

LESSON  
1.4

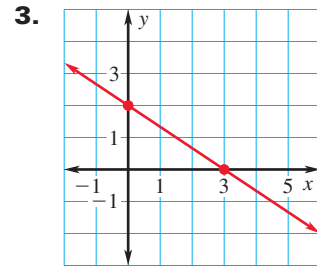
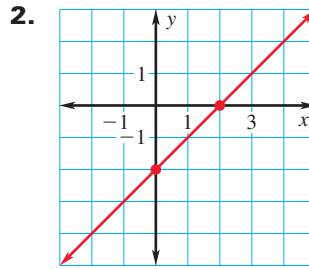
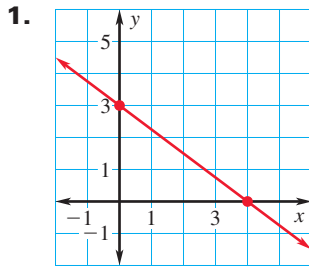
Exercise  
Set A



**MM1A1b** Graph the basic functions  $f(x) = x^n$ , where  $n = 1$  to 3,  $f(x) = \sqrt{x}$ ,  $f(x) = |x|$ , and  $f(x) = \frac{1}{x}$ .

**MM1A1d** Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.

Identify the  $x$ -intercept and the  $y$ -intercept of the graph.



Find the  $x$ -intercept and the  $y$ -intercept of the graph of the equation.

- |                    |                     |                     |
|--------------------|---------------------|---------------------|
| 4. $x + y = 1$     | 5. $x - y = -5$     | 6. $6x - 3y = -3$   |
| 7. $5x + 10y = 30$ | 8. $9y - 5x = 20$   | 9. $8x - 2y = 16$   |
| 10. $7x + 8y = 18$ | 11. $2y - 12x = -6$ | 12. $2x - 0.5y = 8$ |

Draw the line that has the given intercepts.

- |  |   |   |
|--|---|---|
| 13. $x$ -intercept: 5<br>$y$ -intercept: 4 | 14. $x$ -intercept: $-1$<br>$y$ -intercept: 6 | 15. $x$ -intercept: 2<br>$y$ -intercept: $-3$ |
|--|---|---|

Graph the equation. Label the points where the line crosses the axes.

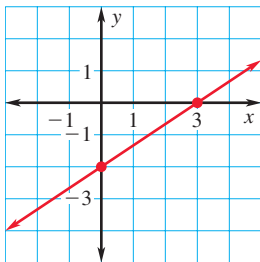
- |                    |                    |                    |
|--------------------|--------------------|--------------------|
| 16. $y = -x - 4$   | 17. $y = 6 + 3x$   | 18. $y = 8x - 7$   |
| 19. $y = 1 - 3x$   | 20. $7x - 7y = 42$ | 21. $3y + 2x = -5$ |
| 22. $4x - 9y = 16$ | 23. $y = 0.5x - 2$ | 24. $y = x$        |

Match the equation with its intercepts.

- |  |  |   |
|--|--|---|
| 25. $7y = 28 - 4x$                           | 26. $7x = 4y + 28$                           | 27. $4y = 7x + 28$                        |
| A. $x$ -intercept: 4<br>$y$ -intercept: $-7$ | B. $x$ -intercept: $-4$<br>$y$ -intercept: 7 | C. $x$ -intercept: 7<br>$y$ -intercept: 4 |

## Exercise Set A *(continued)*

28. **Error Analysis** Describe and correct the error in finding the intercepts of the line shown.



The line has an  $x$ -intercept of  $-2$  and a  $y$ -intercept of  $3$ .



29. **Rabbit Hutch** The cage that you keep your rabbit in has a perimeter of 118 inches. Let  $x$  be the cage's width (in inches) and let  $y$  be its length (in inches).
- Write an equation for the perimeter.
  - Find the intercepts of the graph of the equation you wrote. Then graph the equation.
30. **Home and Garden Show** Admission to a home and garden show costs \$7 per person during the week and \$9 per person on the weekend. During one week of the show, a total of \$142,506 was paid in admissions. This situation can be represented by the equation  $7x + 9y = 142,506$  where  $x$  is the number of tickets sold during the week and  $y$  is the number of tickets sold on the weekend.
- Find the intercepts of the graph of the equation. Graph the equation.
  - Give three possibilities for the number of each kind of ticket that could have been sold for the week.
31. **Multiple Representations** A man burns 10 calories per minute mountain biking and 7.5 calories per minute in-line skating. His goal is to burn approximately 420 calories daily. This situation can be represented by the equation  $10x + 7.5y = 420$  where  $x$  is the number of minutes spent mountain biking and  $y$  is the number of minutes spent in-line skating.
- Graphing an Equation** Find the intercepts of the graph of the equation. Graph the equation.
  - Interpreting Intercepts** What do the intercepts mean in this situation?
  - Finding Solutions** What are three possible numbers of minutes of biking and skating the man could do to reach his goal?

