
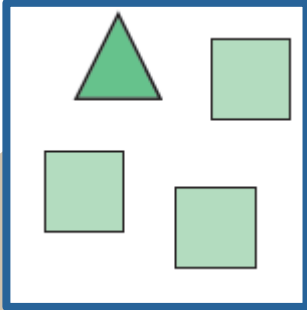


Spring 1 OVERVIEW YEAR 6 – Maths

Term 1 Book– Goodnight Mr Tom

Block 1 Number: Ratio		Guide Time = 3 Weeks
Assessment:	Weekly Arithmetic Tests Termly Year 6 tests SATs practice papers (reasoning and problem solving)	Very Important Points (VIPs): <p style="text-align: center;"><u>Ratio Language</u></p> <div style="text-align: center;">  </div> <p>Ratio uses specific language to compare and show the relationship between two quantities.</p> <p>'For every 1 circle, there are 2 triangles'.</p> <p style="text-align: center;"><u>Ratio and fractions</u></p> <div style="display: flex; align-items: center;"> <div style="border: 2px solid blue; padding: 10px; margin-right: 10px;">  </div> <div style="border: 2px solid blue; padding: 5px;"> <p>Ratio of triangles to squares: 1:3</p> <p>$\frac{1}{4}$ of the shapes are triangles.</p> </div> </div>
Links to prior learning (sequencing) and canon book	<u>Canon Book-Goodnight Mr Tom</u> Children will use their understanding of multiplication and division to understand that ratio is concept that is derived from comparison between to integers. Children will understand that a ratio shows the relationship between two values and can describe how one is related to another. They will start by making simple comparisons between two different quantities. For example, they may compare the number of boys to girls in the class and write statements such as, "For every one girl, there are two boys".	
Links to other learning (cross fertilisation)	<u>History</u> – timelines and the understanding of the progression of events and dates of WWII; comparing the events of WWII and prior events, which contributed to the beginning of the war. The geograph of Europe as well as the rest of the world will be linked through the comparison of distance, size and population. <u>Active Maths</u> - provide additional maths questions / problems based around times tables and ratio VIPs, which allows children to apply their knowledge and understanding mentally at another time / lesson e.g. in PE. <u>Science / Geography</u> – exploring the voltage and ampage of electrical currents through the use of mathematical reasoning. Exploring the planets and comparing/ measuring temperatures /distances through investigations and from analysing data in	

tables / on graphs from countries / cities around the world, in which they can interpret the data and draw conclusions from during investigations.
 Compare contemporary scientific knowledge to that of the 1930s and 1940s.

Children will be taught to use their decimal knowledge to interpret and compare voltages and Ohm's Law in order to

Thematic Questions:

The World Beyond Us:

How did mathematics contribute the space race between the East and West after the end of WWII? Why were former Nazi scientists brought to the United States after the war to help in the creation of Nasa? Why were their skills so sought after?

The World Around Us:

How does our number system in Britain compare to that of Japan? How did Japanese Emperor Hirohito encourage mathematical thinking and scientific reasoning through his reign?

Modern Britain:

Explore where you would use your knowledge of ratio and proportion in modern day Britain. How will this knowledge help in your chosen career in the future? Which recreational activities and careers rely on ratio as a concept to function?

How has our understanding of maths developed since the 1930s and 1940s? What scientific and technological advancements can be attributed to our better understanding of mathematics?

Healthy Bodies & Healthy Minds:

Do you think the resting heart rate of the average British citizen has improved or deteriorated since the end of WW2? How could we use mathematics to record and convey this data?

Culture:

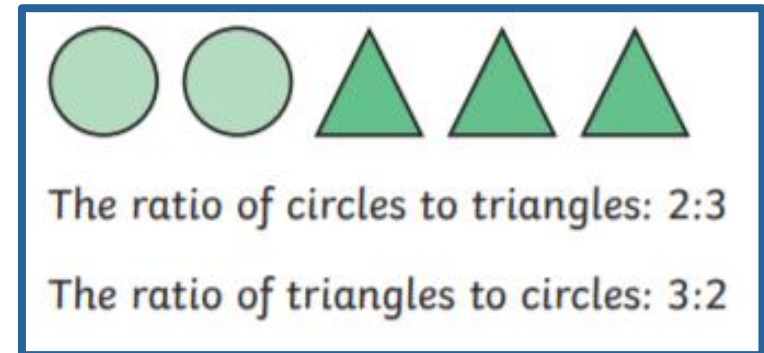
Explore the causes of WWII. What cultural differences and ideologies contributed to the conflict? Is the prominence of mathematics in education the same for every culture? Why do you think this is? How are numbers written in other religions and cultures? Why is this?

