

# EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice*.

## Practice and Problem Solving

### A Practice by Example



**Example 1**  
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**Example 2**  
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**Example 3**  
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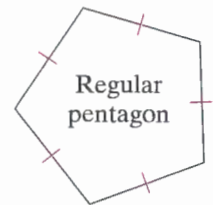
**Example 4**  
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Model each rule with a table of values and a graph.

- |                          |                     |                     |
|--------------------------|---------------------|---------------------|
| 1. $f(x) = -3x$          | 2. $f(x) = -3x + 1$ | 3. $f(x) = -3x - 2$ |
| 4. $y = 2x - 7$          | 5. $f(x) = 8 - x$   | 6. $y = 5 + 4x$     |
| 7. $f(x) = \frac{1}{4}x$ | 8. $y = 4x$         | 9. $y = x + 4$      |

10. **Earnings** Juan charges \$3.50 per hour for baby-sitting.
- Write a rule to describe how the amount of money  $M$  earned is a function of the number of hours  $h$  spent baby-sitting.
  - Make a table of values.
  - Graph the values and join the points with a line.
  - Estimation** Use the graph to estimate how long it will take Juan to earn \$15.

11. **Geometry** The figure at the right is a regular pentagon. The function  $P(\ell) = 5\ell$  describes the perimeter of a regular pentagon with side length  $\ell$ .
- Make a table of values for  $\ell = 1, 2, 3,$  and  $4$ .
  - Graph the function.



Determine whether the function rule models discrete or continuous data. Then make a table and graph each function.

12. A hardware store sells bolts for \$0.35 apiece. The function  $C(p) = 0.35p$  relates the total cost of the bolts to the number  $p$  purchased.
13. A supermarket sells string beans for \$2 a pound. The function  $A(n) = 2n$  relates the total cost of string beans to the number of pounds  $n$  bought.
14. Students sell lemonade at a school fundraiser. It costs them \$0.42 to make each lemonade which they sell for \$0.75. The function  $P(c) = 0.75c - 0.42c$  relates the number of cups of lemonade sold  $c$  to the students' profit.

Graph each function.

- |                      |                       |                       |
|----------------------|-----------------------|-----------------------|
| 15. $y =  x $        | 16. $y =  x  + 2$     | 17. $y = x^2$         |
| 18. $f(x) = x^2 - 1$ | 19. $f(x) =  x  + 3$  | 20. $y = x^2 + 3$     |
| 21. $y =  x  - 4$    | 22. $f(x) = -x^2 - 1$ | 23. $f(x) = -x^2 + 2$ |

### B Apply Your Skills



24. **Conserving Water** The equation  $w = 6m$  models the gallons of water  $w$  used by a standard shower head for a shower that takes  $m$  minutes. The function  $w = 3m$  models the water-saving shower head.

**How Long Does Your Shower Last?**

- average shower: 12.2 min
- recommended shower: 6 min
- standard head uses 6 gal/min
- water-saving head cuts water flow in half

Source: Opinion Research Corp.

- Suppose you take a 6-minute shower using a water-saving shower head. How much water do you save compared to an average shower with a standard shower head?
  - Graph both functions on the same coordinate plane.
  - Open-Ended** How much water did you use during your last shower?
  - How did you find your answer?
25. **Open-Ended** Describe a situation which involves discrete data. Write a function to model the situation.