Multiplying and dividing expressions

Sunday, 13 October 2019 10:42 AM

By the end of the lesson I would hope that you have an understanding of the concepts below:

- Know all the different ways in which we can write multiplication and division questions
- Remember that multiplication is **commutative**
- Numbers should be written first and pronumerals in alphabetical order
- Know how to cancel fractions.

RECAP:

This is a fast paced and exciting course and builds towards some awesome Mathematics in later years!
We have been looking at all the language which has been used in Algebra and how, when we master the language, we can master Algebra.
Maffs is a BIG FAT TRICK.
We now get a little more interesting and look at how we can multiply and divide terms together using algebra.

SHOW THE LOVE!!

I love my Mum and Dad.
And, each year, I take the time to show them how much by sending them a birthday card.
At the bottom the card I always show them I love them using …

I like to think of a multiplication sign as **maths love**.
Between a letter and number, or number and number, or lots of letters and numbers joined together, there is a kissy-kissy sign.

$3a = 3 \times a$

$4ab = 4 \times a \times b$

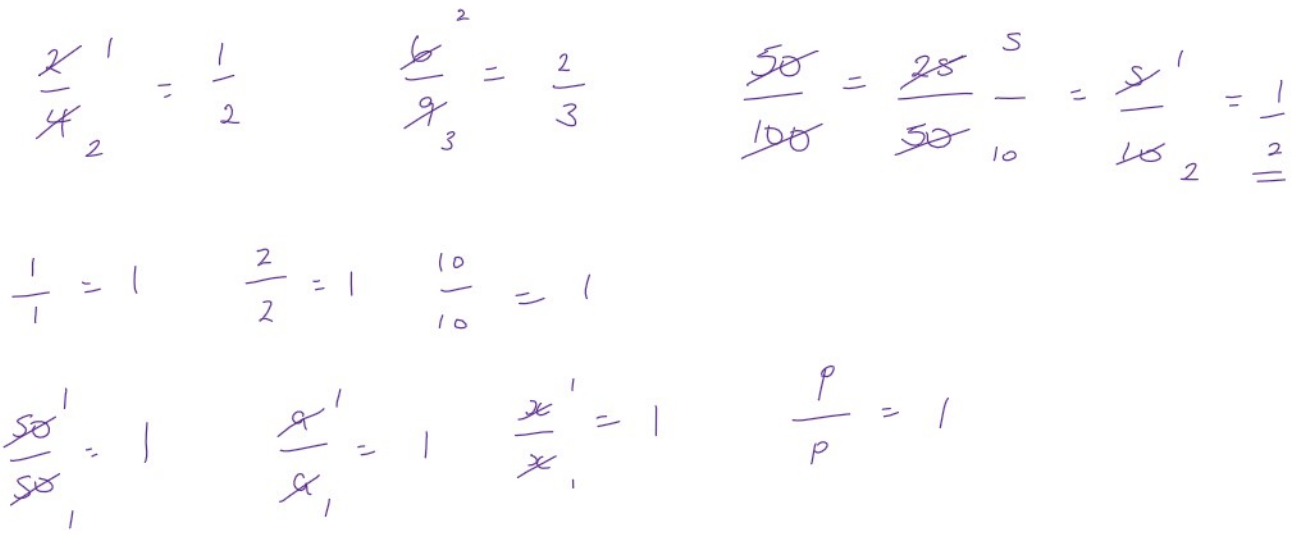
If we remember this … then we're another step forward to being great at Mathematics!

RECAP: Fractions.

I don't think I've ever ... **EVER** ... met anyone who likes fractions.
Which is a real shame as they are AWESOME and one of the biggest tricks in the world.
So, we're going to recap some fractions stuff before we go on.

Cancelling down fractions

We know that it is good Maffs practice to cancel fractions down and show them in their simplest form.
Let's look at some examples.