Technology in Action:

How was mathematics used throughout WWII to gain the upper hand in battle, espionage and logistical management? How is mathematics

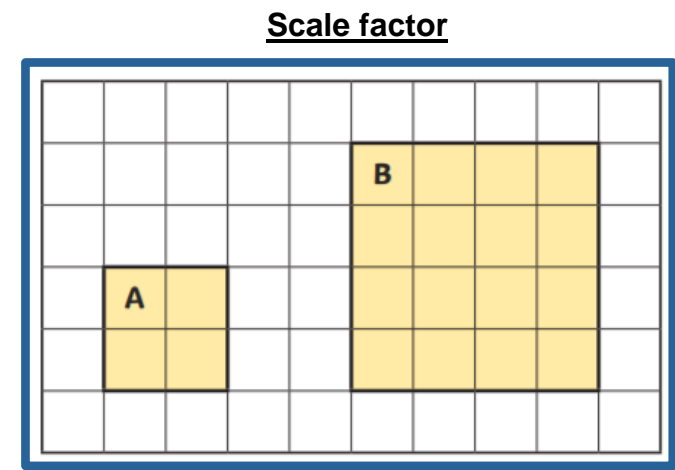
When a ratio has been written in fraction form, the fraction should be simplified. If it is an improper fraction, we do not change it to a mixed number.

Ratio symbol



The ratio symbol is a colon and compares the integers on either side.

	<p>used in the design and mass manufacture of weapons, vehicles and supplies?</p>
<p>Links to future learning</p>	<p>The skills and knowledge taught in this block will be built upon and deepened throughout the year and will begin to provide a platform for reasoning and problem solving questions based on ratio and proportion as well as algebra. Children will have a secure understanding of the formal methods of finding ratio and proportion, which will allow them to better understand the concepts behind algebra.</p>
<p>Character/Wider Development ('50 things', cultural capital, skills)</p>	<p>Relate and use this knowledge and understanding in real-life contexts and make these relevant and purposeful links: when visiting a restaurant or cinema; exploring the population of a range of countries, voting systems and betting. <u>Communicate in a different language</u> – Spanish: children will relate their mathematical understanding of integers, shape and objects to the Spanish number system in their language. <u>Taking part in time travel</u> – The above can also be applied to curriculum learning on rationing, battle participation numbers and planning logistics in wartime.</p>



'Shape A has been enlarged by a scale factor of 2 to make shape B'.

Scale factor is the enlargement or reduction of a 2d shape.


Fat Questions:

How could ratio have been used to plan for the distribution of war materials during the arms race of the 1930s?

Where can ratio be seen throughout our daily lives?

How could scale factor have been used in the designing and manufacture of tanks and planes during WWII?

OVERVIEW OF TEACHING SEQUENCE

Key Facts / Learning	Learning Focus or Key Question	Learning Outcomes (NC)	Key Words/ Vocabulary	Greater Depth/SEND	Misconceptions	Activities and Resources
Weeks 10 – 11 (8 lessons) Ratio	To use ratio language Ratio and fractions Introducing the ratio symbol Calculating ratio Using scale factors Calculating scale factors Ratio and proportion problems	To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. To solve problems involving similar shapes where the scale factor is known or can be found. To solve problems involving unequal	Ratio Proportion Comparison Compare Relative size Missing value Scale factor Proportionality Unequal sharing Enlargement Reduction	GD: Children are introduced to more complex and wider reasoning and problem-solving questions / concepts. Children will have multi-step reasoning problems to solve, applying prior learning as well as current. Children will need to use depth of mathematical knowledge to provide clear mathematical explanation and reasoning to problems.	<ul style="list-style-type: none"> Children's understanding of ratio amounts are often confused with fractions involving the same digits. For instance 2 : 3 is confused with $\frac{2}{3}$ or $1 : 2 = \frac{1}{2}$. When solving problems involving proportion children tend to struggle with forming a ratio. For instance, three apples cost 45p would form the ratio apples: cost. When writing ratios into the form 1: n children incorrectly assume that n has to be an integer or greater than one. 	Pre-teaching of key concepts to allow students to commence tasks immediately within lessons. DTMs to be created using the following resources and based on CTs AFL of their class/cohort. Further cross-curricular links can be made to the 6 these during these also, for a wider context. WRMH: https://whiterosemaths.com/wp-content/uploads/2019/SoLs/Primary/Year-6-2018-19-Spring-Term-Block-6-FINAL.pdf Third Space Learning: https://thirdspacelearning.com/ Classroom Secrets: https://classroomsecrets.co.uk/category/maths/year-6/spring-block-6-ratio/ NCETM – resources / activities for DTMs  Mastery_Assessment_Y5_High_Res.pdf

	<p>Ratio and proportion problems 2</p>	<p>sharing and grouping using knowledge of fractions and multiples.</p>		<p>SEND: Assessment and analysis of prior knowledge is needed. Teacher to assess and base planning and resources in a bespoke manner.</p> <p>Children will focus and use pictorial and practical resources to support and develop their understanding of ratio and proportionality. Children will focus on recognising and understanding the value of integers, through use of number lines and context to support their understanding.</p>		<p>Maths Frame: https://mathsframe.co.uk/en/resources/category/379/Y6-Ratio-and-proportion Slides / resources saved on trust shared.</p>
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Context (big picture learning):

Mathematics is an important, creative discipline that helps us to understand and change the world. We want all of our children within the Pontefract Academies Trust to experience all that mathematics has to offer and to develop a sense of curiosity about the subject with a clear understanding. When they leave us we want them to continue their love of maths and use it continuously and positively in their future lives.

