

Year 7 Maths - Term 1

Number

Integer Place Value

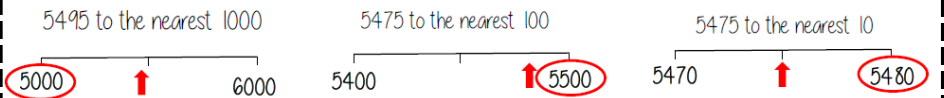
Billions			Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O	H	T	O
		3	1	4	8	0	3	3	0	2	9

Placeholder

Three billion, one hundred and forty eight million, thirty three thousand and twenty nine
 billion 1,000,000,000
 million 1,000,000

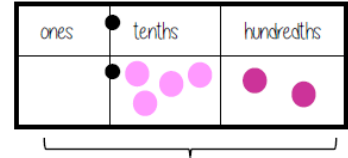
Rounding to the nearest power of ten

If the number is halfway between we "round up"



Decimals

We say "nought point five two"



Five tenths and two hundredths

$$0 \text{ ones, } 5 \text{ tenths and } 2 \text{ hundredths}$$

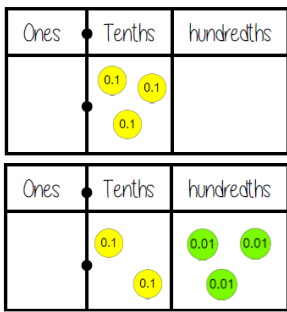
$$0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01$$

$$= 0 + 0.5 + 0.02$$

$$= 0.52$$

Comparing decimals

Which is the largest of 0.3 and 0.23?



$$0.3 > 0.23$$

"There are more counters in the furthest column to the left"

0.30
0.23

Comparing the values both with the same number of decimal places is another way to compare the number of tenths and hundredths

Round to 1 significant figure

370 to 1 significant figure is 400

37 to 1 significant figure is 40

3.7 to 1 significant figure is 4

0.37 to 1 significant figure is 0.4

0.00000037 to 1 significant figure is 0.0000004

Round to the first non zero number

Mental methods for addition/ subtraction

Addition is commutative

Subtraction the order has to stay the same



$$6 + 3 = 3 + 6$$

The order of addition does not change the result

$$360 - 147 = 360 - 100 - 40 - 7$$

- Number lines help for addition and subtraction

- Working in 10's first aids mental addition/ subtraction

Mental methods for multiplication/ division

Multiplication is commutative

Partitioning can help multiplication



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

The order of multiplication does not change the result

$$24 \times 6 = 20 \times 6 + 4 \times 6$$

$$= 120 + 24$$

$$= 144$$

Division is not associative

Chunking the division can help $4000 \div 25$
 "How many 25's in 100" then how many chunks of that in 4000.

Mental methods for decimals

Multiplying by a decimal < 1 will make the original value smaller eg $\times 0.1 = \div 10$

Methods for multiplication 12×0.03

$$\begin{array}{l} 12 \times 3 = 36 \\ 12 \times 3 = 36 \\ 12 \times 0.3 = 3.6 \\ 12 \times 0.03 = 0.36 \end{array} \quad \begin{array}{l} 12 \times 3 = 36 \\ +10 \downarrow +100 \downarrow +1000 \downarrow \\ 12 \times 0.03 = 0.36 \end{array}$$

Methods for division $15 \div 0.05$

Multiply by powers of 10 until the divisor becomes an integer

$$\begin{array}{l} 1.5 \div 0.05 \\ \times 100 \downarrow \quad \times 100 \downarrow \\ 150 \div 5 = 30 \end{array}$$

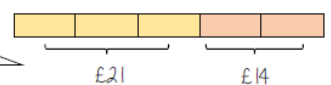
Methods for addition $2.3 + 2.4$

$$\begin{array}{l} 2 + 2 = 4 \\ 0.3 + 0.4 = 0.7 \\ 4 + 0.7 = 4.7 \end{array}$$

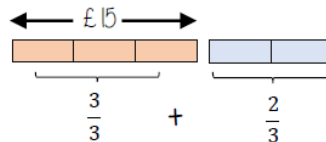
Mental methods for fractions

Use bar models where possible

I've spent $\frac{2}{5}$ of my money I have £21 left



How much did they have to begin with?

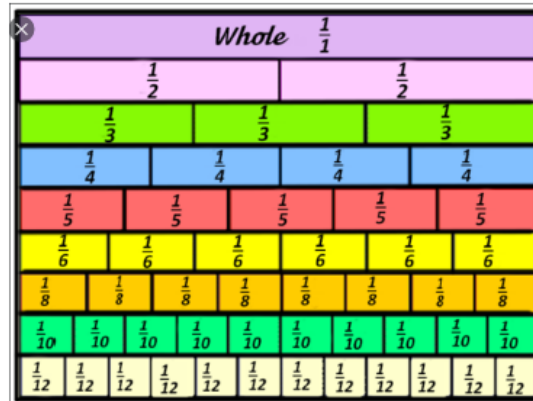


What is $\frac{5}{3}$ of £15?

