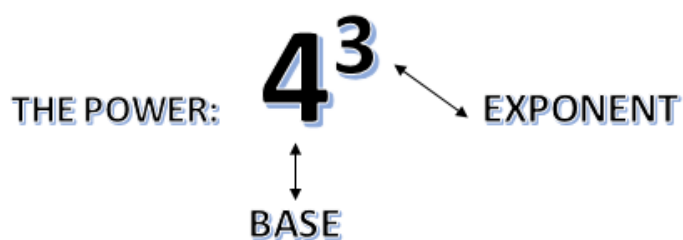


PROPERTIES OF EXPONENTS

The expanded form is  $4 \times 4 \times 4$

The value is 64

**÷ x rules:**

If you ÷ matching bases....subtract the exponents & keep the base.

If you X matching bases....add the exponents & keep the base.

**(IF THE BASES DON'T MATCH...DO NOTHING!!)**

EX:

$$\underline{x^4} (x^6) = x^{10}$$

$$\underline{a^3} (w^2) = \text{impossible!! leave it}$$

$$\underline{M^7} = M^5$$

$$M^2 |$$

\*\*\* VIP\*\*\*

Anything with an exponent of zero = 1

$$5^0 = 1 \quad B^0 = 1 \quad \epsilon^0 = 1$$

Invisible exponents: If you don't see an exponent, that means it's a 1 exponent

$$W \text{ is really } \rightarrow \frac{1W^1}{1}$$

## ALGEBRA RULES

**+ / -** You can only + or - if the terms match in letter AND exponent

ex:  $5a^3 + 6a = \dots$  cannot be simplified!..so leave it !

$7m + 3a = \dots$  cannot be simplified!....so leave it!

IF they do match PERFECTLY, you + or - the base # ONLY

!!!!DO NOT TOUCH THE EXPONENT!!!!

ex:  $4x^3 + 7x^3 = 11x^3$

**X / ÷** You can X or ÷ any term!

When you X.....you **add the exponents** of the same letters

ex:  $5a^2 ( 2a^4 ) = 10a^6$

(Just X the numbers, drag letters to the end)


ex:  $3m^2 ( 4x^3 ) = 12 m^2x^3$

When you **÷**.....you **subtract the exponents** of the same letters

ex:  $\frac{10m^7}{2m^5} = 5m^2$

(Just ÷ the numbers, keep letters as is)

ex:  $\frac{20x^4}{5y^3} = \frac{4x^4}{y^3}$

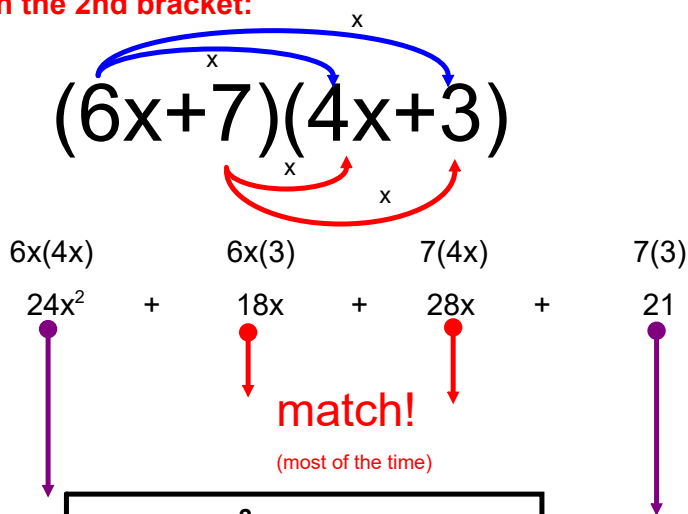
\*\*\* REMEMBER \*\*  - ( all signs change in the bracket )

## BINOMIAL X BINOMIAL (AKA FOIL)

BINOMIAL: a 2 term algebraic expression

$$(6x+7)(4x+3)$$

1) 1st bracket x with the 2nd bracket:



$$(6x+7)(4x+3)$$

$$6x(4x) \quad + \quad 6x(3) \quad + \quad 7(4x) \quad + \quad 7(3)$$

$$24x^2 \quad + \quad 18x \quad + \quad 28x \quad + \quad 21$$

**match!**  
(most of the time)

2) simplify

Final answer

$$= 24x^2 + 46x + 21$$

CAREFUL!

!!BINOMIAL SQUARE!!

$(5y + 3)^2$  •  $\longrightarrow$  turn into  $(5y+3)(5y+3)$

## FACTORING

You are given an answer...you must calculate the ORIGINAL QUESTION.

1<sup>st</sup>) Among the # bases, find the GCF ( greatest common factor)

ex:  $15x^2 + 10x$      **5 is the GCF**

2<sup>nd</sup>) Look at the variables..choose the ones that are **common to all terms**, pick the one with the smallest exponent (called the LCV- lowest common variable)

ex:  $15x^2 + 10x$      so we have  $x^2$  and  $x^1$ .....We have to pick  $x^1$

3<sup>rd</sup>) You now have your GCF and your LCV = **5x**..divide the expression with it!

ex:  $\frac{15x^2 + 10x}{5x} \div = 3x + 2$      ← **This is NOT the final answer**

4<sup>th</sup>) Your final answer must be in the form of a question using the answer from step 3) and your GCF and LCV

ex:  $5x(3x+2)$      ← **FINAL ANSWER!**