Year 8 Maths Topics 1,2&3
Ratio & Scale

Week 1

Ratio compares how many of one thing there is compared to another. It uses the **:** symbol and is pronounced as "to".
You will have heard the ratio 1:1(one to one) For every one teacher there is one pupil. The ratio 3:1 means there are 3 times as many of the first thing compared to the second thing. A clue the question is a ratio question is if it uses " For every … there are"
Ratios can be **simplified** by dividing each side by the same number. E.g. 32 pupils and 4 adults go on a school trip.

Pupils : Adults

$\div 4$ (32 : 4) $\div 4$

8 : 1

Week 2

When we share something out we don't always share it equally and some people can get more than others. In maths we divide an amount by a ratio by following 3 steps.

Step 1: Add the numbers in the ratio
Step 2: Divide the amount by your answer
Step 3: Multiply each number in the ratio by your new answer. (Share with ADaM to help you remember)

E.g. Share £120 in the ratio 2 : 3
Step 1: 2 + 3 = 5
Step 2: 120 ÷ 5 = 24
Step 3: x24 (2 : 3) x 24

£48 : £72

One person gets £48 and one person gets £72

Week 3

This week we are looking at **direct proportion**. This is when one thing increases or decreases at the same rate as another thing. Examples of this in real life are;

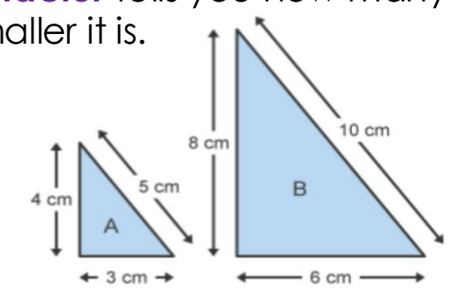
- Adjusting recipes
- Exchanging currency on holiday
- Buying goods in a shop etc.

If I need 3 eggs to make 6 pancakes I will need 6 eggs to make 12 pancakes, both have doubled. If I put half as many apples in my basket, it will cost half as much.
We can also use **conversion graphs** to help us make the connections.

Week 4

This week we are looking at enlargement.
Enlargement is making an item larger or smaller. The **scale factor** tells you how many times bigger or smaller it is.

E.g. Shape B is twice as big as shape A so has a scale factor 2.



We say these shapes are **similar** as they are in the same proportion.
In real life examples of this include;

- Maps
- Floor plans
- Toys and Models

Week 5

This topic we are going to practise multiplying and dividing fractions.
You can multiply and divide any fractions – they do not need to have the same denominator.

To multiply: You multiply the numerators (top numbers) and multiply the denominators (bottom numbers)

E.g. $\frac{3}{4} \times \frac{5}{8} = \frac{15}{32}$ $\frac{2}{5} \times \frac{5}{8} = \frac{10}{40} = \frac{1}{4}$

Sometimes you can simplify your answer.

To divide: We use Keep, Flip, Change (KFC) Keep the 1st fraction the same, flip the 2nd fraction upside down and change the sign to multiply. Calculate the answer.

E.g. $\frac{7}{8} \times \frac{2}{5} = \frac{7}{8} \times \frac{5}{2} = \frac{35}{16} = 2\frac{3}{16}$

Key words:

Ratio compares how many of one thing there is compared to another.
Simplify to make it easier to understand.
Direct Proportion is when one thing increases or decreases at the same rate as another thing.
Convert means switch from one thing to another thing.
Enlargement is making an item larger or smaller.
Scale tells you how many times bigger or smaller it is.
Product is another word for multiply.

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Week 1

Questions	Answers
What does Ratio compare?	Ratio compares how many of one thing there is compared to another.
What symbol is used for ratio?	The symbol used for ratio is : as is read as the word "to".
How do you simplify a ratio?	Ratios can be simplified by dividing each side by the same number.
What does the ratio 3:1 mean?	The ratio 3:1 means there are three times as many of one thing compared to another thing.
What is a clue the question might be a ratio question?	A clue that a question is a ratio question is if it contains the phrase " for every … there are …"

Week 2

Questions	Answers
How many steps are needed to divide a ratio?	Three steps are needed to divide a ratio.
What is the first step?	The first step is to add the numbers in the ratio together.
What is the second step?	The second step is to divide the amount in the question by your answer to step 1.
What is the third step?	The third step is to multiply each number in the ratio by your answer to step 2.
How could we remember the 3 steps?	We can use sharing with ADaM to remember the steps.

Week 3

Questions	Answers
What is direct proportion?	Direct Proportion is when one thing increases or decreases at the same rate as another thing.
Give a real life example of direct proportion	An example of direct proportion in real life is buying goods in a shop.
If you want to make double the recipe what do you need to do to the amount of ingredients?	To make double the recipe you will need to double the ingredients.
What kind of graphs can help us make connections?	Conversion graphs help us make connections between things.
If you buy half as many what happens to the price?	If I buy half as many the price will also half.

Week 4

Questions	Answers
What is enlargement?	Enlargement is making an item larger or smaller.
What does the scale factor tell you?	The scale factor tells you how many times bigger or smaller it is.
If shapes are similar what does that mean?	If shapes are similar it means they are in the same proportion.
If a shape is twice as big what scale factor was used?	If a shape is twice as big a scale factor of 2 was used.
Give an example of when scale factor is used in real life	An example of scale factor being used in real life is making model cars.

Week 5

Questions	Answers
Which number in a fraction is the numerator?	The top number of a fraction is the numerator.
Do the denominators need to be the same to multiply & divide fractions?	The denominators do not need to be the same to multiply or divide them.
How do you multiply fractions together?	To multiply fractions together you multiply the numerators and multiply the denominators.
What three steps are used for dividing fractions?	The three steps used for dividing fractions are Keep, Flip and Change.
What do you need to do to your answers if possible?	If possible you should always simplify your answers.

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