

# ALGEBRA SIMPLIFYING (NOT SOLVING)

Making an expression easier to understand

## Adding & Subtracting Terms

$$5x + 4y + 2x + y$$

$$= 7x + 5y$$

Group like terms together  
Signs stay with the letter after

$$3a - 4b + 5a + 2b$$

$$8a - 2b$$

note for  $-4b + 2b$   
see  $-4 + 2 = -2$

you can't add separate numbers to the  $x$ 's

$$3 + 2x + 5 + 7x$$

$$= 8 + 9x$$

$x^2$  is separate to  $x$

$$4x^2 + 3x - x^2 + 10x$$

$$= 3x^2 + 13x$$

## Multiplying & Dividing Terms

multiply & divide numbers & letters separately

$$3 \times 2x \Rightarrow 3 \times 2 \times x = 6x$$

$$4a \times 2a \Rightarrow 4 \times 2 \times a \times a = 8a^2$$

$$12x^2 \div 4x \Rightarrow 12 \div 4 \times x^2 \div x = 3x$$

## BRACKETS

whatever is outside is inside multiplies by whatever

$$3(x+2)$$

$$\Rightarrow 3x + 6$$

$$x(5+3x)$$

$$\Rightarrow 5x + 3x^2$$

$$7a(2a-4b)$$

$$\Rightarrow 14a^2 - 28ab$$

## DOUBLE BRACKETS Everything

in first bracket multiplies by everything in second bracket

$$(x+2)(x+3)$$

$$x^2 + 3x + 2x + 6$$

now simplify

$$\Rightarrow x^2 + 5x + 6$$

In the case of  $(x+5)^2$  Does NOT equal  $x^2 + 5^2$

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

$$\Rightarrow x^2 + 5x + 5x + 25$$

$$\Rightarrow x^2 + 10x + 25$$