TERM 2 OVERVIEW YEAR 6 – Maths

Term 2 Book – Goodnight Mr Tom

Topic(s) – Block 5 Measurement: Perimeter, Area and Volume	Guide Time = 2 Weeks

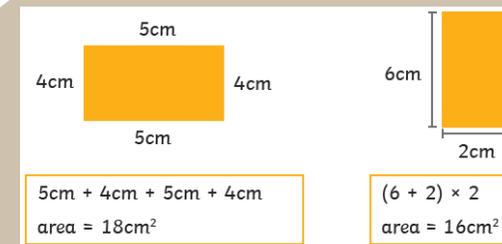|		
Assessment:	WRMH End of block / term assessments Weekly Arithmetic Tests / Skills checks End of KS2 Statutory tests – year: 2018 and 2019. Daily retention activities / quizzes to ensure children are revisiting prior learning.	**Very Important Points (VIPs):** **Perimeter** is the total distance around the edge of a 2D shape. It is always calculated by adding up the length of each of the sides. **Area** is the term used to define the amount of space taken up by a 2D shape or surface. It is measured area in square units, e.g.**:** cm² or m². **Volume** is the amount of 3D space an object occupies or takes up. It is measured in cubic units to estimate volume, e.g.: cm^3
Links to prior learning (sequencing) and canon book	<u>Canon Book – Goodnight Mr Tom</u> Children will have prior knowledge of converting between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]. Children will have prior knowledge of understanding and using approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Children will have prior knowledge of measuring and calculating the perimeter of composite rectilinear shapes in centimetres and metres. Children will have prior knowledge of calculating and comparing the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes. Children will have prior knowledge of estimating volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]. Children will have prior knowledge of solving problems involving converting between units of time. Children will have prior knowledge of using all four operations to solve problems involving measure [for example, length, mass, volume, money using decimal notation, including scaling.	**Rectilinear shapes** are shapes that have lots of sides that meet at right angles. They usually look like two or more rectangles that have been joined together. **A parallelogram** is a type of quaritaleral (a four-sided two-dimensional shape). **Perpendicular height** is the height of the pyramid measured at a right angle from the base. **Formula** is a group of mathematical symbols and numbers that show how to work something out**.** **Perimeter of rectangles:** Perimeter = length + width + length + width OR 2(length + width)
	<u>History</u> – children can apply and compare the scale of desruption that occured during The Blitz to that of other areas of the country, based on the area and perimater of this.	

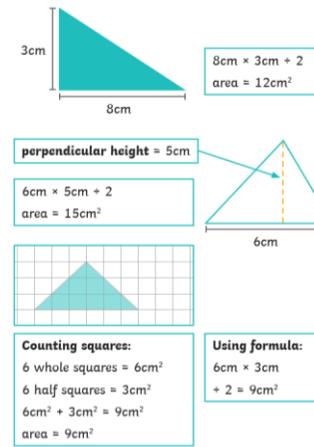| Links to other learning (cross fertilisation) | Childrne can further explore the scale of the evacuation and to which areas across the countryin which this occured.
DT – children will apply their knowledge of perimeter and area when designing, creating and building their own WWII air-raid shelter. When baking and cooking, children can apply their understanding of volume and applying the formulae to
Active Maths - provide additional maths questions / problems based around perimeter, area and volume. Consolidate and teach further concepts in an active way, which allows children to apply their knowledge and understanding mentally at another time / lesson.
Geography – exploring the scope of World War II through the countries involved and calculating the area of allies and axis. They can then make comparisons between these areas overtime and the changes / growth of the two.
Children will further examine and explore the volume of food rationing in the first instance and the reasons behind this. They can calulate and compare the volume of different food groups.

