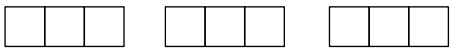
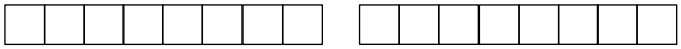
Lesson 3: The Relationship of Multiplication and Addition

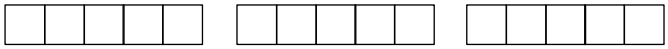
Classwork

Opening Exercise

Write two different expressions that can be depicted by the tape diagram shown. One expression should include addition, while the other should include multiplication.

a. 

b. 

c. 

Exercises

1. Write the addition sentence that describes the model and the multiplication sentence that describes the model.

2. Write an equivalent expression to demonstrate the relationship of multiplication and addition.

a. $6 + 6$

b. $3 + 3 + 3 + 3 + 3 + 3$

c. $4 + 4 + 4 + 4 + 4$

d. 6×2

e. 4×6

f. 3×9

g. $h + h + h + h + h$

h. $6y$

3. Roberto is not familiar with tape diagrams and believes that he can show the relationship of multiplication and addition on a number line. Help Roberto demonstrate that the expression 3×2 is equivalent to $2 + 2 + 2$ on a number line.

4. Tell whether the following equations are true or false. Then, explain your reasoning.
   a. $x + 6g - 6g = x$

   b. $2f - 4e + 4e = 2f$

5. Write an equivalent expression to demonstrate the relationship between addition and multiplication.

   a. $6 + 6 + 6 + 6 + 4 + 4 + 4$

   b. $d + d + d + w + w + w + w + w$

   c. $a + a + b + b + b + c + c + c + c$

Problem Set

Write an equivalent expression to show the relationship of multiplication and addition.

1. $10 + 10 + 10$

2. $4 + 4 + 4 + 4 + 4 + 4 + 4$

3. 8×2

4. 3×9

5. $6m$

6. $d + d + d + d + d$