

Mrs Apostol's

Fractions

Steps to success

Adding fractions with unlike denominators

$$\frac{10}{12} + \frac{1}{4}$$

1: Change the denominators so they are the same, but to do this you must make sure you consider the lowest common denominator e.g. look at the larger denominator, could you change both to this? Does the smaller denominator fit into the larger one? (Does 4 fit into 12?...Yes!)

If the smaller denominator doesn't fit into 12 find a common multiple that they both fit into.

2:

$$\frac{10}{12} + \frac{3}{12}$$

To get 12 we did 4×3

Remember, whatever you do to the denominator you must do to the numerator.

So we must also multiply the numerator by 3 so...

$$1 \times 3 = 3$$

3: Complete the sum (numerator only)

$$10 + 3 = 13$$

Answer: $\frac{10}{12} + \frac{3}{12} = \frac{13}{12}$

4: Now ask yourself: "Can I half both the numerator and the denominator?" If not...

Ask yourself "Can I divide both by 3?" If not...

Ask yourself "Can I divide both by 5?" If not...

Ask yourself "Can I divide both by 7?" etc...

5: As the answer is an improper fraction otherwise known as 'top heavy' we can now change this into a mixed number.

So, ask yourself: "How many of the denominator go into the numerator?"

$$\frac{13}{12}$$

('Top heavy' = improper fraction)

12 goes into 13 once with 1 left over

Multiplying fractions

$$\frac{5}{6} \times \frac{2}{3} = \frac{(5 \times 2)}{(6 \times 3)} = \frac{10}{18}$$

- 1: Multiply the numerators
- 2: Multiply the denominators
- 3: Now to change it into the 'lowest form'...

Ask yourself:

"Can I halve it?" If not...

"Can I divide both numbers by 3?" If not...

"Can I divide both numbers by 5?" If not...

"Can I divide both by 7?" ...etc...

Lowest Form

Whatever you do to the denominator you must do to the numerator.

I can half both the numerator and denominator, so ...the answer in the lowest form would be:

$$\frac{5}{6} \times \frac{2}{3} = \frac{5}{9}$$

Dividing fractions

Write the answer as a mixed number e.g.

$$1 \frac{1}{5}$$

KFC

Keep it, flip it, change it!

1:

$$\frac{3}{5} \div \frac{1}{2}$$

Keep it

flip it

change $\div$ to $\times$

so.....

$$\frac{3}{5} \times \frac{2}{1} = \frac{(3 \times 2)}{(5 \times 1)} = \frac{6}{5}$$

Top heavy fraction,
otherwise known as
an 'improper fraction'

1: Multiply the numerators

2: Multiply the denominators

3: Because the numerator is larger than the denominator, we need to write it as a mixed number.

4: Ask yourself...

"How many of the denominator go into the numerator?"

$$\frac{6}{5}$$

"How many 5's go into 6?"

1

5: Ask yourself "How many left over?"

1

...so the answer is:

$$1 \frac{1}{5}$$

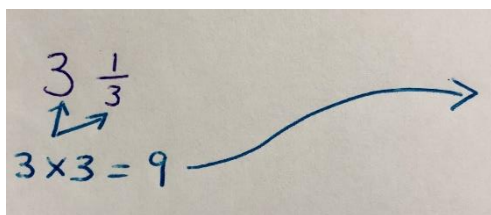
Dividing mixed numbers

$$\frac{2}{3} \div 3\frac{1}{3} =$$

1: Always change the mixed number into a top heavy fraction. (Consider the value of the whole number)

2: Look at the denominator – this is what the whole number is made up of.

