Math 60, HW 17 Section 3.1 Name: _____

**Concept and Vocabulary:**

3. In the rectangular coordinate system, the point of intersection of the horizontal axis and the vertical axis is called the _____.

4. The axes of the rectangular coordinate system divide the plane into regions, called _____. There are _____ of these regions.

5. The first number in an ordered pair such as (3,8) is called the _____. The second number in such an ordered pair is called the _____.

6. The ordered pair (1,3) is a/an _____ of the equation $y = 5x - 2$ because when 1 is substituted for $x$ and 3 is substituted for $y$, we obtain a true statement. We also say that (1,3) _____ the equation.

7. Each ordered pair of numbers corresponds to _____ point in the rectangular coordinate system.

8. A linear equation in two variables can be written in the form $y =$ _____, where $m$ and $b$ are constants.

**Practice Exercises:**

In exercises 1 - 3 odd, plot the given point in a rectangular coordinate system. Label your points. Indicate in which quadrant each point lies.

1. (3,5)

3. (-5,1)

5. (-3,-1)

7. (6,-3.5)

9. (-3,-3)

11. (-2,0)

13. (0,2)

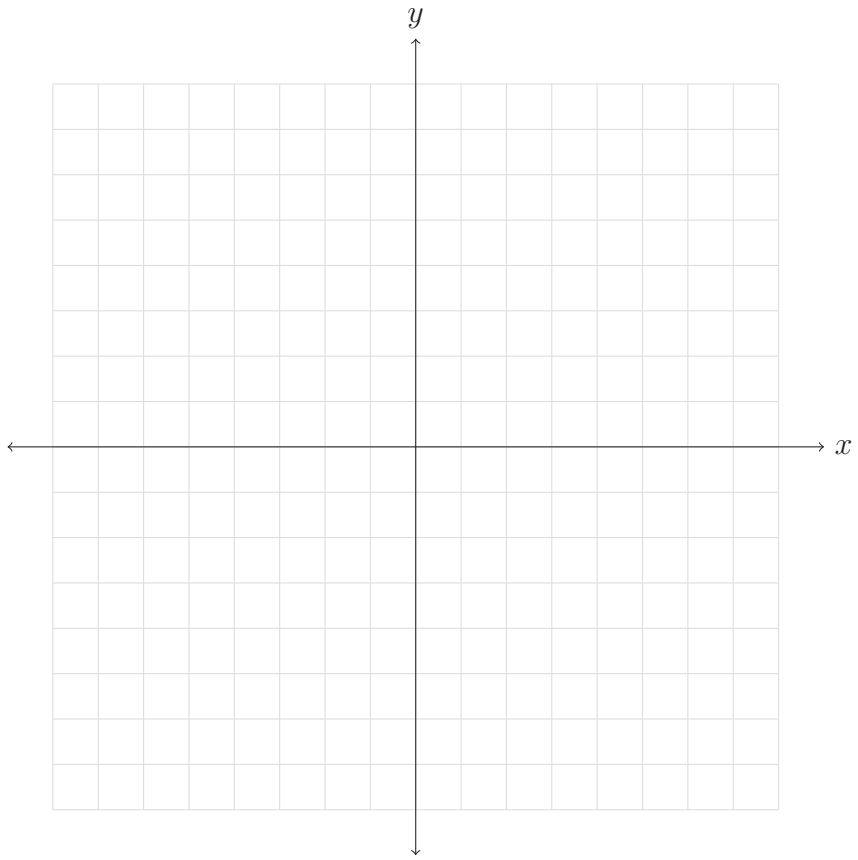
15. (0,-3)

