



Lesson Check

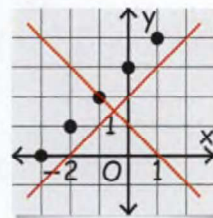
Do you know HOW?

Graph each function rule.

- $y = 2x + 4$
- $y = \frac{1}{2}x - 7$
- $y = 9 - x$
- $y = -x^2 + 2$
- The function rule $h = 18 + 1.5n$ represents the height h , in inches, of a stack of traffic cones.
 - Make a table for the function rule.
 - Suppose the stack of cones can be no taller than 30 in. What is a reasonable graph of the function rule?

Do you UNDERSTAND? MATHEMATICAL PRACTICES

- Vocabulary** Tell whether each relationship should be represented by a *continuous* or a *discrete* graph.
- The number of bagels b remaining in a dozen depends on the number s that have been sold.
 - The amount of gas g remaining in the tank of a gas grill depends on the amount of time t the grill has been used.
- 8. Error Analysis** Your friend graphs $y = x + 3$ at the right. Describe and correct your friend's error.



Practice and Problem-Solving Exercises



A Practice

Graph each function rule.

- | | | |
|------------------|----------------------------|---------------------------------------|
| 9. $y = x - 3$ | 10. $y = 2x + 5$ | 11. $y = 3x - 2$ |
| 12. $y = 5 + 2x$ | 13. $y = 3 - x$ | 14. $y = -5x + 12$ |
| 15. $y = 10x$ | 16. $y = 4x - 5$ | 17. $y = 9 - 2x$ |
| 18. $y = 2x - 1$ | 19. $y = \frac{3}{4}x + 2$ | 20. $y = -\frac{1}{2}x + \frac{1}{2}$ |

See Problem 1.

Graph each function rule. Explain your choice of intervals on the axes of the graph. Tell whether the graph is *continuous* or *discrete*.

See Problems 2 and 3.

- Beverages** The height h , in inches, of the juice in a 20-oz bottle depends on the amount of juice j , in ounces, that you drink. This situation is represented by the function rule $h = 6 - 0.3j$.
- Trucking** The total weight w , in pounds, of a tractor-trailer capable of carrying 8 cars depends on the number of cars c on the trailer. This situation is represented by the function rule $w = 37,000 + 4200c$.
- Food Delivery** The cost C , in dollars, for delivered pizza depends on the number p of pizzas ordered. This situation is represented by the function rule $C = 5 + 9p$.

Graph each function rule.

24. $y = |x| - 7$

25. $y = |x| + 2$

26. $y = 2|x|$

27. $y = x^3 - 1$

28. $y = 3x^3$

29. $y = -2x^2$

30. $y = |-2x| - 1$

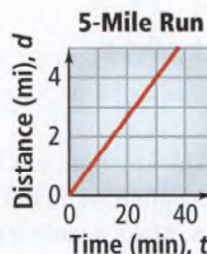
31. $y = -x^3$

32. $y = |x - 3| - 1$

See Problem 4.

B Apply

33. **Error Analysis** The graph at the right shows the distance d you run, in miles, as a function of time t , in minutes, during a 5-mi run. Your friend says that the graph is not continuous because it stops at $d = 5$, so the graph is discrete. Do you agree? Explain.



34. **Writing** Is the point $(2, 2\frac{1}{2})$ on the graph of $y = x + 2$? How do you know?

35. **Geometry** The area A of an isosceles right triangle depends on the length ℓ of each leg of the triangle. This is represented by the rule $A = \frac{1}{2}\ell^2$. Graph the function rule. Is the graph *continuous* or *discrete*? How do you know?

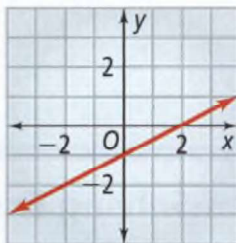
36. Which function rule is graphed below?

(A) $y = -\frac{1}{2}x + 1$

(B) $y = \frac{1}{2}x - 1$

(C) $y = \left|\frac{1}{2}x\right| - 1$

(D) $y = \frac{1}{2}x + 1$



37. **Sporting Goods** The amount a basketball coach spends at a sporting goods store depends on the number of basketballs the coach buys. The situation is represented by the function rule $a = 15b$.

a. Make a table of values and graph the function rule. Is the graph *continuous* or *discrete*? Explain.

b. Suppose the coach spent \$120 before tax. How many basketballs did she buy?

38. **Think About a Plan** The height h , in inches, of the vinegar in the jars of pickle chips shown at the right depends on the number of chips p you eat. About how many chips must you eat to lower the level of the vinegar in the jar on the left to the level of the jar on the right? Use a graph to find the answer.

- What should the maximum value of p be on the horizontal axis?
- What are reasonable values of p in this situation?

$h = 4.75 - 0.22p$



39. **STEM Falling Objects** The height h , in feet, of an acorn that falls from a branch 100 ft above the ground depends on the time t , in seconds, since it has fallen. This is represented by the rule $h = 100 - 16t^2$. About how much time does it take for the acorn to hit the ground? Use a graph and give an answer between two consecutive whole-number values of t .