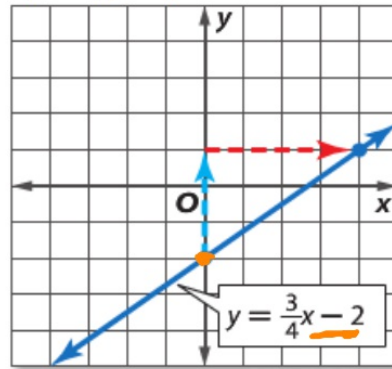


form for the line with a slope of $\frac{3}{4}$ and equation.

4-1 Graphing Equations in Slope-Intercept Form

with -2 .



-2), move up

the point

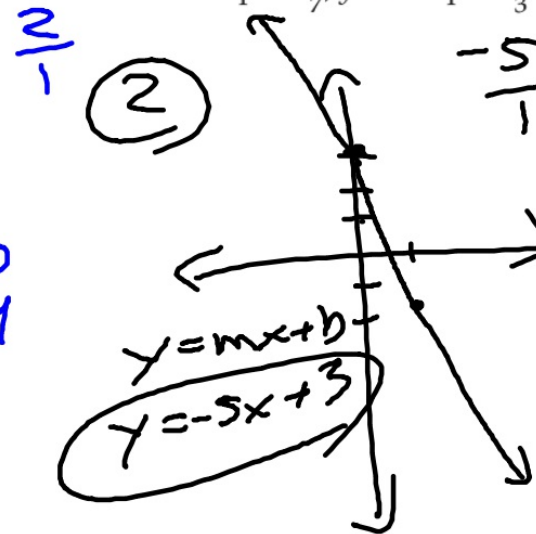
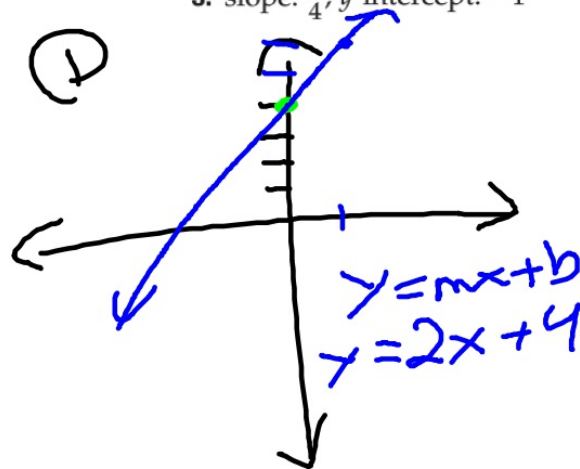
Example 1 Write an equation of a line in slope-intercept form with the given slope and y -intercept. Then graph the equation. **1-4. See Ch. 4 Answer Appendix.**

1 slope: 2, y -intercept: 4

2. slope: -5 , y -intercept: 3

3. slope: $\frac{3}{4}$, y -intercept: -1

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



Example 2 Graph Linear Equations

Graph $3x + 2y = 6$.

Rewrite the equation in slope-intercept form.

$3x + 2y = 6$	Original equation
$3x + 2y - 3x = 6 - 3x$	Subtract $3x$ from each side.
$2y = 6 - 3x$	Simplify.
$2y = -3x + 6$	$6 - 3x = 6 + (-3x)$ or $-3x + 6$
$\frac{2y}{2} = \frac{-3x + 6}{2}$	Divide each side by 2.
$y = -\frac{3}{2}x + 3$	Slope-intercept form

Now graph the equation. The slope is $-\frac{3}{2}$, and the y -intercept is 3.

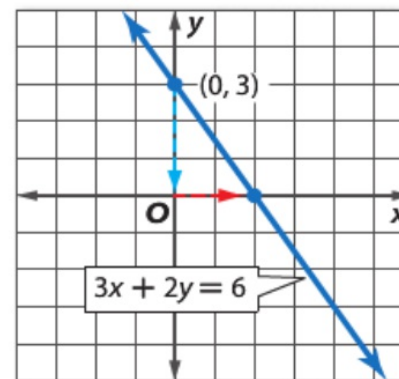
Step 1 Plot the y -intercept $(0, 3)$.

Step 2 The slope is $\frac{\text{rise}}{\text{run}} = -\frac{3}{2}$. From $(0, 3)$, move down 3 units and right 2 units. Plot the point.