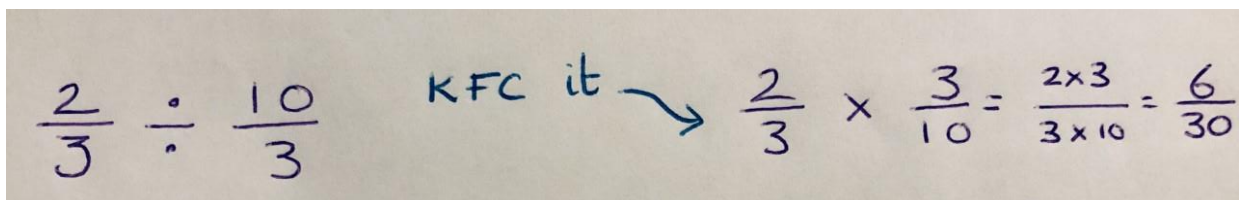
We can multiply the denominator and the whole number first, so...


$$3\frac{1}{3}$$
$$3 \times 3 = 9$$

Plus the numerator which in this case is 1 which equals 10. So the answer is...

$$\frac{10}{3}$$

3: Now, because this is a divide we now need to 'KFC it!'


$$\frac{2}{3} \div \frac{10}{3} \quad \text{KFC it} \rightarrow \frac{2}{3} \times \frac{3}{10} = \frac{2 \times 3}{3 \times 10} = \frac{6}{30}$$

4: Now ask yourself:

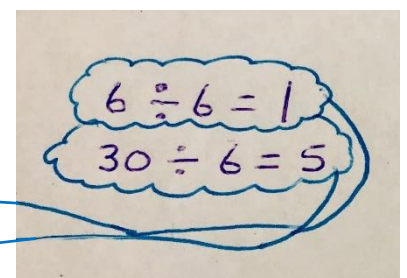
"Can I halve it?" If not...

"Can I divide it by 5?"

"Can I divide it by 3?" etc...

I can divide both numbers by 6 so...

$$\frac{2 \times 3}{3 \times 10} = \frac{6}{30} = \frac{1}{5}$$


$$6 \div 6 = 1$$
$$30 \div 6 = 5$$

Multiplying a fraction by a whole number

$$\frac{3}{7} \times 5$$

This is the same as saying...

$$\frac{3}{7} \times \frac{5}{1}$$

1: 3×5 multiply the numerators

2: 7×1 multiply the denominators

$$\frac{3}{7} \times \frac{5}{1} = \frac{15}{7}$$

We can leave it as an improper fraction or convert it to a mixed number. So...

$$\frac{15}{7}$$

Ask yourself "How many of the denominator go into the numerator?"

7's into 15?
→ 2

With one left over, so we write this like this:

$$2 \frac{1}{7}$$

Subtracting fractions with unlike denominators

$$\frac{2}{6} - \frac{1}{8} =$$

1: Change the denominators so they are both the same. (What do they both go into?) 24

(6 doesn't go into 8 so we must consider other factors)

$$\frac{2}{24} - \frac{1}{24} =$$

2: Whatever you do to the denominators you must do to the numerators.

We multiplied the digit 6 by 4 so we must multiply the digit 2 by 4.

We multiplied the digit 8 by 3 so we must multiply the digit 1 by 3.

$$\frac{8}{24} - \frac{3}{24} =$$

3: Complete the subtraction sum $8 - 3 =$ (Keep the denominator the same)

$$\frac{8}{24} - \frac{3}{24} = \frac{5}{24}$$

4: Then ask yourself "Is the answer in its lowest form?"

(Can I halve it? Can I divide it by 3, 5, 7 etc...?)

If the answer is no, leave it as it is!

Multiplying Mixed Numbers

$$1\frac{1}{2} \times 4\frac{4}{7}$$

1: Always change the mixed number into a top heavy fraction.

2: Ask yourself "What is the value of the whole number?"

(Look at the denominator-this is what the whole number is made up of)

We can multiply the denominator and the whole number first...so...

Plus the numerator 1 which equals 3 so... $\frac{3}{2}$

Now repeat these steps for the other mixed number

$4 \times 7 = 28$

Plus the numerator 4 which equals:

32

So...

$$\frac{32}{7}$$

3: So, lets now put it all back together to work out this top heavy fraction number sentence.

$$\frac{3}{2} \times \frac{32}{7}$$

4: To make this easier we can make the diagonal numbers smaller, but whatever you do to one diagonal we must do to the other.

5: $\frac{3}{1} \times \frac{16}{7} = \frac{48}{7}$

6: Now put this in it's lowest form:

If possible ☺