Name _____ Class _____ Date _____

2-3 Reteaching

Linear Functions and Slope-Intercept Form

You can use the slope-intercept form to write equations of lines.

- The slope-intercept formula is $y = mx + b$, where m represents the slope of the line, and b represents its y-intercept. The y-intercept is the point at which the line crosses the y-axis.
- The slope of a horizontal line is always zero, and the slope of a vertical line is always undefined.

Problem

What is the equation of the line that contains the point $(3, -1)$ and has a slope of $-\frac{4}{3}$?

$-1 = \left(-\frac{4}{3}\right)(3) + b$	To find b, substitute the values $-\frac{4}{3}$ for m, 3 for x, and -1 for y into the slope-intercept formula.
$-1 = -4 + b$	Multiply.
$3 = b$	Add 4 to each side and simplify.
$y = -\frac{4}{3}x + 3$	Substitute $-\frac{4}{3}$ for m and 3 for b into the slope-intercept formula.

Exercises

Write an equation for each line.

1. $m = 4$; contains $(3, 2)$
$y = 4x - 10$

2. $m = -2$; contains $(4, 7)$
$y = -2x + 15$

3. $m = 0$; contains $(3, 0)$
$y = 0$

4. $m = -1$; contains $(-5, -2)$
$y = -x - 7$

5. $m = 3$; contains $(-2, -4)$
$y = 3x + 2$

6. $m = 0$; contains $(0, -7)$
$y = -7$

7. $m = 8$; contains $(5, 0)$
$y = 8x - 40$

8. $m = -1$; contains $(0, 7)$
$y = -x + 7$

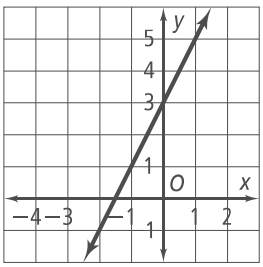
9. $m = 0$; contains $(3, 8)$
$y = 8$

10. $m = 4$; contains $(2, 5)$
$y = 4x - 3$

11. $m = 7$; contains $(3, 2)$
$y = 7x - 19$

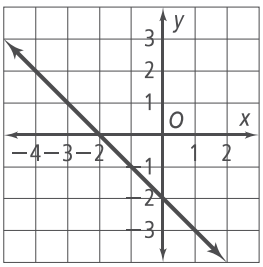
12. $m = -1$; contains $(2, -6)$
$y = -x - 4$

13.



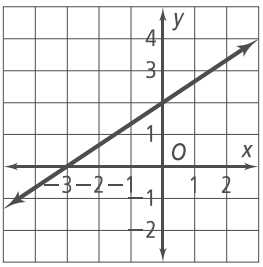
$y = 2x + 3$

14.



$y = -x - 2$

15.



$y = \frac{2}{3}x + 2$

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2-3 Reteaching (continued)

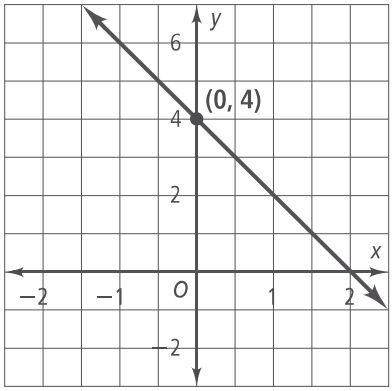
Linear Functions and Slope-Intercept Form

You can graph a linear equation if you know the slope and the y-intercept.

- Write the linear equation in slope-intercept form.
- Plot the y-intercept.
- Plot a second point using the slope.
- Draw a line through the two points.

Problem

What is the graph of $4x + 2y = 8$?



Write the linear equation in slope-intercept form.

$4x + 2y = 8$ Original equation

$2y = -4x + 8$

$y = -2x + 4$ Slope-intercept form

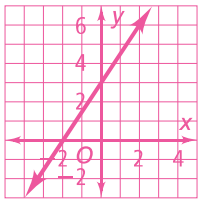
The slope is -2 and the y-intercept is $(0, 4)$.

Plot the y-intercept. Use the slope to plot a second point. Then draw a line through the two points.

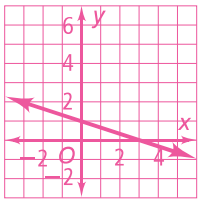
Exercises

Graph each equation.

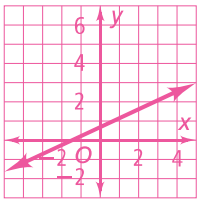
16. $-3x + 2y = 6$



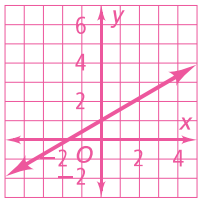
17. $3y + x = 3$



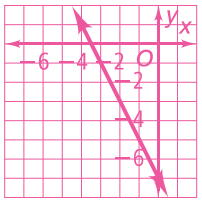
18. $3y - x = 2$



19. $-2x + 4y - 3 = 0$



20. $y + 7 = -2x$



21. $2y - 6 = 0$