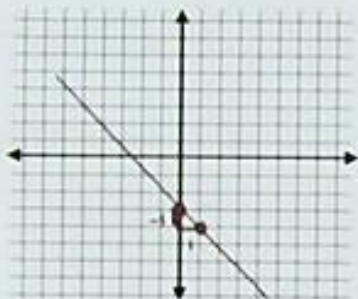Name: **Answer Key**

1. Find the slope and y-intercept of each line

a.
$$y = \frac{5}{3}x + 3$$
slope = $\frac{5}{3}$

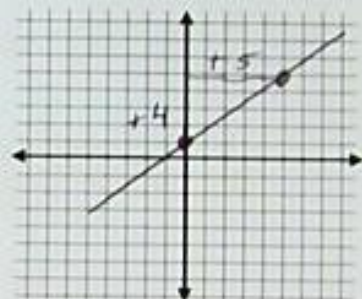y-intercept = $(0, 3)$

b.
$$y = 8 - \frac{1}{2}x$$
slope = $-\frac{1}{2}$

y-intercept = $(0, 8)$

**Graph each line:**

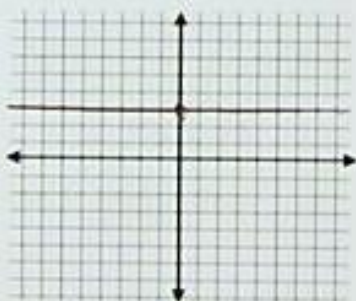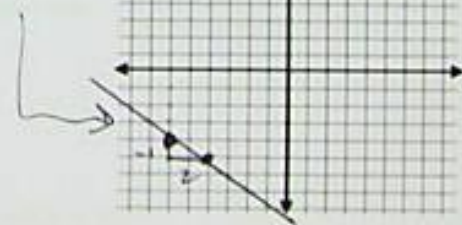2. $y = -x - 3$



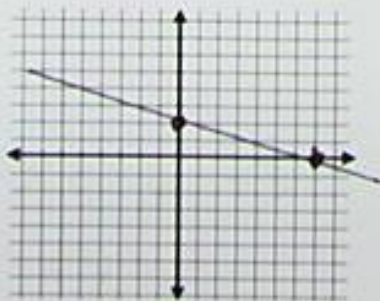3. $y = \frac{4}{5}x + 1$



4. $y = 2$



5. $y + 4 = \frac{-1}{2}(x - 6)$
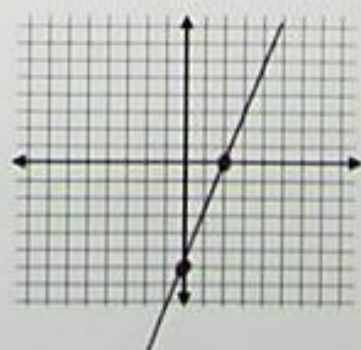
$(6, -4)$



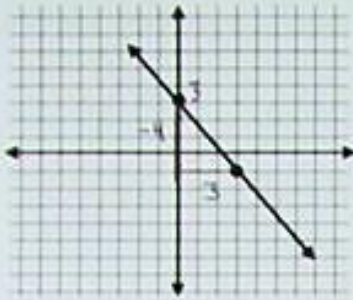6. $2x + 7y = 14$

x-int 7,0
y-int 0,2



7. $3x - y = 6$

x-int 2,0
y-int 0,-6

**Find the equation of each line:**

8.



Slope-intercept form: $y = -\frac{4}{3}x + 3$

9. Through the points $(-1, 1)$ and $(3, 9)$

$$\frac{9-1}{3+1} = \frac{8}{4} = 2$$

$$y - 1 = 2(x+1)$$
$$y - 1 = 2x + 2$$

Slope-intercept form: $y = 2x + 3$

10. Through the points $(2, -3)$ and $(-3, -6)$

$$\frac{-6+3}{-3-2} = \frac{-3}{-5} = \frac{3}{5}$$

11.

| | -4 | -4 | -4 | |
|---|---|---|---|---|
| x | 1 | -3 | -7 | -11 |
| y | -8 | -5 | -2 | 1 |

$+3 \quad +3 \quad +3$

$\frac{\Delta y}{\Delta x} = \frac{3}{-4}$

$\searrow_{p+} (1, -8)$

Point-slope form: $y + 3 = \frac{3}{5}(x-2)$

or $y + 6 = \frac{3}{5}(x+3)$

Point-slope form: $y + 8 = -\frac{3}{4}(x-1)$

12. Convert each equation to standard form: $= No\ fractions$

a. $y = \frac{1}{5}x - 3$

$$5y = x - 3$$

b. $y + 2 = -4(x + 3)$

$$y + 2 = -4x - 12$$
$$-2 \qquad -2$$
$$y = -4x = -4x - 14$$

Standard form: $-x + 5y = -3$

or $x - 5y = 3$

Standard form: $4x + y = -14$

13. You are reading a book and you currently have 300 pages left to read. You are able to read 15 pages each hour. Write an equation that represents how many pages (y) you will have left to read after x hours. Use your equation to find how many hours until you have finished reading your book.

$$Y = 300 - 15X$$

$$0 = 300 - 15x$$
$$15x = 300$$
$$x = \frac{300}{15}$$

$$\boxed{20 \text{ hours}}$$

14. You have $56 to spend at the county fair. Rides cost $6 each and snacks cost $4 each. Write an equation that represents the number of rides (x) and snacks (y) that you can buy. Use your equation to determine how many snacks you can buy if you do not go on any rides. $x = 0$

$6, 4$  $\boxed{6x + 4y = 56}$

$$4y = 56$$
$$y = \frac{56}{4} = \boxed{14 \text{ rides}}$$

**Fill in the slopes for each line in the table:**

| | Line | Slope | Parallel Slope | Perpendicular Slope |
|---|---|---|---|---|
| 15. | Through (-3,2) and (1, -5)  $\frac{-5-2}{1+3} = \frac{-7}{4}$ | $-\frac{7}{4}$ | $-\frac{7}{4}$ | $\frac{4}{7}$ |
| 16. | $y = -2x + 9$ | $-2$ | $-2$ | $\frac{1}{2}$ |
| 17. | $x - 5y = 6$  $\frac{-A}{B}$ $\frac{-1}{-5} = \frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $-5$ |

**Find the equation of each line in point-slope form:**

18. Through the point (-1, 6)

    Parallel to the line  $2x + 7y = 3$

$$m_1 = -\frac{2}{7}$$

Point-slope form: $y - 6 = -\frac{2}{7}(x + 1)$

19. Through the point (2, -3)

    Perpendicular to the line  $y = -6x + 5$

$$m_1 = -6$$
$$m_2 = \frac{1}{6}$$

Point-slope form: $y + 3 = \frac{1}{6}(x - 2)$

20. Determine if the lines are parallel, perpendicular, or neither:

$$y = \frac{1}{4}x - 5 \qquad \text{and} \qquad 8x + 2y = 10$$

$$m = \frac{1}{4} \qquad\qquad m = -\frac{8}{2} = -4 \qquad \text{opp rec} = \boxed{\text{perpendicular}}$$

Extra Credit: