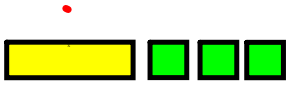
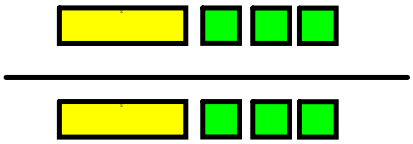
What is the algebraic expression?



$x+3$

How could you describe the expression below?



$2x+6$

or

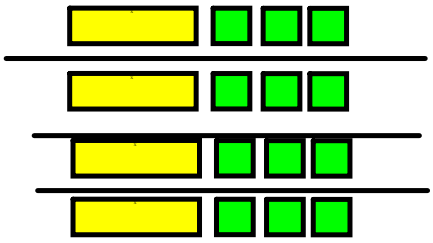
2 groups of $x+3$

or

$2 \times (x+3)$

$[2(x+3)]$

What about this expression?



$4x+12$

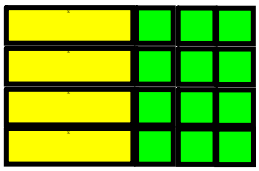
or

4 groups of $x+3$

or

$4 \times (x+3)$ or $4(x+3)$

How is this related to the diagram above?



$4x+12$

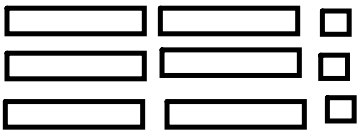
They are the same but in this one the tiles are touching. Still mean $4 \times (x+3)$

What we just showed is the Distributive Property in math.

4 (x+ 3) means the 4 is distributed to the x and to the 3, so we get
4 x *x* + 4 x 3
4*x* + 12

Examples: Model and give the answer for the following:

(a) 3(2x + 1)



6x+3

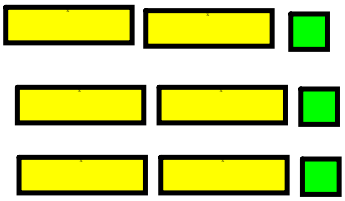
(b) 2(3x + 2)

Without modelling:

What we just showed is the Distributive Property in math.
4 (x+ 3) means the 4 is distributed to the x and to the 3,
so we get 4 x x + 4 x 3
$4x + 12$

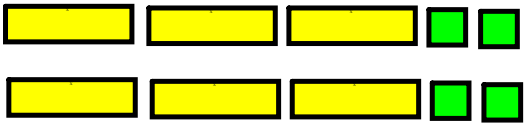
Examples: Model and give the answer for the following:

(a) 3(2x + 1)



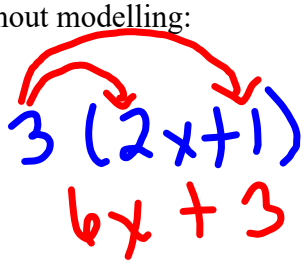
6x +3

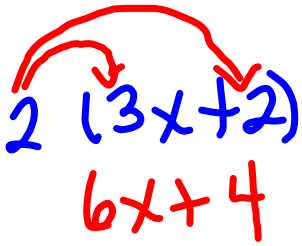
(b) 2(3x + 2)



6x + 4

Without modelling:





The Distributive Property

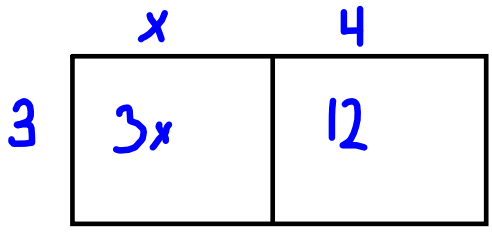
The property stating that a product can be written as a sum or difference of two products.

For example: $a(b + c) = ab + ac$

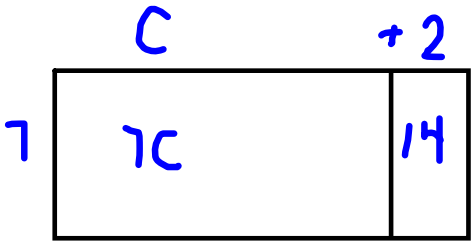
$a(b - c) = ab - ac$

Box method

Multiply: $3(x + 4)$



Multiply: $7(c + 2)$



$2(x + 4)$

$2x + 8$

$3(x - 2)$

$3x - 6$

Expand:

a) $-5(x+7)$

$-5x - 35$

b) $4(2 - c)$

$8 - 4c$

c) $-2(-5t + 8)$

$10t - 16$

d) $-3(2x-7)$

$-6x + 21$

Solving Equations that Involve the Distributive Property

The Distributive property may also appear in solving equations.
When it does, **first you have to apply the distributive property, then solve as you normally would.**

outside Bracket, you multiply each term on inside bracket. Then solve as usual

Solve the following:

(a) $2(x + 4) = 18$

$2x + 8 = 18$ (−8 −8)

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$

(b) $3(x - 5) = 9$

$3x - 15 = 9$ (+15 +15)

$\frac{3x}{3} = \frac{24}{3}$

$x = 8$

Word Problem

Ex)

I have 4 friends. We each have a package of cookies and we each have 2 cookies that are not in the package. If we have 50 cookies in total, how many cookies are in each package?

c = the number of cookies in one package
c + 2 = the number of cookies each person has

hint : How many people?

5

$$5(c + 2) = 50$$
$$5c + 10 = 50$$
$$5c + 10 - 10 = 50 - 10$$
$$5c = 40$$
$$\frac{5c}{5} = \frac{40}{5}$$
$$c = 8$$

Each package has 8 cookies.

pg. 342 # 4ab,7(a-d),8(a-d),12abc,15

Pg. 347 # 4,5,

Need more practice?? Extra Practice 5 Worksheet