

AIM: 2-5 I will be able to use the Distributive Property to evaluate expressions!

Name _____
Mrs. Ashley

Date _____
Math 6 - Period _____

Warm-up:

1) Choose the numerical expression that represents the verbal sentence below.

Switch multiply
"2 less than the product of 3 and a number *n*"

- a) $3n + 2$ **b) $3n - 2$** c) $2 - 3n$ d) $2n - 3$

2) Evaluate the expression $4x + 2$ when **$x = 5$** . Show your work and substitutions.

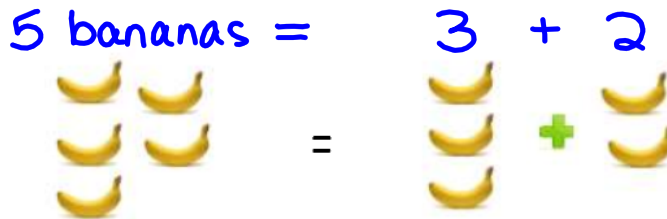
Handwritten work:
 $4 \cdot 5 + 2$
 $20 + 2$

- a) 11 b) 3 **c) 22** d) 47

The Distributive Property

We can write equivalent expressions using the distributive property.

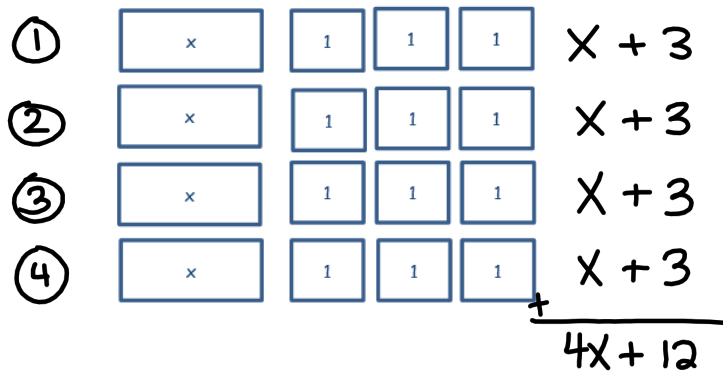
Equivalent expressions are expressions that have the **SAME** value.



We use an **equal sign** to show equivalence of two different expressions.

We can use **ALGEBRA TILES** to show the *distributive property* of an expression.

The expression $4 \cdot (x+3)$ can be represented as four sets of $(x+3)$
 OR
 $(x+3)$ FOUR TIMES



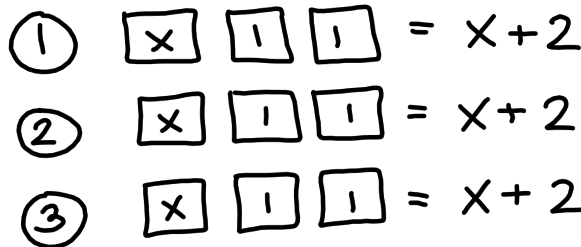
Can you write an equivalent expression of $4(x+3)$?

$4x + 12$

Now You Try!

Using the example above, draw algebra tiles to represent the expression: $3 \cdot (x+2)$

*Hint: There are 3 sets of $x+2$ or $(x+2)$ three times



a) How many x's are there? 3 x's

b) How many 1's are there? 6

c) Write an equivalent expression to represent $3(x+2) = \underline{3x + 6}$

if $x=1$

$3(x+2)$	}	$3x+6$
$3(1+2)$		$3 \cdot 1 + 6$
$3 \cdot 3$		$3 + 6$
<u>$= 9$</u>		<u>$= 9$</u>

The Distributive Property:

Let's write equivalent expressions in TWO WAYS!

