5-3 Equations in Slope-Intercept Form

Name _____ Date _____

Given the equation $y = \frac{3}{4}x - 2$, identify the slope and y-intercept.

Then graph the line.

$y = \frac{3}{4}x - 2$

Think

The slope-intercept form of a linear equation is $y = mx + b$, where m is the slope and b is the y-intercept.

So the slope $(m) = \frac{3}{4}$, and the y-intercept $(b) = -2$.

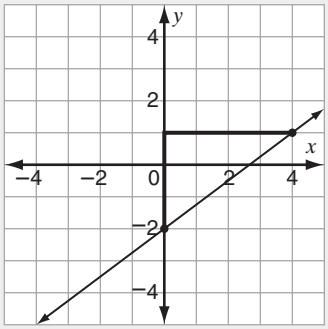
Remember: The ordered pair for the y-intercept of a line is always $(0, b)$.

Plot the y-intercept, $(0, -2)$.

$m = \frac{3}{4} = \frac{\text{vertical change}}{\text{horizontal change}}$

Count 3 units up and 4 units to the right from $(0, -2)$ to plot another point.

Draw the line through both points.



Write an equation in slope-intercept form for the line with the given slope and y-intercept.

1. slope: 4; y-intercept: -9

y* = *mx* + *b
***m* = 4; *b* = −9**
***y* = 4*x* − 9**

2. slope: 2; y-intercept: -5

3. slope: $-\frac{7}{2}$; y-intercept: $\frac{3}{5}$

4. slope: $-\frac{11}{9}$; y-intercept: $\frac{17}{5}$

5. slope: 2.5; y-intercept: -7.9

6. slope: 5.3; y-intercept: -4.1

Identify the slope and y-intercept of the line whose equation is given. Graph the equation on a separate sheet of paper.

7. $y = x + 8$

slope (*m*) = 1
***y*-intercept (*b*) = 8**

8. $y = -x + 12$

9. $5y + 2x = -15$

10. $5x + 2y = 12$

11. $2x = -10$

12. $5y = -25$

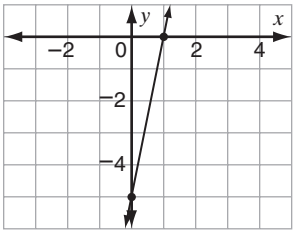
13. $2x + 8y = 0$

14. $5x - y = 0$

15. $1.4x + 0.7y - 2 = 0.1$

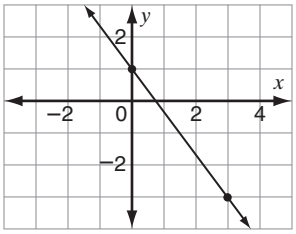
Write the slope-intercept form of the equation of the line shown.

16.

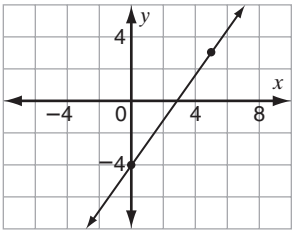


$y = mx + b$
slope (m) = 5
y-intercept (b) = −5
$y = 5x - 5$

17.



18.



Write an equation in slope-intercept form with the given slope and containing the given point.

19. slope = −9; (2, 8)

$y = mx + b$; $8 = (-9)(2) + b$
$8 = -18 + b$; $26 = b$
$y = -9x + 26$

20. slope = $\frac{2}{9}$; (5, −2)

21. slope = 3.5; (−2.8, 2.9)

Solve. Show your work.

22. Wu earns $22 per hour plus a set-up fee of $45 to paint houses. Write an equation in slope-intercept form that represents how much Wu earns for painting houses.

23. Janice can install 8 fence posts per hour. Write an equation in slope-intercept form that represents how many fence posts Janice can install.

Problem Solving

24. Traveling Ava is driving at a constant rate. After $3\frac{3}{4}$ h of travel, she is 291.25 miles from home. After $5\frac{1}{2}$ h of travel, she is 422.5 miles from home. How many miles from home was she when she *began* driving?

25. Celine makes $10.75 per hour at her part-time job. If she wants to buy a pair of jeans for $22.75, a blouse for $35.95, and boots for $51.95, but owes her parents $33.25, how many complete hours must she first work?

WRITE ABOUT IT

26. Explain how to find the equation of a line with slope $-\frac{7}{2}$ that passes through the point (−5, 1).