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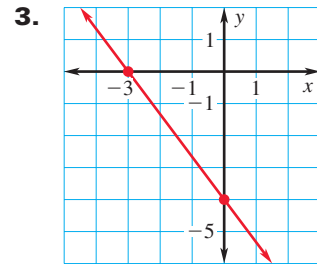
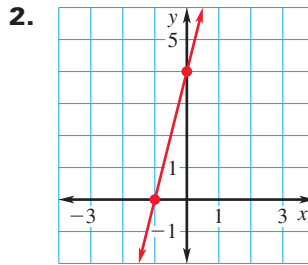
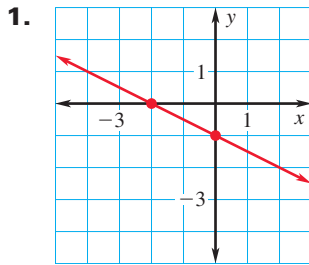
Exercise  
Set B



**MM1A1b** Graph the basic functions  $f(x) = x^n$ , where  $n = 1$  to 3,  $f(x) = \sqrt{x}$ ,  $f(x) = |x|$ , and  $f(x) = \frac{1}{x}$ .

**MM1A1d** Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.

Identify the  $x$ -intercept and the  $y$ -intercept of the graph.



Find the  $x$ -intercept and the  $y$ -intercept of the graph of the equation.

4.  $6x + 8y = 24$

5.  $7x - 5y = -35$

6.  $4x - 9y = 18$

7.  $0.5x + 4y = -1$

8.  $0.2y - 0.3x = 0.6$

9.  $y = 7x - 15$

10.  $y = -4x + 10$

11.  $y = -2.4x - 9$

12.  $y = \frac{5}{3}x + 6$

Draw the line that has the given intercepts.

13.  $x$ -intercept: 10

$y$ -intercept:  $-1$

14.  $x$ -intercept:  $-7$

$y$ -intercept: 4

15.  $x$ -intercept: 11

$y$ -intercept:  $-9$

16.  $x$ -intercept:  $-3$

$y$ -intercept: 3

17.  $x$ -intercept: 8

$y$ -intercept:  $-8$

18.  $x$ -intercept: 5

$y$ -intercept:  $-2$

Graph the equation. Label the points where the line crosses the axes.

19.  $y = 8 + 2x$

20.  $y = 5x - 2$

21.  $6y + 3x = 18$

22.  $4y - 6x = 48$

23.  $10x - 70y = 210$

24.  $2y + 9x = -15$

25.  $5x - 8y = 36$

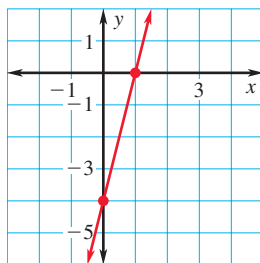
26.  $y = 0.4x - 1.2$

27.  $y = 0.5x + 7$

## Exercise Set B *(continued)*

28. **Error Analysis** Describe and correct the error in finding the intercepts of the line shown.

The line has an  $x$ -intercept of  $-4$  and a  $y$ -intercept of  $1$ .

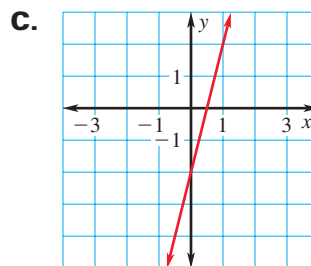
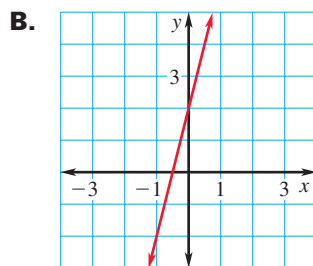
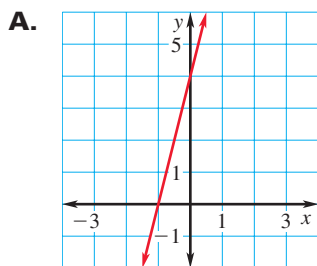


**Match the equation with its graph.**

29.  $8x - 2y = 4$

30.  $8x - 2y = -4$

31.  $8x - 2y = -8$



32. **Multiple Representations** You earn \$16 an hour mowing lawns and \$10 an hour washing windows. You want to make \$500 in one week. This situation can be represented by the equation  $16x + 10y = 500$  where  $x$  is the number of hours you mow lawns and  $y$  is the number of hours you wash windows.

- Graphing an Equation** Find the intercepts of the graph of the equation. Graph the equation.
- Interpreting Intercepts** What do the intercepts mean in this situation?
- Finding Solutions** What are three possible numbers of hours you could work at each job?
- Calculating a Value** If you work 30 hours washing windows, how many hours do you have to mow lawns?

33. **Fruit Baskets** A small mail-order company that sells fruit baskets currently has 400 orders for fruit baskets. The person who assigns workers to tasks is trying to figure out how many workers need to be assigned to assembling fruit baskets in order to get them out on time. To do this, the person needs to know how many fruit baskets must be produced in one hour. The number  $B$  of fruit baskets left to assemble can be modeled by the function  $B = 400 - nh$  where  $n$  is the number of fruit baskets that can be assembled in one hour and  $h$  is the number of hours the company has to produce the fruit baskets.

- Graph the function if the baskets have to be assembled in 48 hours. Then identify the domain and range of this function. How many baskets per hour have to be assembled?
- Suppose 220 baskets are made in the first 24 hours. How does this affect the graph? How many baskets per hour have to be assembled to finish the job?