

## Squares and Cubes and Binomial Powers

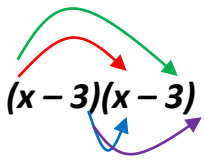
What does  $(3x^2)^3$  mean?

$$= (3x^2) (3x^2) (3x^2)$$

What does  $(5x^4)^4$  mean?

$$= (5x^4) (5x^4) (5x^4) (5x^4)$$

So what about  $(x - 3)^2$  ?

$$= (x - 3)(x - 3)$$


$$\begin{array}{r} x^2 - 3x \\ -3x + 9 \\ \hline x^2 - 6x + 9 \end{array}$$

It's important to notice the difference...

$$(7xy)^2$$

Everyone gets a power of 2

$$49x^2y^2$$

$$(7x + y)^2$$

write out twice and expand

$$\begin{array}{r} (7x + y)(7x + y) \\ 49x^2 + 7xy \\ + 7xy + y^2 \\ \hline 49x^2 + 14xy + y^2 \end{array}$$

1) Expand the following

a)  $(3x - 7)^2$

$$\begin{array}{r} (3x - 7)(3x - 7) \\ 9x^2 - 21x \\ - 21x + 49 \\ \hline 9x^2 - 42x + 49 \end{array}$$

b)  $(3x - 5)^3$

$$\begin{array}{r} (3x - 5)(3x - 5)(3x - 5) \\ \text{Do these first} \\ (3x - 5)(9x^2 - 15x - 15x + 25) \\ (3x - 5)(9x^2 - 30x + 25) \\ 27x^3 - 90x^2 + 75x \\ - 45x^2 + 150x - 125 \\ \hline 27x^3 - 135x^2 + 225x - 125 \end{array}$$

Notice the +, -, +, - pattern in signs

c)  $(3x + 2)^4$

$$\begin{array}{r} (3x + 2) (3x + 2) (3x + 2) (3x + 2) \\ \text{Do these first} \\ 9x^2 + 6x + 6x + 4 \\ (9x^2 + 12x + 4) (9x^2 + 12x + 4) \\ 81x^4 + 108x^3 + 36x^2 \\ 108x^3 + 144x^2 + 48x \\ 36x^2 + 48x + 16 \\ \hline 81x^4 + 216x^3 + 216x^2 + 96x + 16 \end{array}$$

d)  $(x + 7)^2 - (x - 5)^2$

$$\begin{array}{r} (x + 7)(x + 7) - (x - 5)(x - 5) \\ \text{careful} \\ x^2 + 7x + 7x + 49 \\ - x^2 + 5x + 5x - 25 \\ \hline 24x + 24 \end{array}$$

Assignment = worksheet

*Math 10 Worksheet (Squares and Cubes)*

1) Find and fix the mistake in the following

a)  $(3x - 7)^2$

$9x^2 + 49$

b)  $(8x - 1)(x+1)$

$8x^2 + 8x - x - 1$

$8x^2 + 7 - 1$

$8x^2 + 6$

c)  $(5x - 2)^2$

$25x^2 - 4x - 4x - 4$

$25x^2 - 8x - 4$

2) Expand the following:

a)  $(x + 6)^2$

b)  $(2x - 1)^2$

c)  $(3x + 4)^2$

d)  $(4x - 3)^2$

e)  $(1 - 5m)^2$

f)  $(2x - 3y)^2$

g)  $(2x + 7)^2 + (3x + 4)^2$

h)  $(2x + 6y)^2 - (x - 4y)^2$

i)  $(x + 3)^3$

j)  $(4x - 5)^3$

***k)***  $(2x - 1)^4$

***l)***  $2(3x - y)^2 - 2(x - 4y)(4x - 6y)$

***And complete Page 186***

***15e)***

***15f)***

***21d)***

***21e)***