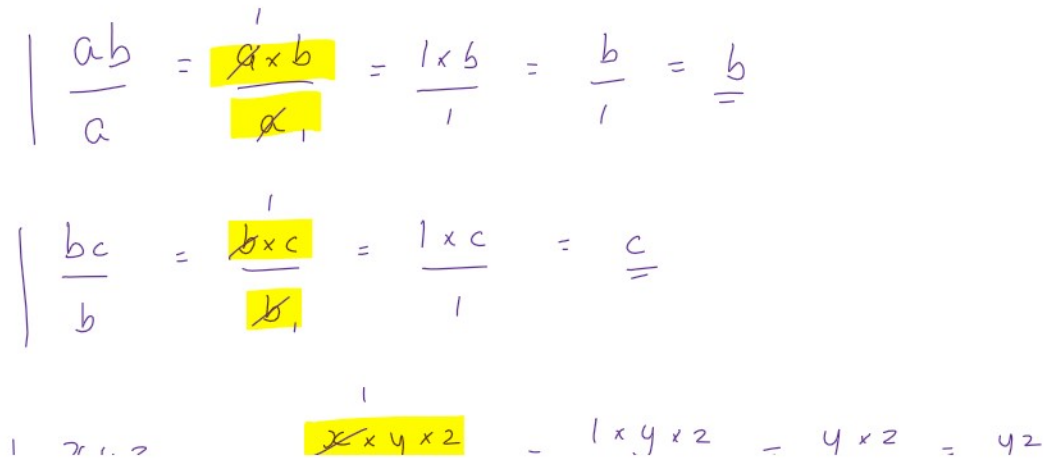


Cancelling down is nothing more than taking the common number (or letter!) from the top and cancelling it from the bottom of a fraction **if they are the same.**

This means we can use the same idea in Algebra.

REMEMBER: Every single term on term on the top of a fraction and the bottom MUST include the letter for it to be cancelled.

Examples:



$$\left|\frac{xyz}{xb}\right| = \frac{\cancel{x}\times y\times z}{\cancel{x}\times b} = \frac{1\times y\times z}{b} = \frac{y\times z}{b} = \frac{yz}{b}$$

$$\left|\frac{abcde}{cdfg}\right| = \frac{a\times b\times \cancel{c}\times\cancel{d}\times e}{\cancel{c}\times\cancel{d}\times f\times g} = \frac{a\times b\times 1\times 1}{1\times 1\times f\times g} = \frac{a\times b}{f\times g} = \frac{ab}{fg}$$

But what about this example:

$$\frac{3a+ab}{4a} = \frac{3\times\cancel{a}+\cancel{a}\times b}{4\times\cancel{a}_1}$$

$$= \frac{3\times 1+1\times b}{4\times 1}$$

$$= \frac{3+b}{4}$$

And this example?

$$\frac{2xy+5dx}{7d} = \frac{2\times x\times y+5\times d\times x}{7\times d}$$

$$= \frac{2xy+5dx}{7d}$$

OK! Let's get back to the love ...

Remember that we are looking for the love in Mathematics.
Let's practice finding those kissy-kissy's.

Example 1: Taken from the Cambridge Essentials Textbook series

Remember that we are looking for the love in mathematics!
Let's practice finding those kissy-kissy's.

Example 1: Taken from the Cambridge Essentials Textbook series

Write $4 \times a \times b \times c$ without multiplication signs.

$4abc$

Simplify $4a \times 2b \times 3c$, giving your final answer without multiplication signs.

$4 \times a \times 2 \times b \times 3 \times c = 2 \times 3 \times 4 \times a \times b \times c$

$= 24 \times a \times b \times c$

$= 24abc$

Simplify $3w \times 4w$.

B
I
D
M
A
S

$2^2 = 2 \times 2 = 4$

$3^2 = 3 \times 3 = 9$

$4^3 = 4 \times 4 \times 4 = 64$

$3w \times 4w$

$= 3 \times w \times 4 \times w$

$= 3 \times 4 \times w \times w$

$= 12w^2$

Example 2: Taken from the Cambridge Essentials Textbook series

Write $(3x + 1) \div 5$ without a division sign.

$1 \div 2 = \frac{1}{2}$

$(3x + 1) \div 5$

$= \frac{(3x + 1)}{5}$

Simplify the expression $\frac{8ab}{12b}$.

$\frac{8ab}{12b} = \frac{\cancel{8}^{2} \times a \times \cancel{b}^{1}}{\cancel{12}^{3} \times \cancel{b}_{1}} = \frac{2 \times a \times 1}{3 \times 1}$

$= \frac{2a}{3}$