Adding and subtracting fractions

You must have a common denominator. A common denominator can be found by choosing the LCM of the two numbers. Multiply the numerator by the same as the denominator before adding the fractions.

$$\frac{1}{8} + \frac{2}{3}$$
Rewrite with common denominator
$$\frac{3 \times 1}{3 \times 8} + \frac{2 \times 8}{3 \times 8}$$
Add the numerators
$$\frac{3}{24} + \frac{16}{24}$$

$$\frac{19}{24}$$

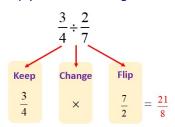
Multiplying fractions

The easiest operation with fractions.

- Multiply the numerators
- 12) Multiply the denominators
- Simplify

$$\frac{1}{4} \times \frac{2}{3} = \frac{1 \times 2}{4 \times 3} = \frac{2}{12} = \frac{\text{reduces}}{\text{to}} = \frac{1}{6}$$

Dividing fractions



Year 9 Higher Topic 4

Topic title: Fractions, Ratio and Percentages

Reciprocal of a number

The reciprocal of a number is 1 divided by the number.

The amount of interest changes with com-

Original amount x multiplier number of years

Luke leaves £3000 in the bank for 2 years.

It earns 2% compound interest per annum.

Calculate the total amount Luke has in the

This can also be used for depreciation. You

simply subtract the percentage from 100

bank at the end of the two years.

 $3000 \times 1.02^2 = £3132.20$

like decreasing percentages.

Examples:

Reciprocal of 7 is $^{1}/_{7}$ Reciprocal of 3 is $\frac{1}{3}$ Reciprocal of $\frac{3}{4}$ is $\frac{4}{3}$ Reciprocal of $\frac{5}{2}$ is $\frac{2}{5}$

Compound interest

pound interest.

Formula:

Example:

Ratio of an amount

Divide an amount in a given ratio.

Share £280 in the ratio 5:2

Add up the parts of the ratio 5+2=7

Share the amount by the total number of ratio parts. £280 \div 7 = £40

This is equivalent to one part of the ratio. We now multiply it by each part.

 $£40 \times 5 = £200$

 $f40 \times 2 = f80$

Problem solving involving ratios

Ratios can be applied to many situations.

When faced with problem solving you need

Increasing and decreasing by a percentage

Use the multiplier method.

Add or subtract the percentage to 100 then divide by 100 to get a decimal. Finally multiply by the original amount.

Example:

Increase £120 by 35%

100+35 = 135%

 $135 \div 100 = 1.35$

Simplifying a ratio

Divide all parts of the ratio by the same number until you cannot divide any more. Sometimes this takes a while sometimes is

very quick.

Examples:

40:30 25:55:75

5: 11: 15

to use your varied knowledge to apply a ratio in the right way.

Examples:

According to Charlie perfect cherry pies have a ratio of 240 cherries to 3 pies. How many cherries will Charlie need to make 9 pies?

Ratio's always increase in the same proportion so as 9 is a multiple of three we can multiply both parts by 3.

240:3 ?:9

 $240 \times 3 = 720$ so it's 720 cherries needed.

Direct proportion

Direct proportion means things increase at the same rate.

Example:

The amount of money Megan earns (M) is directly proportional to the amount of hours (h) she works.

After working 9.5 hours she earns £155.80 How many hours does she have to work to earn £688.80?

M α h α means directly proportional M = kh replace α with k-a constant $155.80 = k \times 9.5$

k = 16.40

688.80 = 16.4 x h h = 42 hours

Keep the first fraction the same. Change the divide for a multiply Flip the second fraction upside down. Now multiply the fractions together.