17. $\left(\frac{5}{2}, \frac{7}{2}\right)$

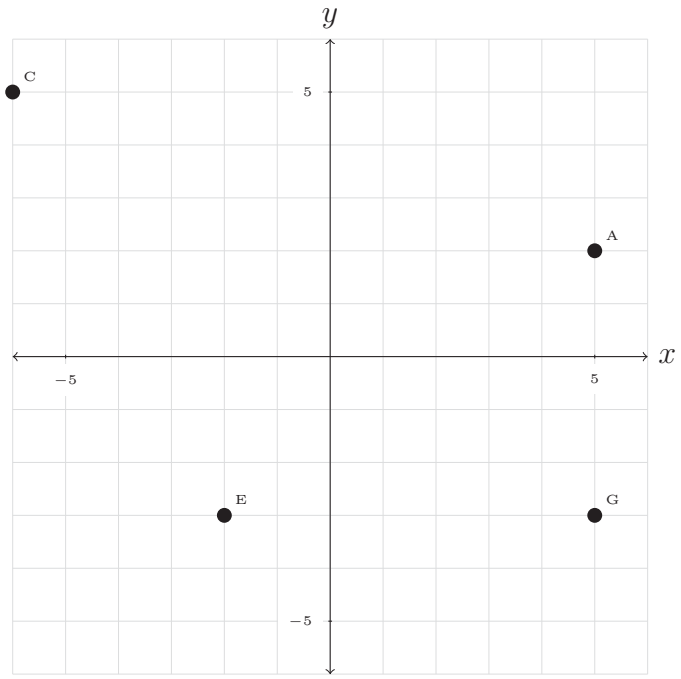
19. $\left(-5, \frac{3}{2}\right)$

21. (0,0)

23. $\left(0, -\frac{5}{2}\right)$



In exercises 25 - 31 odd, give the ordered pairs that correspond to the points labeled in the figure.




25. A

27. C

29. E

31. G

In exercises 37 - 47 odd, determine whether each ordered pair is a solution of the given equation.

37. $y = 3x$ (2,3), (3,2), (-4, -12)

39. $y = -4x$ (-5, -20), (0,0), (9, -36)

41. $y = 2x + 6$ (0,6), (-3,0), (2,-2)

43. $3x + 5y = 15$ (-5,6), (0,5), (10,-3)

45. $x + 3y = 0$ (0,0), $\left(1, \frac{1}{3}\right)$, $\left(2, -\frac{2}{3}\right)$

47. $x - 4 = 0$ (4,7), (3,4), (0,-4)

In exercises 49 - 55, find five solutions of each equation. Select integers for $x$ starting with -2 and ending with 2. Organize your work in a table of values.

49. $y = 12x$

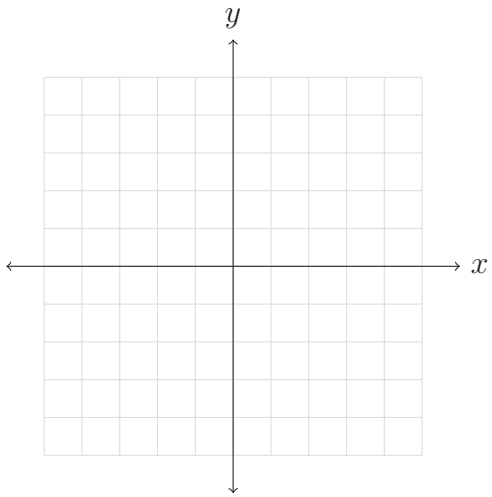
51. $y = -10x$

53. $y = 8x - 5$

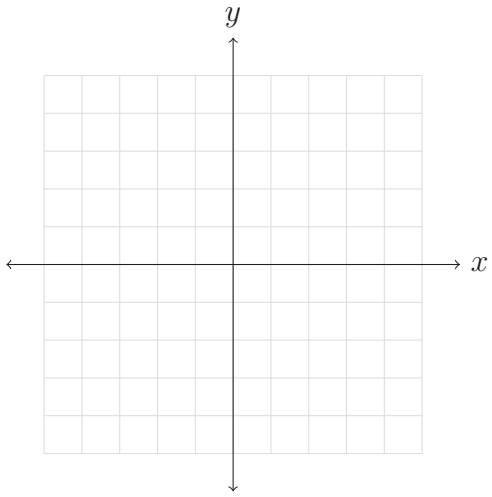
55. $y = -3x + 7$

In exercises 57 - 79 odd, graph each linear equation in two variables. Find at least five solutions in your table of values for each equation.