Step 3 Draw a line through the two points.

standard form
 $Ax + By = C$

slope intercept
 $y = mx + b$

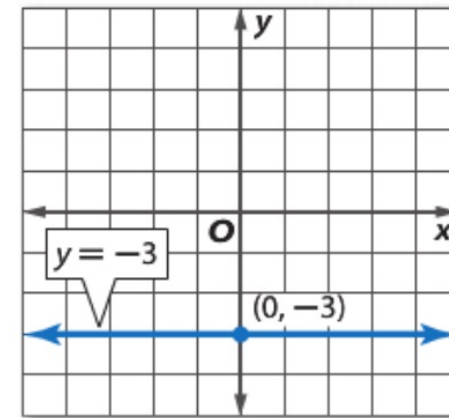


Example 3 Graph Linear Equations

Graph $y = -3$.

Step 1 Plot the y -intercept $(0, -3)$.

Step 2 The slope is 0. Draw a line through the points with y -coordinate -3 .



Examples 2-3 Graph each equation. **5-10.** See Ch. 4 Answer Appendix.

5. $-4x + y = 2$

7. $-3x + 7y = 21$

9. $y = -1$

6. $2x + y = -6$

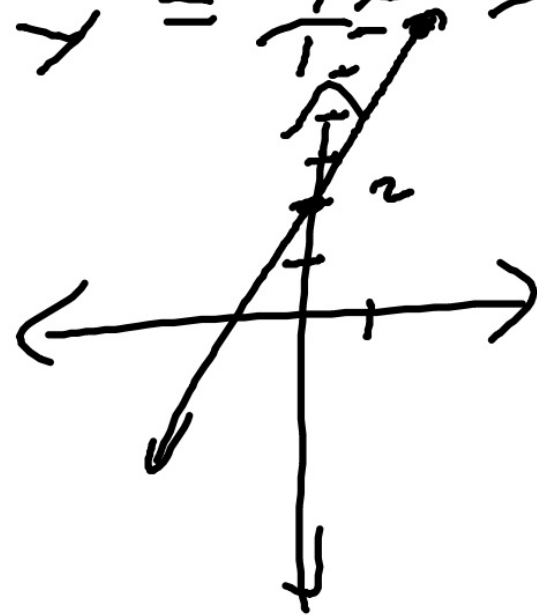
8. $6x - 4y = 16$

10. $15y = 3$

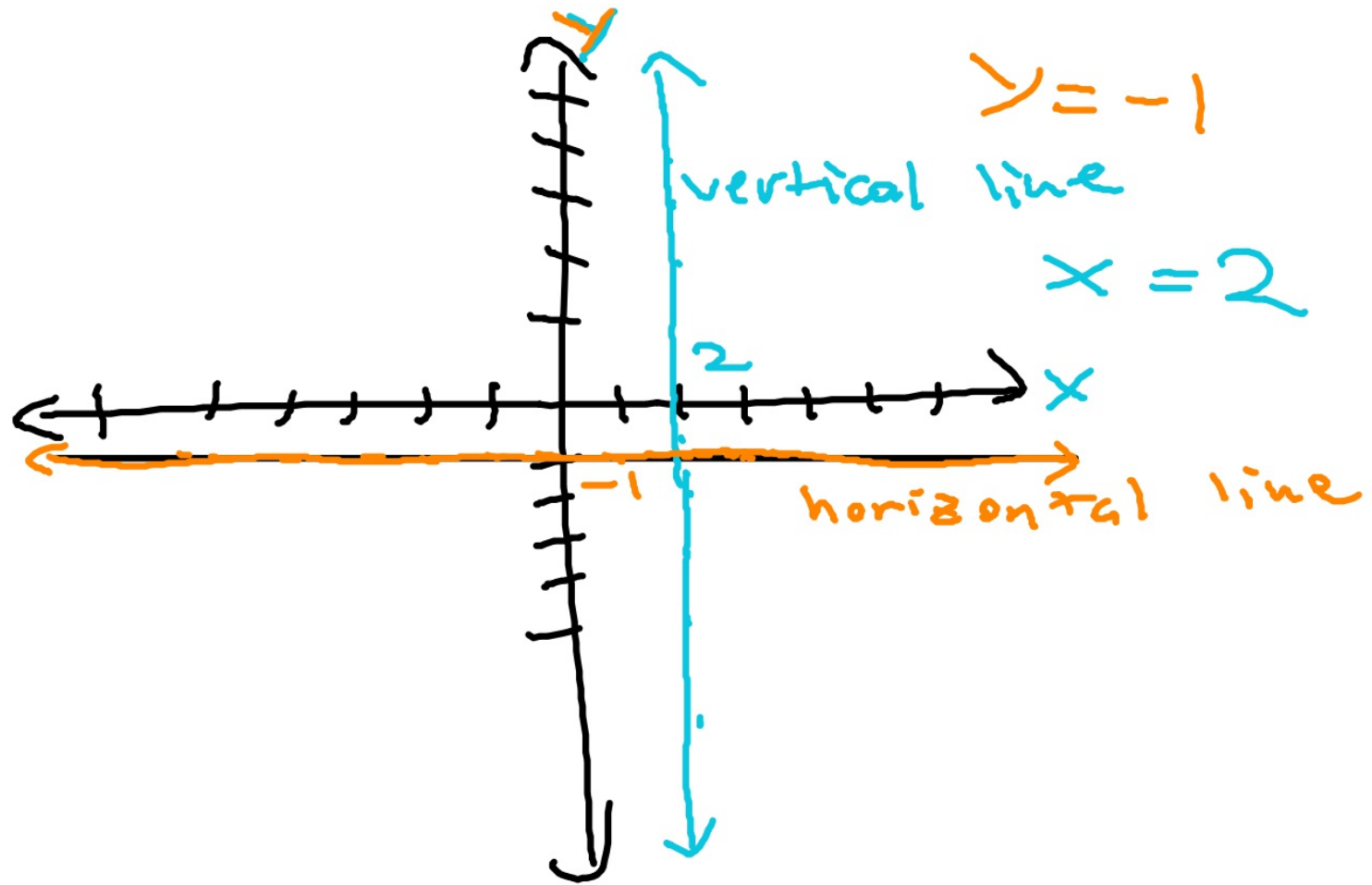
$\frac{15}{15} \frac{3}{15} = \frac{1}{5}$
 $y = \frac{1}{5}$

