Lesson 3: Writing Products as Sums and Sums as Products

Classwork

Opening Exercise

Solve the problem using a tape diagram. A sum of money was shared between George and Benjamin in a ratio of $3:4$. If the sum of money was $\$56.00$, how much did George get?

Example 1

Represent $3 + 2$ using a tape diagram.

Represent $x + 2$ using a tape diagram.

Adapted from:

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Draw a rectangular array for $3(3+2)$.

Draw an array for $3(x+2)$.

Key Terms

DISTRIBUTIVE PROPERTY: The distributive property can be written as the identity

$$a(b+c) = ab + ac \text{ for all numbers } a, b, \text{ and } c.$$

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Example 2

Rewrite the following in at least 3 ways:

$$3(x+y)$$

Workspace before beginning Example 3

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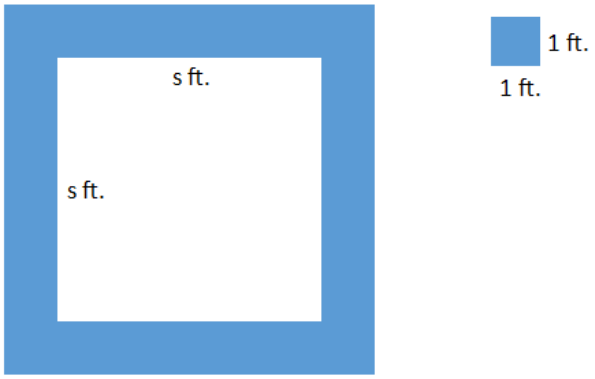
Example 3

A square fountain area with side length s ft. is bordered by a single row of square tiles as shown. Express the total number of tiles needed in terms of s three different ways.



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Problem Set

1.

a. Write two equivalent expressions that represent the rectangular array below.

b. Verify informally that the two expressions are equivalent using substitution.

2. You and your friend made up a basketball shooting game. Every shot made from the free throw line is worth 3 points, and every shot made from the half-court mark is worth 6 points. Write an equation that represents the total number of points, P, if f represents the number of shots made from the free throw line, and h represents the number of shots made from half-court. Explain the equation in words.

3. Use a rectangular array to write the products in standard form.

a. $2(x + 10)$

b. $3(4b + 12c + 11)$

4. Use the distributive property to write the products in standard form.

a. $3(2x - 1)$

b. $10(b + 4c)$

c. $9(g - 5h)$

d. $7(4n - 5m - 2)$

e. $a(b + c + 1)$

f. $(8j - 3l + 9)6$

g. $(40s + 100t) \div 10$

h. $(48p + 24) \div 6$

i. $(2b + 12) \div 2$

j. $(20r - 8) \div 4$

k. $(49g - 7) \div 7$

l. $(14g + 22h) \div \frac{1}{2}$

5. Write the expression in standard form by expanding and collecting like terms.

a. $4(8m - 7n) + 6(3n - 4m)$

b. $9(r - s) + 5(2r - 2s)$

c. $12(1 - 3g) + 8(g + f)$

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