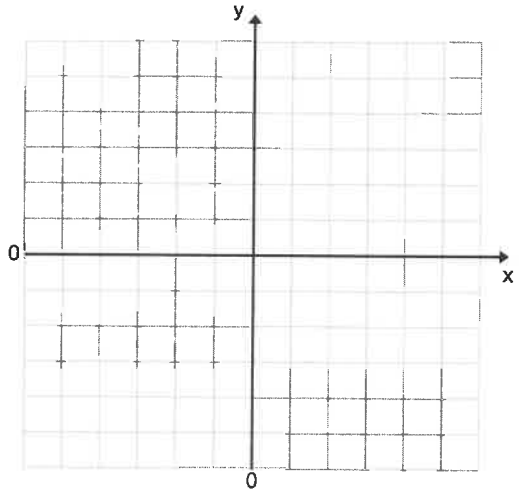
- Cartesian coordinate system (xy-coordinate plane)
- x-axis
- y-axis
- origin
- quadrants
- point
- x-coordinate
- y-coordinate



Ex 1

Graph the Ordered Pairs

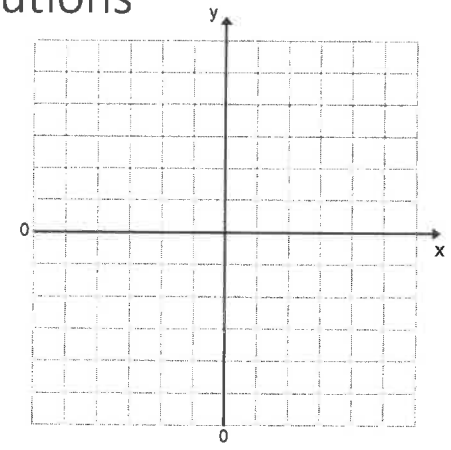
$(1,4),(-2,0),(0,5),(-1,-3),(2,-4)$



Ex 2

Use an input-output table to Find & Graph 4 solutions

$3x+2y=4$



Linear Equations

Every linear equation can be written in the following form:

STANDARD FORM

$$Ax + By = C$$

- A & B cannot both equal zero
- A, B & C must be integers
- A cannot be negative
- GCF of A, B & C must be 1

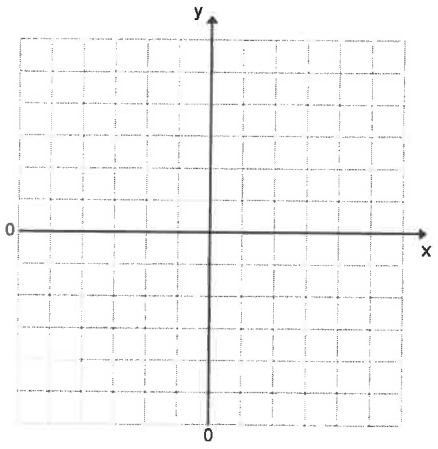
Ex 3 Which of the following Are Linear? Why or Why Not?

- a. $x = -\frac{1}{2} - \frac{3}{5}y$
- b. $xy = 2$
- c. $2x + 3y^2 = 4$
- d. $4x = \frac{1}{3}$
- e. $\frac{5}{4}y = 10$
- f. $2x + \frac{3}{y} = 5$

Intercepts

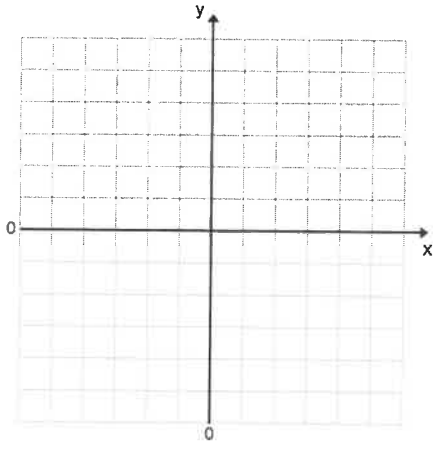
- x-intercept

- y-intercept



Ex 4 Find the x- and y-intercepts, then Graph.

$$2x - 6y = -10$$

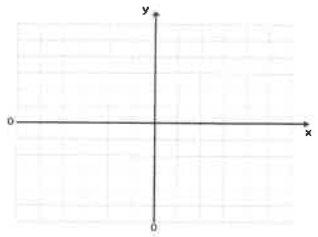


Special linear functions

- **Horizontal Lines (HOY)**

Ex 5

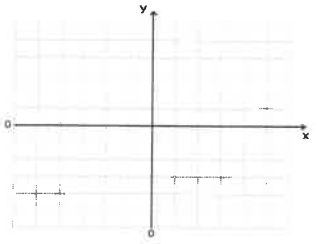
$$y = 4$$



- **Vertical Lines (VUX)**

Ex 6

$$x = -\frac{7}{2}$$



Worksheet: Pg 111

Name:_____
Date:_____ Pd:_____

Written Exercises

For each exercise, graph the ordered pairs in the same coordinate plane.

A **1.** $(1, 2), (0, 3), (3, -2), (-3, 2), (-4, 0)$

2. $(-3, -3), (0, -3), (-2, 4), (3, 0), (1, 4)$

3. $(6, -4), (3, -2), (0, 0), (-3, 2), \left(\frac{3}{2}, -1\right)$

4. $(3, 3), (1, 1), \left(-\frac{3}{2}, -\frac{3}{2}\right), (0, 0), (-2, -2)$

Graph each equation. You may wish to verify your graphs on a computer or a graphing calculator.

5. $-y = 4$

6. $x + y = 3$

7. $2y - 3 = 0$

8. $2x + 1 = 0$

9. $x + 2y = 4$

10. $2x - y = 6$

11. $3x - 2y + 18 = 0$

12. $2x + 3y + 12 = 0$

13. $x - 3y = 0$

14. $x = 2 - 2y$

15. $2x + 5y = 15$

16. $2x - 3y = 0$

17. $3x - 2y = 7$

18. $3x + 2y - 9 = 0$

B **19.** $y = \frac{1}{2}x - 2$

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

21. $y - 2 = x - y + 2$

22. $x + y = 2(x + y + 3)$

Find the value of k so that the point P lies on the line L.

23. $P(2, 1)$, L: $3x + ky = 8$

24. $P(2, 3)$, L: $kx - 2y + k = 0$

25. $P(2, 2)$, L: $kx + (k + 1)y = 2$

26. $P(k, -2)$, L: $3x + 2y = k$

Graph each pair of equations in the same coordinate plane. Find the coordinates of the point where the graphs intersect. Then show by substitution that the coordinates satisfy both equations.

27. $2x + 5y = 0$
$2x + y = 8$

28. $x - 2y = -4$
$3x + 2y = 12$

29. $3x + 2y - 1 = 0$
$x - 2y + 13 = 0$

30. $3x + y = -6$
$3x - 5y = 12$

~~**Graph each equation.**~~

~~**31.** $|x| = 2$~~

32. $|y| = 3$

33. $y = |x|$

C **34.** $|y| = |x|$

~~**35.** $y = |x - 1|$~~

36. $y = |x| - 1$

~~**37.** $y = |x|$ x~~

38. $y = x - |x|$

39. $y = |x| + x$