5. $-4x + y = 2$
 $+4x \qquad +4x$

$y = 4x + 2$



$y = \underline{m}x + \underline{b}$



Standardized Test Example 4 Write an Equation in Slope-Intercept Form



Which of the following is an equation in slope-intercept form for the line shown?

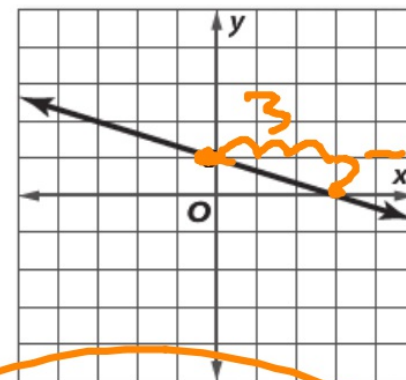
A $y = -3x + 1$

B ~~$y = -x + 3$~~

C $y = -\frac{1}{3}x + 1$

D ~~$y = -\frac{1}{3}x + 3$~~

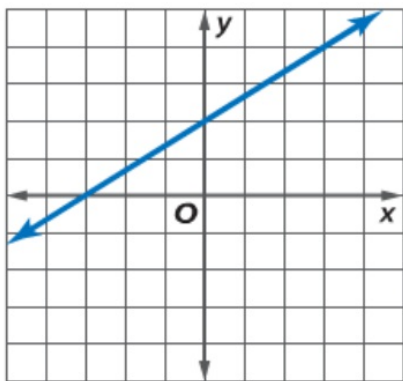
$y = mx + b$



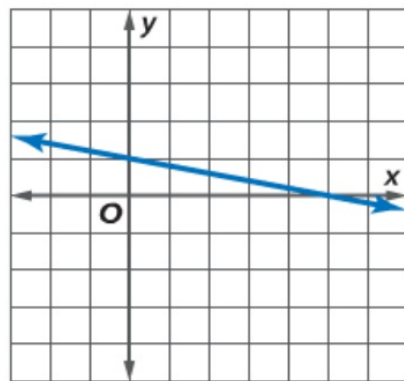
$b = 1$
 $m = -\frac{1}{3}$

Write an equation in slope-intercept form for each graph shown.

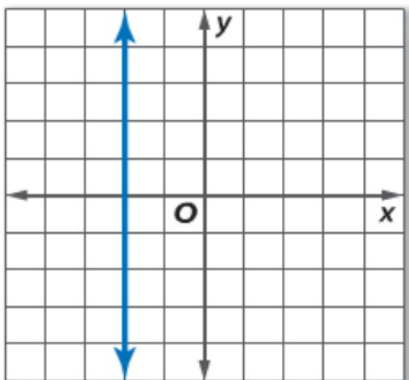
11. $y = \frac{2}{3}x + 2$



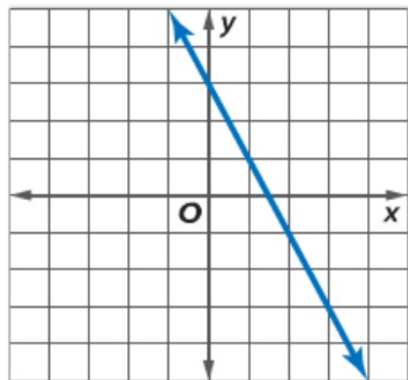
12. $y = -\frac{1}{5}x + 1$



13. not possible



14. $y = -2x + 3$





Real-WorldLink

In 1997, about 2.6 million girls competed in high school sports. The number of girls competing in high school sports has increased by an average of 0.06 million per year since 1997.

