Edward Peake Church of England Middle School			
Topic: Multiplicative Change		**Year: 8**	**NC Strand: Proportion**

What should I already know?

- How to represent sequences in tables and graphs
- Equivalent Fractions
- How to use ratio language
- Know how to use the ratio symbol
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

- Solve ratio and proportion problems
- Represent functions graphically
- Recognise types of triangle, quadrilateral and polygons
- Draw and measure lines and angles accurately
- Construct triangles given SSS, SAS, ASA

What will I know by the end of the unit?

- How to solve problems involving direct proportion
- How to draw and us conversion graphs to answer questions
- How to convert between currencies using different methods
- How to draw and use direct proportion graphs and understand where I might find direct proportion in real life
- How to explain if two shapes are similar

- How to write the scale factor of lengths using ratio
- How to draw scale diagrams
- How to interpret scale diagrams
- How to interpret maps using scale factors
- How to interpret maps using ratios

Vocabulary

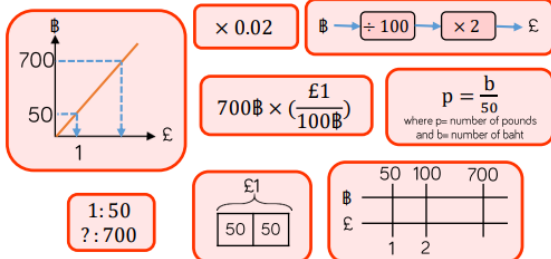|			
Ratio	is the comparison of two values of the same kind, which may be written as a to b, a:b or as a fraction a/b.	**Rate**	a ratio between two measurements using different units, for example, births per year, cost per person, words per minute.
Proportion	being in proportion means that two ratios or fractions are of equal value.	**Constant**	a quantity having a fixed value that does not change or vary, such as a number.
Double	multiplied by 2, twice as much	**Directly proportional**	the relationship between two quantities whose ratio remains constant.
Triple	three times. to multiply by three		
Linear	an equation whose graph is a straight line.	**Origin**	the point of intersection of the x and y axis on a coordinate or Cartesian plane. The coordinates of the origin are (0, 0).
Units	standard amount or quantity.		
Axis /Axes	real or imaginary reference line. (plural)		
Variable	a quantity that can change or vary, taking on different values.	**Orientation**	the angle of an object compared to compass points or the axes of a Cartesian plane.
Conversion	a number or formula used to convert quantities to equivalent amounts in a different system.	**Similar**	having the same shape but not necessarily the same size.
		Corresponding	In the same position
Approximation	to estimate a number, amount or total, often rounding it off to the nearest 10 or 100.	**Scale factor**	when comparing two similar geometric figures – the ratio of any two corresponding edge lengths.
Exchange rate	the value of one currency for the purpose of conversion to another	**Enlargement**	a transformation where a shape is made larger (or smaller if reversed) without changing its position or direction.
Estimate	to make an approximate calculation, often based on rounding.	**Object**	the shape before the enlargement
Currency	a system of money in general use in a particular country.	**Image**	the shape after the enlargement

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Sterling	British money	**Length**	distance from one end to the other.How long something is.
Distance	the length between two points (or objects).	**Not to scale**	is drawn with no scale.
Metric	a decimal system of measurement	**Plan**	a drawing of something as viewed from above

Key Information	
Students will develop their skills to use multiple representations to solve problems that involve multiplicative change.	

Diagram

1 British pound (£) is approximately 50 Thai Baht (฿)
Explain how each of these representations could be used to convert
700฿ into pounds. Why do they all work?

Investigate/Homework tasks

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- Homework will be set from the booklet issued by your teacher
- You should complete at least 30 minutes of maths tasks on Maths Whizz (not games). Please attend help sessions if you do not have access to the internet at home
- Additional work you could complete:
  - Find out more about the meaning of the vocabulary list using http://www.amathsdictionaryforkids.com/
- To challenge yourself:
  - Investigate the key questions typed in blue text
  - Explain the key questions typed in purple text

Key Questions

- How is direct proportion similar to direct proportion?
- If two variable quantities are in direct proportion, what happens if you halve the value of one variable?
- What happens if you triple the value of one variable?
- Is direct proportion liked to ratio?
- Do all conversion graphs start at the origin?
- Is it important to label axis on conversion graphs?
- What should the limits of your axes be?
- How is the conversion of pounds to dollars different to pounds to dollars?
- How do conversion rates relate to ratios?
- Is converting a currency an example of direct proportion?
- Do all direct proportion graphs start at the origin?
- How might we use the graph to answer questions that use values beyond those on the axes?
- Would a map with a scale of 1: 25,000 need to be bigger or smaller than a map with scale of 1: 1250 showing the same features?

- Why is important to label the axes?
- What do you notice about the angles in a pair of similar shapes?
- If shapes are not drawn to scale how can we show they are similar?
- How can labelling the vertices be useful with similar shapes?
- How does a scale factor compare to a ratio?
- What range of scale factors would make an image smaller?
- If the lengths of a shape have tripled, what is the scale factor?
- Are scale diagrams always smaller versions of the original?
- Why is a scale diagram useful?
- Describe a method for finding an appropriate scale?
- What does the scale 1:25,000 mean on a map? Can you express it as a ration in mixed units?