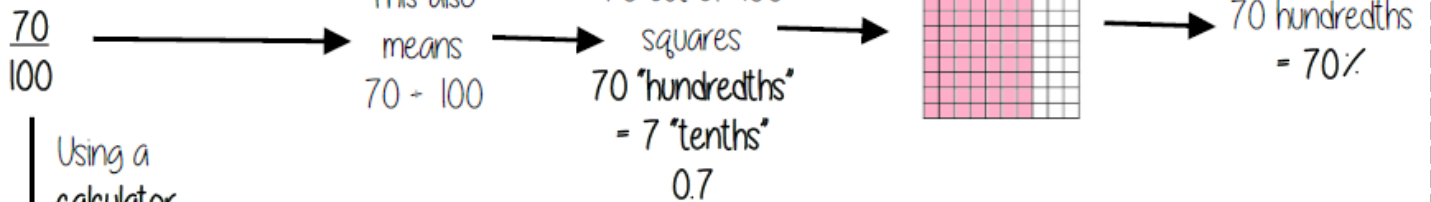
Fractions & Percentages

Equivalent fractions

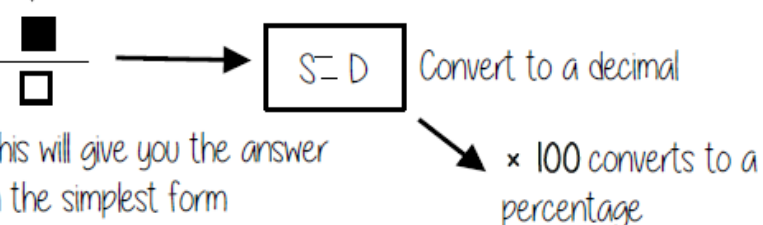
Represent equivalence with fraction walls



Convert FDP



Using a calculator

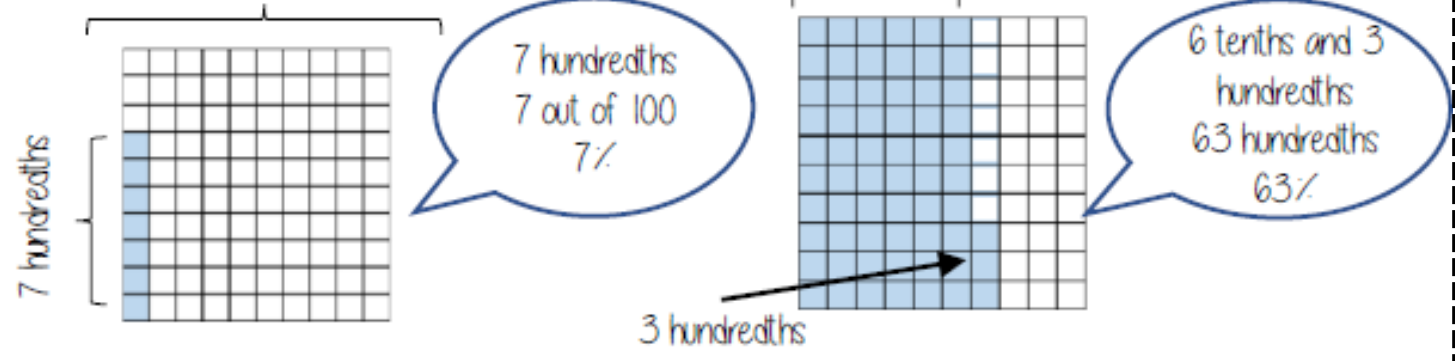


This will give you the answer in the simplest form

Be careful of recurring decimals
 e.g. $\frac{1}{3} = 0.333333$
 $\frac{1}{3} = 0.\dot{3}$
 The dot above the 3