Source: National Federation of High School Associations

Real-World Example 5 Write and Graph a Linear Equation

SPORTS Use the information at the left about high school sports.

- a. Write a linear equation to find the number of girls in high school sports after 1997.

Words	Number of girls competing	equals	rate of change	times	number of years	plus	amount at start.
Variables	Let G = number of girls competing.		Let n = number of years since 1997.				
Equation	G	=	0.06	×	n	+	2.6

The equation is $G = 0.06n + 2.6$.

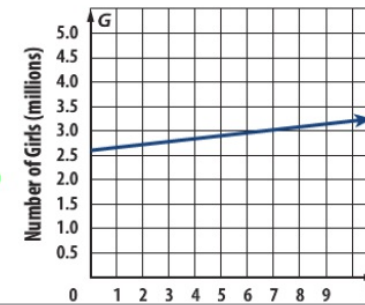
- b. Graph the equation.

The y -intercept is where the data begins. So, the graph passes through $(0, 2.6)$.

The rate of change is the slope, so the slope is 0.06.

- c. Estimate the number of girls competing in 2017.

The year ?



15. **FINANCIAL LITERACY** Rondell is buying a new stereo system for his car using Jack's Stereo layaway plan.

a. Write an equation for the total amount S that he has paid after w weeks. **$S = 10w + 75$**

b. Graph the equation. **See margin.**

c. Find out how much Rondell will have paid after 8 weeks. **\$155**



16. **CCSS REASONING** Ana is driving from her home in Miami, Florida, to her grandmother's house in New York City. On the first day, she will travel 240 miles to Orlando, Florida, to pick up her cousin. Then they will travel 350 miles each day.

a. Write an equation that models the total number of miles m Ana has traveled, if d represents the number of days after she picks up her cousin. **$m = 350d + 240$**

b. Graph the equation. **See margin.**

c. How long will the drive take if the total length of the trip is 1343 miles? **about**

Write an equation of a line in slope-intercept form with the given slope and y -intercept. Then graph the equation. **17–22. See Ch. 4 Answer Appendix.**

17. slope: 5, y -intercept: 8

19. slope: -4 , y -intercept: 6

21. slope: 3, y -intercept: -4

18. slope: 3, y -intercept: 10

20. slope: -2 , y -intercept: 8

22. slope: 4, y -intercept: -6

3 Graph each equation. **23–32. See Ch. 4 Answer Appendix.**

23. $-3x + y = 6$

25. $-2x + y = -4$

27. $5x + 2y = 8$

29. $y = 7$

31. $21 = 7y$

24. $-5x + y = 1$

26. $y = 7x - 7$

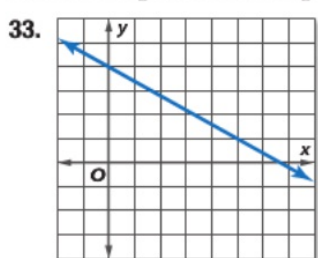
28. $4x + 9y = 27$

30. $y = -\frac{2}{3}$

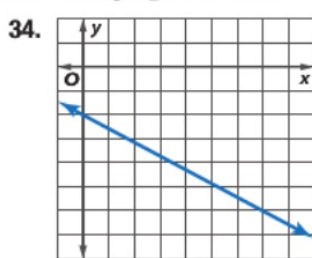
32. $3y - 6 = 2x$

Example 4

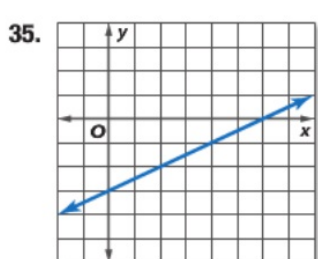
Write an equation in slope-intercept form for each graph shown.



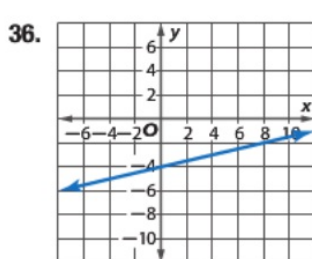
$y = -\frac{3}{5}x + 4$



$y = -\frac{4}{7}x - 2$



$y = \frac{1}{2}x - 3$



$y = \frac{1}{4}x - 4$

Example 5



37 MANATEES In 1991, 1267 manatees inhabited Florida's waters. The manatee population has increased at a rate of 123 manatees per year.

- Write an equation for the manatee population, P , t years since 1991. $P = 1267 + 123t$
- Graph this equation. **See margin.**
- In 2006, the manatee was removed from Florida's endangered species list. What was the manatee population in 2006? **3112 manatees**

Additional Answers

