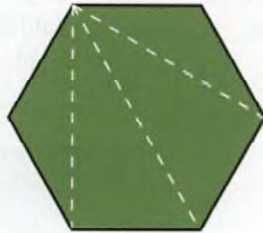




**Got It?** 5. Suppose you draw a segment from any one vertex of a regular polygon to the other vertices. A sample for a regular hexagon is shown below. Use the table to find a pattern. What is a rule for the number of nonoverlapping triangles formed? Give the rule in words and as an algebraic expression.



**Triangles in Polygons**

| Number of Sides of Polygon | Number of Triangles |
|----------------------------|---------------------|
| 4                          | $4 - 2$             |
| 5                          | $5 - 2$             |
| 6                          | $6 - 2$             |
| $n$                        | ■                   |



## Lesson Check

### Do you know HOW?

- Is each expression *algebraic* or *numerical*?  
 a.  $7 \div 2$       b.  $4m + 6$       c.  $2(5 - 4)$
- What is an algebraic expression for each phrase?  
 a. the product of 9 and a number  $t$   
 b. the difference of a number  $x$  and  $\frac{1}{2}$   
 c. the sum of a number  $m$  and 7.1  
 d. the quotient of 207 and a number  $n$

Use words to describe each algebraic expression.

- $6c$
- $x - 1$
- $\frac{t}{2}$
- $3t - 4$

### Do you UNDERSTAND?



- Vocabulary** Explain the difference between numerical expressions and algebraic expressions.
- Reasoning** Use the table to decide whether  $49n + 0.75$  or  $49 + 0.75n$  represents the total cost to rent a truck that you drive  $n$  miles.

**Truck Rental Fees**

| Number of Miles | Cost                      |
|-----------------|---------------------------|
| 1               | $\$49 + (\$.75 \times 1)$ |
| 2               | $\$49 + (\$.75 \times 2)$ |
| 3               | $\$49 + (\$.75 \times 3)$ |
| $n$             | ■                         |



## Practice and Problem-Solving Exercises



### Practice

Write an algebraic expression for each word phrase.

- 4 more than  $p$
- $y$  minus 12
- the quotient of  $n$  and 8
- the product of 15 and  $c$
- a number  $t$  divided by 82
- the sum of 13 and twice a number  $h$
- 6.7 more than the product of 5 and  $n$
- 9.85 less than the product of 37 and  $t$

See Problems 1–3.

Write a word phrase for each algebraic expression.

- $q + 5$
- $\frac{y}{5}$
- $12x$
- $49 + m$
- $9n + 1$
- $\frac{z}{8} - 9$
- $15 - \frac{1.5}{d}$
- $2(5 - n)$

See Problem 4.

Write a rule in words and as an algebraic expression to model the relationship in each table.

See Problem 5.

- 25. Sightseeing** While on vacation, you rent a bicycle. You pay \$9 for each hour you use it. It costs \$5 to rent a helmet while you use the bicycle.

| Bike Rental     |                        |
|-----------------|------------------------|
| Number of Hours | Rental Cost            |
| 1               | $(\$9 \times 1) + \$5$ |
| 2               | $(\$9 \times 2) + \$5$ |
| 3               | $(\$9 \times 3) + \$5$ |
| $n$             | ■                      |

- 26. Sales** At a shoe store, a salesperson earns a weekly salary of \$150. A salesperson is also paid \$2.00 for each pair of shoes he or she sells during the week.

| Shoe Sales          |                           |
|---------------------|---------------------------|
| Pairs of Shoes Sold | Total Earned              |
| 5                   | $\$150 + (\$2 \times 5)$  |
| 10                  | $\$150 + (\$2 \times 10)$ |
| 15                  | $\$150 + (\$2 \times 15)$ |
| $n$                 | ■                         |

**B Apply**

Write an algebraic expression for each word phrase.

27. 8 minus the product of 9 and  $r$   
 28. the sum of 15 and  $x$ , plus 7  
 29. 4 less than three sevenths of  $y$   
 30. the quotient of 12 and the product of 5 and  $t$
- © **31. Error Analysis** A student writes the word phrase “the quotient of  $n$  and 5” to describe the expression  $\frac{5}{n}$ . Describe and correct the student’s error.

- © **32. Think About a Plan** The table at the right shows the number of bagels a shop gives you per “baker’s dozen.” Write an algebraic expression that gives the rule for finding the number of bagels in any number  $b$  of baker’s dozens.
- What is the pattern of increase in the number of bagels?
  - What operation can you perform on  $b$  to find the number of bagels?

| Bagels         |                  |
|----------------|------------------|
| Baker’s Dozens | Number of Bagels |
| 1              | 13               |
| 2              | 26               |
| 3              | 39               |
| $b$            | ■                |

- 33. Tickets** You and some friends are going to a museum. Each ticket costs \$4.50.
- If  $n$  is the number of tickets purchased, write an expression that gives the total cost of buying  $n$  tickets.
  - Suppose the total cost for  $n$  tickets is \$36. What is the total cost if one more ticket is purchased?
- 34. Volunteering** Serena and Tyler are wrapping gift boxes at the same pace. Serena starts first, as shown in the diagram. Write an algebraic expression that represents the number of boxes Tyler will have wrapped when Serena has wrapped  $x$  boxes.