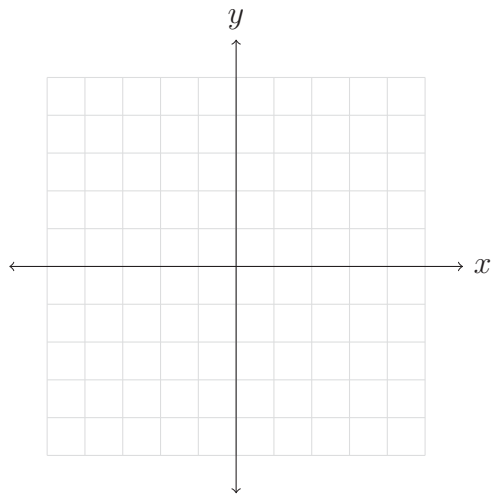
57. $y = x$



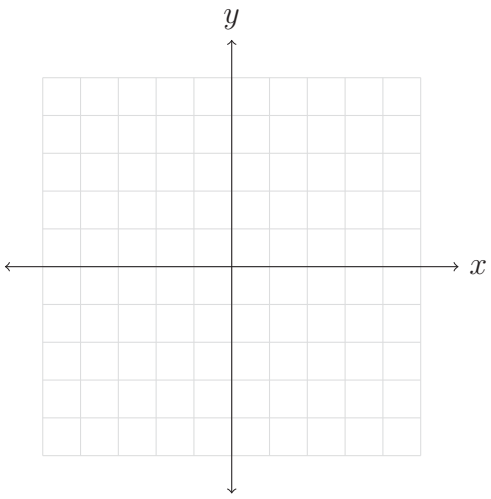

59. $y = x - 1$



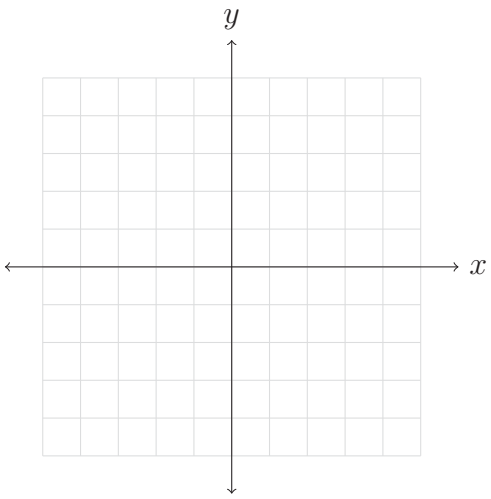
61. $y = 2x + 1$



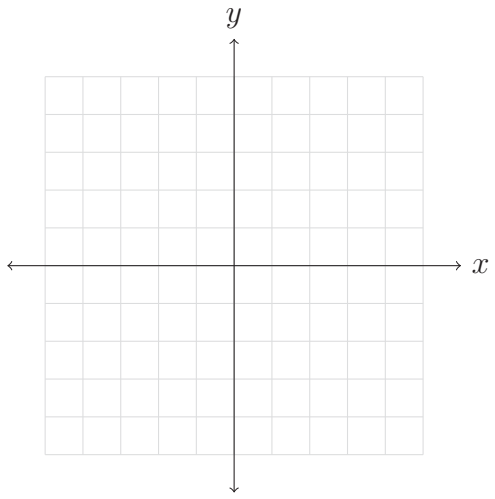

63. $y = -x + 2$



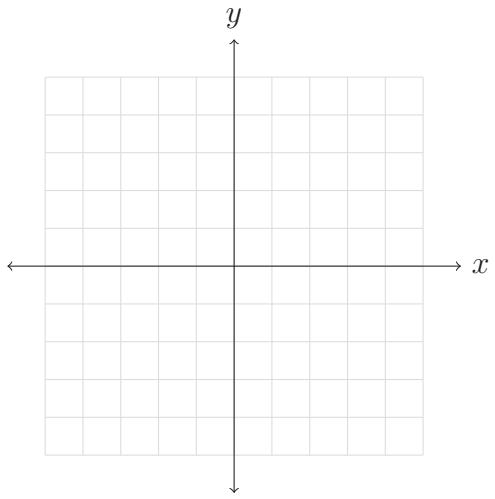

65. $y = -3x - 1$



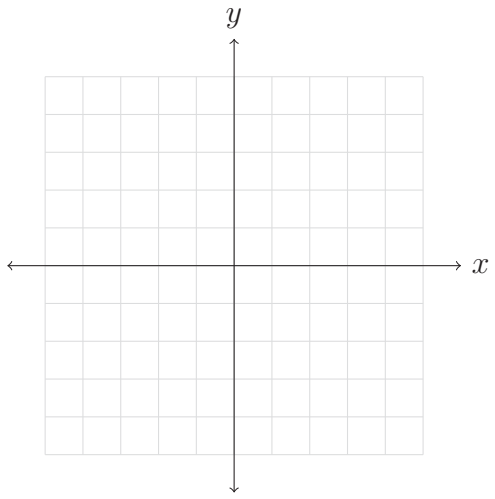
67. $y = \frac{1}{2}x$



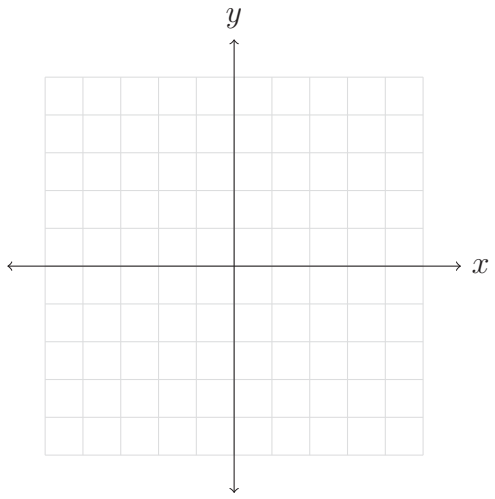

69. $y = -\frac{1}{4}x$



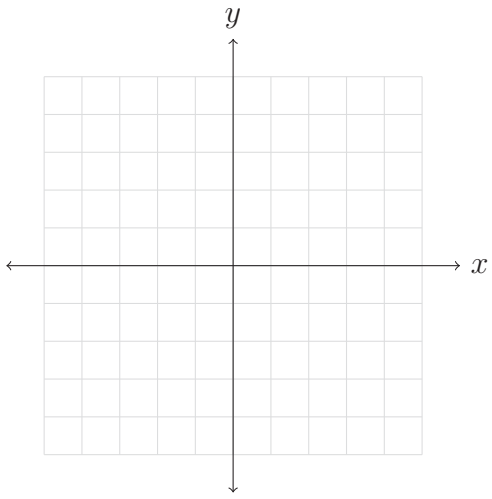
71. $y = \frac{1}{3}x + 1$



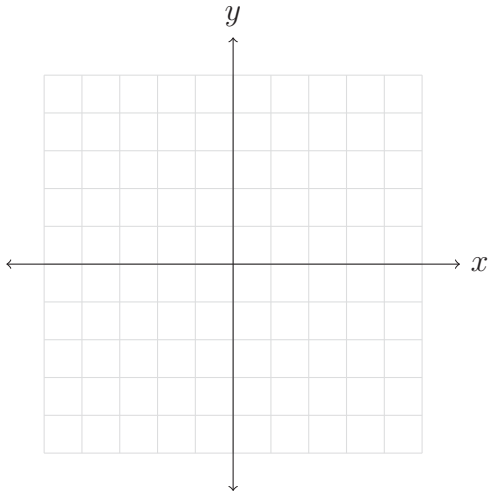

73. $y = -\frac{3}{2}x + 1$



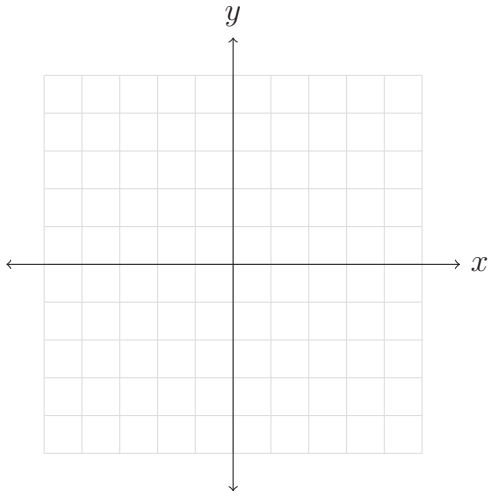
75. $y = -\frac{5}{2}x - 1$




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




79. $y = 4$ or $y = 0x + 4$



**Applications:**

Even as Americans increasingly view a college education as essential for success, many believe that a college education is becoming less available to qualified students.

93. The graph in the text shows that in 2000, 31% of U.S. adults viewed a college education as essential for success. For the period from 2000 through 2010, the percentage viewing a college education as essential for success increased on average by approximately 2.4 each year. These conditions can be described by the mathematical model

$$S = 2.4n + 31,$$

where $S$ is the percentage of U.S. adults who viewed college as essential for success $n$ years after 2000.

a. Let $n = 0$, 5, 10, 15, and 20. Make a table of values showing five solutions of the equation.

b. Graph the formula in a rectangular coordinate system. Suggestion: Let each tick mark on the horizontal axis, labeled $n$, represeent 5 units. Extend the horizontal axis to include $n = 25$. Let each tick mark on the vertical axis, labeled $S$, represent 10 units and extend the axis to include $S = 100$.

c. Use your graph from part (b) to estimate the percentage of U.S. adults who will view college as essential for success in 2018.

d. Use the formula to project the percentage of U.S. adults who will view college as essential for success in 2018.