

P-11 In each problem you are given the slope of a line and a point on it. Find the y -intercept of the line and write the equation of the line in the form $y = mx + b$. Be sure to follow the method used in the example problem.

1. slope 1 through (1,3)

$$y = 1x + b$$

$$3 = 1 \cdot 1 + b \text{ so } b = 2$$

$$\text{so } y = x + 2$$

2. slope -3 through (-1,7)

$$y = -3x + b$$

$$7 = -3(-1) + b$$

$$7 = 3 + b$$

$$4 = b$$

$$y = -3x + 4$$

3. slope 2 through (3,-7)

$$y = 2x + b$$

$$-7 = 2 \cdot 3 + b$$

$$-7 = 6 + b$$

$$-13 = b$$

$$y = 2x - 13$$

4. slope 5 through (2,-3)

$$y = 5x + b$$

$$-3 = 5 \cdot 2 + b$$

$$-3 = 10 + b$$

$$-13 = b$$

$$y = 5x - 13$$

Find the equation of the line passing through the two given points by finding the slope and the y -intercept. Express your answer in the form $y = mx + b$.

5. (1,3) and (2,5)

$$m = \frac{5-3}{2-1} = \frac{2}{1} = 2$$

$$y = 2x + b$$

$$3 = 2 \cdot 1 + b$$

$$1 = b$$

$$y = 2x + 1$$

7. (1,1) and (-1,1)

$$m = \frac{1-1}{-1-1} = \frac{0}{-2} = 0$$

$$y = 0x + b$$

$$1 = b$$

$$y = 1 \text{ (horizontal line)}$$

6. (-1,2) and (1,-2)

$$m = \frac{-2-2}{1-(-1)} = \frac{-4}{2} = -2$$

$$y = -2x + b$$

$$2 = -2(-1) + b$$

$$2 = 2 + b \text{ so } b = 0$$

$$y = -2x$$

8. (3,1) and (4,-1)

$$m = \frac{-1-1}{4-3} = \frac{-2}{1} = -2$$

$$y = -2x + b$$

$$-1 = -2(4) + b$$

$$-1 = -8 + b$$

$$7 = b$$

$$y = -2x + 7$$

Anne Hardtszell is a salesman for the SureStart Used Cars Lot at the corner of First and Main. She earns a salary plus a commission on each car she sells. On Friday night she sold five cars and was paid eight hundred fifty dollars. Saturday was even better: she sold eight cars and made thirteen hundred dollars.

9. What is her commission per car? What is her salary per day?

$$\begin{matrix} (5, 850) \\ (8, 1300) \\ (\# \text{ cars}, \$) \end{matrix} \quad m = \frac{1300-850}{8-5} = \frac{450}{3} = \$150 \text{ is commission per car}$$

5 cars @ \$150 each is \$750 so salary is \$100 per day

10. Find an algebraic expression for Anne's pay in terms of the number of cars she sells that day.

y

x

$$y = 150x + 100$$