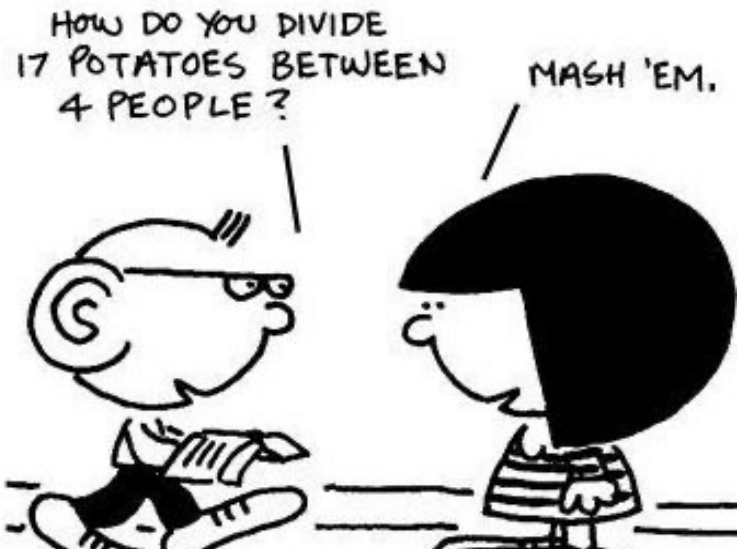
Basic Division



$a \div b$ means the same as $\frac{a}{b}$ which is the same as $b\overline{)a}$

Notice that the numerator goes underneath the division sign: $\frac{a}{b} = b\overline{)a}$

In other words, the numerator is tucked in underneath

5472 ÷ 3

We now work left to right

Step 1: How many times does the number fit into each digit (each colour)

Step 2: Do the calculation to see what the result is

Step 3: Carry the remainder

$$3\overline{)5^{2}4\,7^{1}2}\quad 1\,8\,2\,4$$

How many times does 3 fit into 5?
1 time which gives 3 hence has a remainder of 2 (since 5-3=2)

How many times does 3 fit into 24?
8 times which gives 24 hence no remainder (since 24-24=0)

How many times does 3 fit into 7?
2 times which gives 6 hence a remainder of 1 (since 7-6=1)

How many times does 3 fit into 12?
4 times which gives 12 hence no remainder (since 12-12=0)

$2274 \div 6$

We now work left to right

Step 1: How many times does the number fit into each digit (each colour)

Step 2: Do the calculation to see what the result is

Step 3: Carry the remainder

$$6\overline{)2\,{}^{2}2\,{}^{4}7\,{}^{5}4} \qquad 0\;3\;7\;9$$

How many times does 6 fit into 2?
0 times which gives 0 hence has a remainder of 2 (since 2-0=2)

How many times does 6 fit into 22?
3 times which gives 18 hence a remainder of 4 (since 22-18=4)

How many times does 6 fit into 47?
7 times which gives 42 hence a remainder of 5 (since 47-42=5)

How many times does 6 fit into 54?
9 times which gives 54 hence no remainder (since 54-54=0)

What happens if the number doesn't fit in exactly? We have 2 options.

$$6281 \div 8$$

Option 1

We write the remainder at the end

$$\begin{array}{r} 0\,7\,8\,5 \\ 8\overline{)\,6^{6}2^{6}8^{4}1} \end{array}$$ remainder 1

785 r 1

Option 2

We put a decimal at the end and carry on by putting zeros for as long as we need (we stop either when the number stops or when we reach our desired accuracy)

$$\begin{array}{r} 0\,7\,8\,5.1\,2\,5 \\ 8\overline{)\,6^{6}2^{6}8^{4}1^{1}.0^{2}0^{4}0} \end{array}$$

785.125

Don't worry if you don't understand this, see my decimal basic techniques for this explained in detail

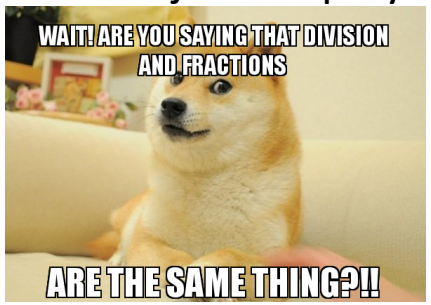
What happens if the numbers are bigger? We have 2 options.

$$2784 \div 32$$

Option 1

We make the numbers smaller and more manageable (if possible). How we we do this:

$a \div b$ means the same thing as $\frac{a}{b}$ so we are just simplifying a fraction first and then dividing



$$2784 \div 32 = \frac{2784}{32} = \frac{1392}{16} = \frac{696}{8} = \frac{348}{4} = \frac{174}{2}$$

$$2\overline{)1^{1}7^{1}4}\quad 0\,8\,7$$

$$87$$

Option 2

Divide as normal

$$32\overline{)2^{2}7^{27}8^{22}4}\quad 0\,0\,8\,7$$

It is harder to see how many times 32 fits into 278, but it is still doable