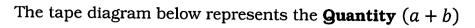
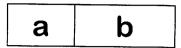
## "I Can Apply the Distributive Property to Generate an Equivalent Expression." Distributive Property



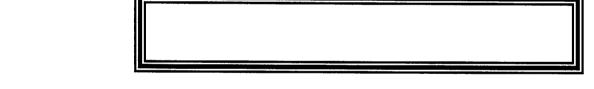


How does the tape diagram below represent 3(a+b)?

а	b	а	b	а	b
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After applying the Commutative Property, we can see an **Equivalent Expression** to 3(a+b).

What conclusion can be drawn from the models about equivalent expressions?



To prove that these two forms are equivalent, let's plug in some values for a and b see what happens.

Let 
$$a = 3$$
 and  $b = 4$   
 $3(a+b)$ 
Let  $a = 5$  and  $b = 7$   
 $3(a+b)$ 
 $3a+3b$ 

Remember 
$$3(a + b)$$
 means the repeated addition of  $a + b$  three times.  $3(a + b) = a + b + a + b + a + b$ 

Use this idea to expand the following expressions. Then use the <u>Commutative Property</u> to simplify.

$$4(5x+3y)$$

$$3(x+6y-5z)$$

WE	DO

Expression 4(2+8-3) 9(8a-p) Expression 7(3h+2j)+8hDistribute \_\_\_\_\_ Distribute \_\_\_\_\_

Evaluate \_\_\_\_\_ Combine \_\_\_\_\_

## "I Can Apply the Distributive Property to Generate an Equivalent Expression." Distributive Property

The tape diagram below represents the **Quantity** (a + b)

a b 
$$(a+b)$$

How does the tape diagram below represent 3(a+b)?

а	b	а	b	a	h
а	D	a	D	a	D

After applying the Commutative Property, we can see an **Equivalent Expression** to 3(a+b).

What conclusion can be drawn from the models about equivalent expressions?

$$3(a+b) = 3a + 3b$$

To prove that these two forms are equivalent, let's plug in some values for a and b see what happens.

Let 
$$a = 3$$
 and  $b = 4$   
 $3(a+b)$  =  $3a+3b$  | Let  $a = 5$  and  $b = 7$   
 $3(a+b)$  |  $3a+3b$  |  $3\cdot 3+3\cdot 4$  |  $3\cdot (5+7)$  |  $3\cdot 5+3\cdot 7$   
 $3\cdot 7$  |  $9+3\cdot 4$  |  $3\cdot 12$  |  $15+3\cdot 7$  |  $15+3\cdot 7$  |  $15+21$  |  $3c$  |

Remember 3(a + b) means the <u>repeated addition</u> of a + b three times. 3(a + b) = a + b + a + b + a + b

Use this idea to expand the following expressions. Then use the <u>Commutative Property</u> to simplify.

$$4(5x+3y) = 20x + 12y$$

$$5x+3y + 5x+3y + 5x+3y + 5x+3y$$

$$5x+5x+5x+5x + 3y + 3y + 3y + 3y$$

$$20x + 12y$$

$$3(x+6y-5z) = 3x+18y - 15z$$

$$1x + 16y - 5z + 1x + 6y - 5z + 1x + 6y - 5z$$

$$1x + 1x + 1x + 6y + 6y + 6y - 5z - 5z - 5z$$

$$3x = + 18y - 15z$$

WE DO
Expression 
$$4(2+8-3)$$
  $9(8a-|p)$  Expression  $7(3h+2j)+8h$ 

Distribute  $8+32-12$   $12a-9p$  Distribute  $21h+14j+8h$ 

Evaluate  $128$  Combine  $145+8h+14j$   $145+8h+14j$