

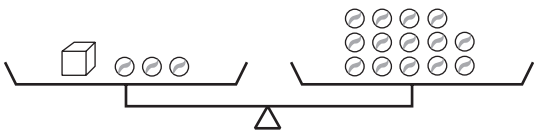
**STUDY LINK**  
**9•11**

# Unit 10: Family Letter



## Algebra Concepts and Skills

In this unit, your child will be introduced to solving simple equations with a pan balance, thus developing basic skills of algebra. For example, a problem might ask how many marbles in the illustration below weigh as much as a cube. You can solve this problem by removing 3 marbles from the left pan and 3 marbles from the right pan. Then the pans will still balance. Therefore, you know that one cube weighs the same as 11 marbles.



You can think of this pan-balance problem as a model for the equation  $c + 3 = 14$ , in which the value of  $c$  is 11.

A “What’s My Rule?” table has been a routine since the early grades of *Everyday Mathematics*. In this unit, your child will follow rules to complete tables, such as the one below and will then graph the data. Your child will also determine rules from information provided in tables and graphs. Students will begin to express such rules using algebraic expressions containing variables.

| Rule |
|------|
| + 6  |

| in | out |
|----|-----|
| -1 | 5   |
| 2  | 8   |
| 5  |     |
|    | 12  |
| 12 |     |
|    | 15  |

As the American Tour continues, your child will work with variables and formulas to predict eruption times of the famous geyser, Old Faithful, in Yellowstone National Park.

In previous grades, your child studied the perimeter (distance around) and the area (amount of surface) of geometric figures. In Unit 9, students developed and applied formulas for the area of rectangles, parallelograms, and triangles. In this unit, your child will explore and apply formulas for the circumference (distance around) and area of circles.



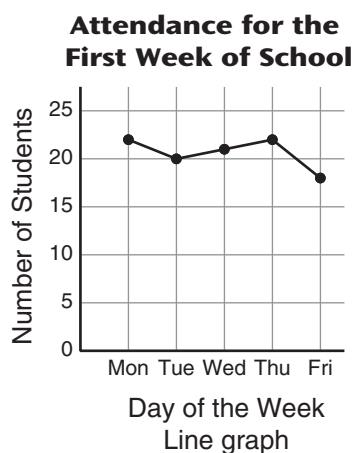
**Please keep this Family Letter for reference as your child works through Unit 10.**

## Vocabulary

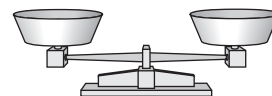
Important terms in Unit 10:

**algebraic expression** An expression that contains a variable. For example, if Maria is 2 inches taller than Joe, and if the variable  $M$  represents Maria's height, then the algebraic expression  $M - 2$  represents Joe's height.

**line graph** A graph in which data points are connected by line segments.



**pan balance** A tool used to weigh objects or compare weights.



Pan balance

**predict** In mathematics, to say what will happen in the future based on experimental data or theoretical calculation.

**rate** A comparison by division of two quantities with unlike units. For example, a speed such as 55 miles per hour is a rate that compares distance with time.

## Do-Anytime Activities

To work with your child on concepts taught in this unit and in previous units, try these interesting and rewarding activities:

1. Have your child list different timed distances for a mile. For example, the fastest mile run by a human and by a race car; your child's own fastest mile completed by running, biking, or walking; the fastest mile run for a handicapped athlete; the fastest mile completed by a swimmer, and so on.
2. Have your child keep a running tally of when the school bus arrives. Or have your child time himself or herself to see how long it takes to walk to school in the morning compared to walking home in the afternoon. After a week, have your child describe landmarks for their data and interpret these landmarks.

### Building Skills through Games

In this unit, your child will practice using algebraic expressions containing variables by playing the following game. For more detailed instructions, see the *Student Reference Book*.

**First to 100** See *Student Reference Book*, page 308.

This is a game for two to four players and requires 32 Problem Cards and a pair of six-sided dice. Players answer questions after substituting numbers for the variable on the Problem Cards. The questions offer practice on a variety of mathematical topics.

## As You Help Your Child with Homework

As your child brings assignments home, you might want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through some of the Study Links in this unit.

### Study Link 10•1

1. 3    2. 3    3. 36    4. 4    5. 3

### Study Link 10•2

3. 5, 10    4. 2, 2    5. 4, 6    6. 26  
7. 2    8. 50    9. 0

### Study Link 10•3

1.  $2 * (L + M)$ , or  $2 (L+M)$   
2.  $\frac{1}{4} * (M - (I + S))$ , or  $\frac{1}{4} (M - (I + S))$   
3. a. Multiply  $N$  by 3 and add 5.  
b.  $Q = 2N + 5$   
4. a. Multiply  $E$  by 6 and add 15.  
b.  $R = (E * 6) + 15$

### Study Link 10•4

1. a.

| Weight (lb) (w) | Cost (\$) ( $2.50 * w$ ) |
|-----------------|--------------------------|
| 1               | 2.50                     |
| 3               | 7.50                     |
| 6               | 15.00                    |
| 10              | 25.00                    |

2. a.

| Gasoline (gal) (g) | Distance (mi) ( $24 * g$ ) |
|--------------------|----------------------------|
| 1                  | 24                         |
| 4                  | 96                         |
| 7                  | 168                        |
| 13                 | 312                        |

### Study Link 10•5

2. 60°F    4. 72°F    5. a. 70°F    b. 67°F

### Study Link 10•6

| Time         | Distance (yd) |           |
|--------------|---------------|-----------|
|              | Natasha       | Derek     |
| <b>Start</b> | <b>0</b>      | <b>10</b> |
| <b>1</b>     | <b>6</b>      | <b>15</b> |
| <b>2</b>     | <b>12</b>     | <b>20</b> |
| <b>3</b>     | <b>18</b>     | <b>25</b> |
| <b>4</b>     | <b>24</b>     | <b>30</b> |
| <b>9</b>     | <b>54</b>     | <b>55</b> |
| <b>10</b>    | <b>60</b>     | <b>60</b> |
| <b>11</b>    | <b>66</b>     | <b>65</b> |
| <b>12</b>    | <b>72</b>     | <b>70</b> |
| <b>13</b>    | <b>80</b>     | <b>75</b> |

### Study Link 10•7

Answers vary.

### Study Link 10•8

1. a. 22.0    b. 40.2  
2. a. 85    b. 85  
3. 21

### Study Link 10•9

1. circumference    2. area    3. area  
4. circumference    5.  $50 \text{ cm}^2$   
6. 6 in.    7. 5 m

8. Sample answer: The circumference is 31.4 meters, and this equals  $\pi * d$ , or about  $3.14 * d$ . Since  $3.14 * 10 = 31.4$ , the diameter is about 10 meters. The radius is half the diameter, or about 5 meters.