# Lesson 20: Writing and Evaluating Expressions—Multiplication and Division

## Classwork

### Example 1

1. The farmers' market is selling bags of apples. In every bag, there are 3 apples.
   a. Complete the table.

| Number of Bags | Total Number of Apples |
|---|---|
| 1 | 3 |
| 2 | |
| 3 | |
| 4 | |
| $B$ | |

   b. What if the market had 25 bags of apples to sell? How many apples is that in all?

   c. If a truck arrived that had some number, $a$, more apples on it, then how many bags would the clerks use to bag up the apples?

   d. If a truck arrived that had 600 more apples on it, how many bags would the clerks use to bag up the apples?

   e. How is part (d) different from part (b)?

**Exercises**

1. In New York State, there is a five-cent deposit on all carbonated beverage cans and bottles. When you return the empty can or bottle, you get the five cents back.

   a. Complete the table.

| Number of Containers Returned | Refund in Dollars |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 10 | |
| 50 | |
| 100 | |
| $C$ | |

   b. If we let $C$ represent the number of cans, what is the expression that shows how much money is returned?

   c. Use the expression to find out how much money Brett would receive if he returned 222 cans.

   d. If Gavin needs to earn $\$4.50$ for returning cans, how many cans does he need to collect and return?

   e. How is part (d) different from part (c)?

2. The fare for a subway or a local bus ride is $\$2.50$.

   a. Complete the table.

| Number of Rides | Cost of Rides in Dollars |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 10 | |
| 30 | |
| $R$ | |

   b. If we let $R$ represent the number of rides, what is the expression that shows the cost of the rides?

   c. Use the expression to find out how much money 60 rides would cost.

   d. If a commuter spends $\$175.00$ on subway or bus rides, how many trips did the commuter take?

   e. How is part (d) different from part (c)?

**Challenge Problem**

3. A pendulum swings though a certain number of cycles in a given time. Owen made a pendulum that swings 12 times every 15 seconds.

   a. Construct a table showing the number of cycles through which a pendulum swings. Include data for up to one minute. Use the last row for $C$ cycles, and write an expression for the time it takes for the pendulum to make $C$ cycles.

| | |
|---|---|
| | |
| | |
| | |
| | |
| | |

   b. Owen and his pendulum team set their pendulum in motion and counted 16 cycles. What was the elapsed time?

   c. Write an expression for the number of cycles a pendulum swings in $S$ seconds.

   d. In a different experiment, Owen and his pendulum team counted the cycles of the pendulum for 35 seconds. How many cycles did they count?