We foster a positive 'growth mind-set' attitude and we promote the fact that we believe that all children can achieve in mathematics. We teach for secure and deep understanding of mathematical concepts through manageable, bespoke steps and cross fertilize at every opportunity. VIPs (Very Important Points) are implemented in every lesson to ensure knowledge and skills are revisited and retained over time.

We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated reasoning and problem solving activities. At our school, the majority of children will be taught the content from their year group only. They will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways.

[Folder name and link to resources: Trust shared > Primaries > Departments > KS2 > Planning Cycle B > Autumn 1 > Maths > Year 5 > Block 1](#)

[Week 1 L1-4](#)

[Week 2 L5-8](#)

Year 6 Knowledge Organiser: Ratio

Fat Questions:

How could ratio have been used to plan for war materials during the arms race of the 1930s?

Where can ratio be seen throughout our daily lives?

How could scale factor have been used in the designing and manufacture of tanks and planes during WWII?

Key vocabulary

Ratio

Proportion

Comparison

"For every...there are".

Scale

Enlargement

Reduction

Unequal

To see the full list of vocabulary, please refer to our resource walls.

Intent

We aim to develop and progress our skills in ratio and proportion in order to equip us with the ability to solve real world problems that require a mathematical solution. With these skills, we can help to improve the world in which we live.

VIPs (very important points)

Ratio- A **ratio** is a way to show a relationship or compare two numbers of the same kind. We use **ratios** to compare things of the same type. For example, we may use a **ratio** to compare the number of boys to the number of girls in your classroom.

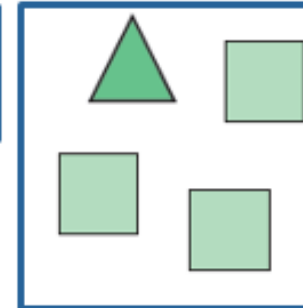
Ratio language



Ratio uses specific language to compare and show the relationship between two quantities.

'For every 1 circle, there are 2 triangles.'

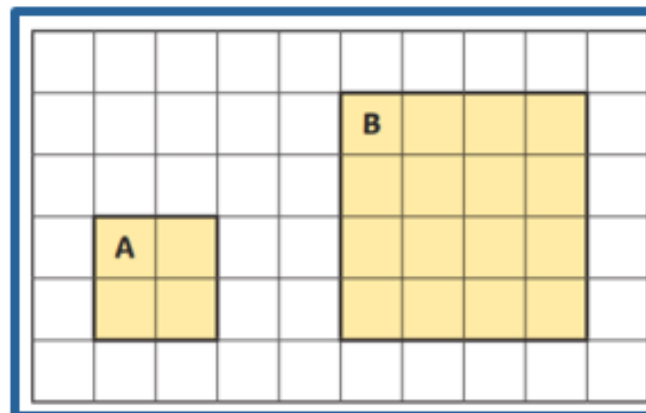
Ratio and fractions



Ratio of triangles to squares: 1:3
 $\frac{1}{4}$ of the shapes are triangles.

When a ratio has been written in fraction form, the fraction should be simplified. If it is an improper fraction, we do not change it to a mixed number.

Scale factor

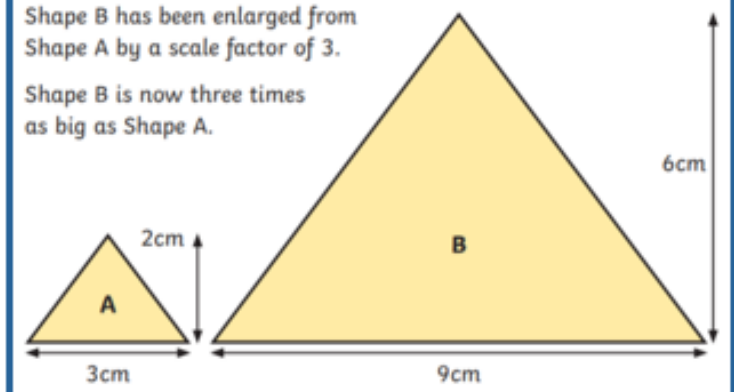


'Shape A has been enlarged by a scale factor of 2 to make shape B.'

Scale factor is the enlargement or reduction of a 2d shape.

Shape B has been enlarged from Shape A by a scale factor of 3.

Shape B is now three times as big as Shape A.



Our prior knowledge of 2d shapes can help us to calculate the correct scale factor of a shape.

A square has equal sides and so its lengths must be scaled equally.