Percentages on a hundred grid

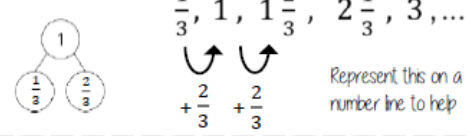
100% = a whole = 100 hundredths



Add/Subtract fractions Same denominator

$$\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$$

Sequences



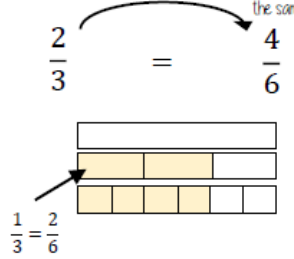
Add/Subtract from integers

$$1 - \frac{2}{6} = \frac{4}{6}$$

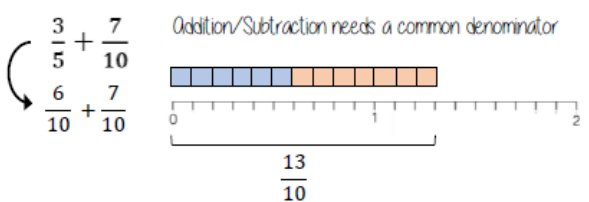
$$3 + \frac{1}{6} = 3\frac{1}{6}$$

The denominator indicates the number of parts a whole is made up of

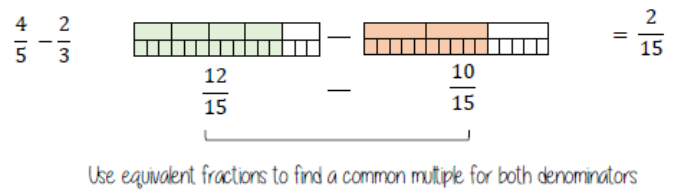
Equivalent fractions Numerator and denominator have the same multiplier



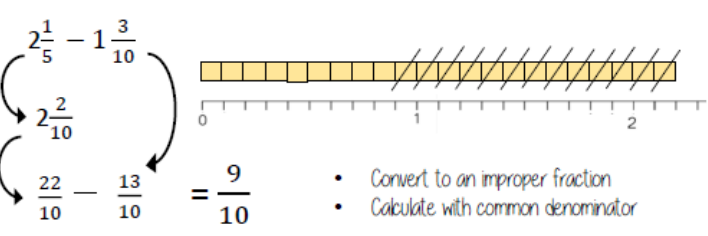
Add/Subtraction fractions (common multiples)



Add/Subtraction any fractions



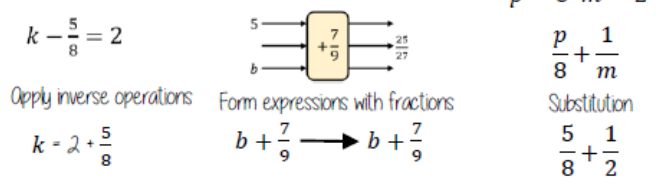
Add/Subtraction fractions (improper and mixed)



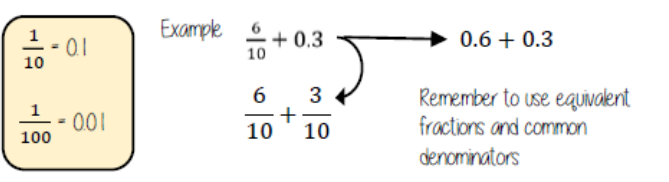
Partitioning method

$$2\frac{1}{5} - 1\frac{3}{10} = 2\frac{2}{10} - 1\frac{3}{10} = 2\frac{2}{10} - 1 - \frac{3}{10} = 1\frac{2}{10} - \frac{3}{10} = \frac{9}{10}$$

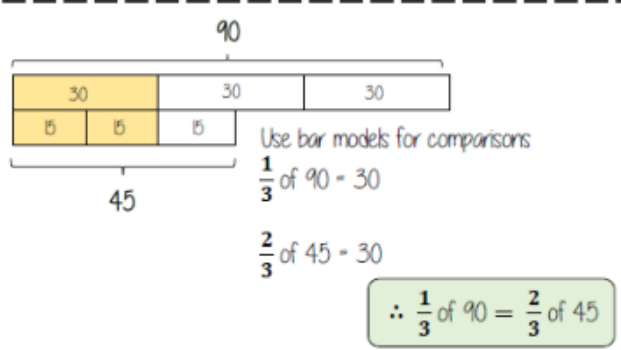
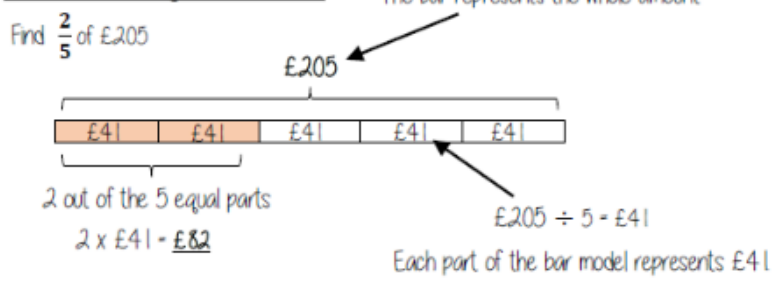
Fractions in algebraic contexts



Fractions and decimals



Fraction of a given amount



Use a fraction of amount

