



Objective

Equivalent Expressions

Warm-Up

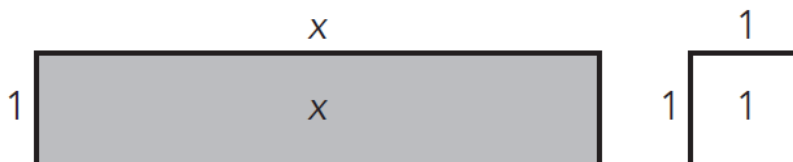
Represent the algebraic expressions below using algebra tiles and combine like terms if needed

1. $2x^2 + x + 2 + 2x$

2. $2x^2 + x + 2x^2$

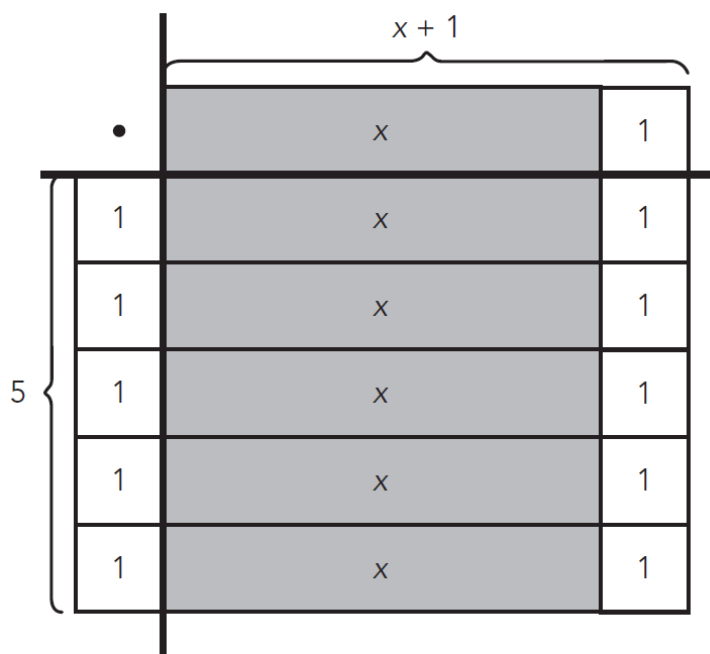


Let's use algebra tiles to explore rewriting algebraic expressions with the Distributive Property.



WORKED EXAMPLE

Consider the expression $5(x + 1)$. This expression has two factors: 5 and the quantity $(x + 1)$. You can use the Distributive Property to rewrite this expression. In this case, multiply the 5 by each term of the quantity $(x + 1)$. The model using algebra tiles is shown.



$$5(x + 1) = 5x + 5$$

1. Analyze the parts of the mathematical expressions in the worked example. Explain each response.

a. Which expression, $5(x + 1)$ or $5x + 5$, shows a product of two factors?

b. How many terms are in $5x + 5$?

c. The number 5 is a coefficient in which expression?

2. Create a model of each expression using your algebra tiles. Then, sketch the model and rewrite the expression using the Distributive Property.

a. $4(2x + 1)$

b. $(3x + 1)^2$

3. Rewrite each expression using the Distributive Property. Then, combine like terms if possible.

a. $2(x + 4)$

b. $\frac{2}{3}(6x + 12)$

c. $2(x + 5) + 4(x + 7)$

d. $5x + 2(3x - 7)$

e. $2(y + 5) + 2(x + 5)$

f. $\frac{1}{2}(4x + 2) + 8x$

How do you think the Distributive Property will play a part in dividing expressions? Let's find out.

4. Consider the expression $(4x + 8) \div 4$, which can also be rewritten as $\frac{4x + 8}{4}$.

a. First, represent $4x + 8$ using your algebra tiles. Sketch the model you create.

b. Next, divide your algebra tile model into four equal groups. Then, sketch the model you created with your algebra tiles.

c. Write an expression to represent each group from your sketches in part (b).

d. Verify you created equal groups by multiplying your expression from part (c) by 4. The product you calculate should equal $4x + 8$.

Let's consider the division expression from Question 4.

WORKED EXAMPLE

You can rewrite an expression of the form $\frac{4x + 8}{4}$ using the Distributive Property.

$$\frac{4x + 8}{4} = \frac{4x}{4} + \frac{8}{4}$$

$$= 1x + 2$$

$$= x + 2$$

$$\text{So, } \frac{4x + 8}{4} = x + 2$$

The model you created in Question 4 is an example that shows that the Distributive Property can be used with division as well as with multiplication.

5. Consider the expression $\frac{2x + 6y + 4}{2}$.

a. Use algebra tiles to represent the division expression.

b. Rewrite the division expression using the Distributive Property. Then, simplify the expression.

$$\frac{2x + 6y + 4}{2} = \frac{2x}{\square} + \frac{6y}{\square} + \frac{4}{\square}$$

c. Verify that your answer is correct.

= _____



LESSON 7.3b
Second Verse, Same as the the First



Objective **Equivalent Expressions**

Review

1. Sheldon Elementary School has a school store that sells many items including folders, pencils, erasers, and novelty items. The parent association is in charge of buying items for the store.
 - a. One popular item at the store is scented pencils that come in packs of 24 from the retailer. Write an algebraic expression that represents the total number of scented pencils they will have available to sell. Let p represent the number of packs of scented pencils.
 - b. Another popular item at the store is animal-themed folders. Each pack of folders contains 6 folders. The store currently has 4 packs in the store and would like to order more. Write an algebraic expression for the total number of folders they will have after they order more folders. Let x represent the number of packs of folders they buy.
 - c. The latest fad is animal-shaped rubber bracelets. The bracelets come in a pack of 24. Write an algebraic expression that represents the cost of each bracelet. Let c represent the cost of a pack of 24 bracelets.

2. Determine which rate is faster.
 - a. 185 miles in 3 hours or 490 miles in 8 hours
 - b. 70 miles per hour or 100 kilometers per hour

3. Calculate the volume of each solid formed by rectangular prisms.