1) $5(3x + 4)$

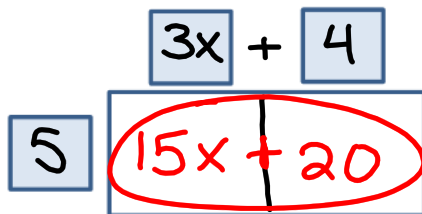
Method 1: AREA MODEL

1. Count the terms:

2 terms

1 term $\rightarrow 5(\underline{3x} + \underline{4})$

2. Create a ONE by TWO area model. Then, multiply the outside by each top section.



Equivalent Expression:

$5(3x + 4) = \underline{15x + 20}$

Method 2: SPLIT TERMS

1. Rewrite the expression by multiplying the number outside the parenthesis by **ALL** of the terms inside the parenthesis.

Draw arrows to represent multiplication

Step 1: $5(3x) + 5(4)$

↓ ↓

Step 2: $\underline{15x + 20}$

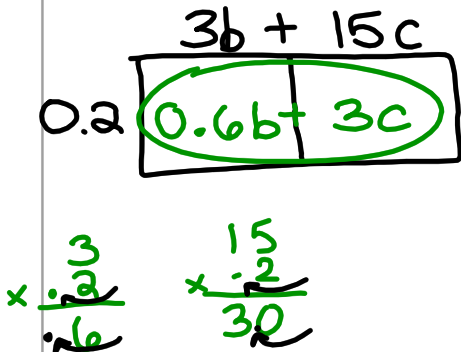


Now You Try!

2) $2(4x + 5)$	
<p>Method 1: AREA MODEL</p> <div style="text-align: center;"> $4x + 5$ </div> <p>Equivalent Expression:</p> $2(4x + 5) = \underline{8x + 10}$	<p>Method 2: SPLIT TERMS</p> <div style="text-align: center;"> $2(4x + 5)$ </div> <p>Step 1: $2(4x) + 2(5)$</p> <div style="text-align: center;"> $\downarrow \quad \downarrow$ </div> <p>Step 2: $\underline{8x + 10}$</p>
3) $\frac{1}{2}(8x + 2)$	
<p>Method 1: AREA MODEL</p> <div style="text-align: center;"> $8x + 2$ </div> <p>Equivalent Expression:</p> $\frac{1}{2}(8x + 2) = \underline{4x + 1}$	<p>Method 2: SPLIT TERMS</p> <div style="text-align: center;"> $\frac{1}{2}(8x + 2)$ </div> <p>Step 1: $\frac{1}{2}(8x) + \frac{1}{2}(2)$</p> <div style="text-align: center;"> \downarrow </div> <p>Step 2: $\underline{4x + 1}$</p>

4) $0.2(3b + 15c)$

Method 1: **AREA MODEL**



Equivalent Expression:

$0.2(3b + 15c) = \underline{0.6b + 3c}$

Method 2: **SPLIT TERMS**

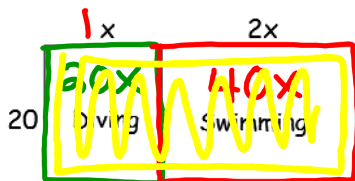
$0.2(3b + 15c)$

Step 1: $0.2(3b) + 0.2(15c)$

Step 2: $0.6b + 3c$

CHALLENGE QUESTION:

Many pools have separate swimming and diving areas. The pool below has a swimming area that must be twice as big as the diving area. Using the diagram below, which choice best represents the area of the pool?



Area = diving + swimming
 $20x + 40x$
 $60x$

A) $40x$

B) $40x + 20$

C) $20x + 40$

D) $60x$

Click the link below to practice using the DISTRIBUTIVE PROPERTY:

~~http://henryanker.com/Math/Algebra/Distributive_Property_1.swf~~

Exit Ticket: Log-in to SOCRATIVE (Room code: TITANSMATH)

1) Write an equivalent expression for: $4(2x + 5)$

$$4(2x) + 4(5)$$

$$8x + 20$$

2) Write an equivalent expression for: $3(x + 5)$

$$3(x) + 3(5)$$

$$3x + 15$$

3) Write an equivalent expression for: $\frac{3}{4}(12x + 4)$

$$\frac{3}{4}(12x) + \frac{3}{4}(4)$$

$$9x + 3$$