NAME _____ DATE _____ PERIOD _____

5-4 Study Guide and Intervention

Writing Equations in Slope-Intercept Form

Write an Equation Given the Slope and One Point

Example 1 **Write an equation of a line that passes through (−4, 2) with slope 3.**

The line has slope 3. To find the y-intercept, replace m with 3 and (x, y) with $(-4, 2)$ in the slope-intercept form. Then solve for b.

$y = mx + b$	Slope-intercept form
$2 = 3(-4) + b$	$m = 3$, $y = 2$, and $x = -4$
$2 = -12 + b$	Multiply.
$14 = b$	Add 12 to each side.

Therefore, the equation is $y = 3x + 14$.

Example 2 **Write an equation of the line that passes through (−2, −1) with slope $\frac{1}{4}$.**

The line has slope $\frac{1}{4}$. Replace m with $\frac{1}{4}$ and (x, y) with $(-2, -1)$ in the slope-intercept form.

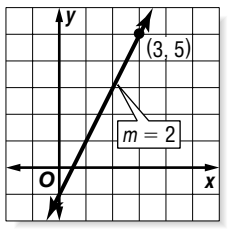
$y = mx + b$	Slope-intercept form
$-1 = \frac{1}{4}(-2) + b$	$m = \frac{1}{4}$, $y = -1$, and $x = -2$
$-1 = -\frac{1}{2} + b$	Multiply.
$-\frac{1}{2} = b$	Add $\frac{1}{2}$ to each side.

Therefore, the equation is $y = \frac{1}{4}x - \frac{1}{2}$.

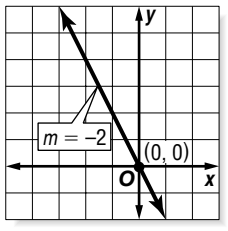
Exercises

Write an equation of the line that passes through each point with the given slope.

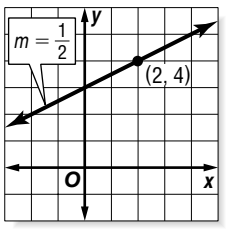
1.



2.



3.



4. $(8, 2)$, $m = -\frac{3}{4}$

5. $(-1, -3)$, $m = 5$

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

7. $(-5, 4)$, $m = 0$

8. $(2, 2)$, $m = \frac{1}{2}$

9. $(1, -4)$, $m = -6$

10. Write an equation of a line that passes through the y-intercept -3 with slope 2.

11. Write an equation of a line that passes through the x-intercept 4 with slope -3.

12. Write an equation of a line that passes through the point $(0, 350)$ with slope $\frac{1}{5}$.

Lesson 5-4