Thematic Questions:
The World Beyond Us:
Compare the surface area and volume of each planet in our solar system.
The World Around Us:
How does the surface area of each of the countries involved in world war two compare? Would the size of each country help or hinder their ability to partake and fight in World War Two?
Modern Britain:
Investigate the scale (area / perimeter) of devastation the bombing during The Blitz had on London. How would this compare to that scale of devastation today? How did / would this have impacted on the people of the city? Would it still have impacted them in the same way today?
Healthy Bodies & Healthy Minds:
How could your knowledge of perimeter, area and volume impact your daily lifestyle and mental wellbeing in a positive way?
Culture:
Do all cultures / religions and countries calculate perimeter, area and volume in the exact same way? Explain your reasons, with evidence. Is this aspect of Maths seen as important as others, for example number? | **The area of a rectangle:**
Area of a rectangle = length x width
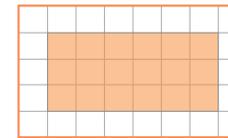
Counting squares:
area = $18cm^2$
Use formula:
$6cm \times 3cm$
area = $18cm^2$
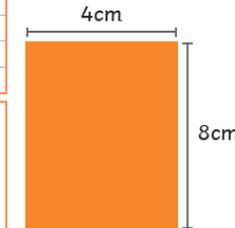
$8cm \times 4cm$ area = $32cm^2$

Perimeter and area:
Shapes with the same area can have different perimeters:

area = $8cm^2$ perimeter = 12cm
area = $8cm^2$ perimeter = 18cm

Shapes with the same perimeter can have different areas:
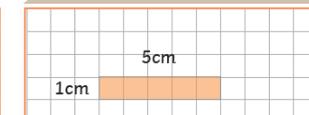
area = $8cm^2$ perimeter = 12cm
area = $5cm^2$ perimeter = 12cm |

|	**Technology in Action:** How has technology changed since World War II, to help and allow us to calculate perimeter, area and volume on a large scale across a wide range of industries? Prove it! The perimeter, area and volume can always be calculated by technology / computers for anything.
Links to future learning	The skills and knowledge taught in this block will be built upon and deepened throughout the year and continue to provide a secure platform formeasurement, with clear, imperative links to real-life contexts, which allow children to reason. Children will have a secure understanding of measurement and calculating in a range of contexts, which they are able to apply to Year 7+ mathematical learning.
Character/Wider Development ('50 things', cultural capital, skills)	Relate and use this knowledge and understanding in real-life contexts and make these relevant and purposeful links: Children can explore their school grounds: the size of the whole grounds and then each area. Children could then apply their mathematical understanding here to design new areas. This process can be applied to that of their home and garden. Communicate in a different language – Spanish: children will relate their mathematical understanding of perimeter and area to compare the perimeter and area of Spanish governed countries to those in the British commonwealth. They can discuss whether these have changed overtime and why. Visit a person in their place of work: children could visit an architect where they are able to explore and find out more information regarding the designing process and how they knowledge of perimeter, area and volume are needed alongside other key mathematical skills. Make and sell a product- children will need to design, measure, create and evaluate a product they will produce. Childrne will need to use and apply their knowledge of measurement (using and applying the correct unit of measure) to calculate the perimeter and area of materials needed in order to produce their product. They can calculate the volume of their product also. Visit a castle – children can explore the grounds of the castle (making comparisons to then and now). They can calculate the perimeter of the castle itself, the castle grounds and the difference in perimeter of both of these overtime. They can then repeat this process with the area to make comparisons and discuss the implications / impact of this. They

The area of a triangle:

Area of a triangle = $\dfrac{\text{base x height}}{2}$

8cm × 3cm ÷ 2
area = 12cm²

perpendicular height = 5cm

6cm × 5cm ÷ 2
area = 15cm²

6cm

Counting squares:
6 whole squares = 6cm²
6 half squares = 3cm²
6cm² + 3cm² = 9cm²
area = 9cm²

Using formula:
6cm × 3cm
÷ 2 = 9cm²

Area of a parallelogram:

Area of a paralellogram = base x perpendicular height
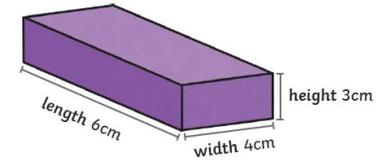
A parallelogram can be transformed into a rectangle.

6cm

base = 12cm

base = 12cm

perpendicular height = 6cm

12cm × 6cm = 72cm²
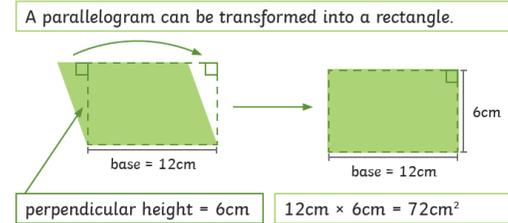
Volume – Counting cubes:

= 1cm³   11cm³   27cm³
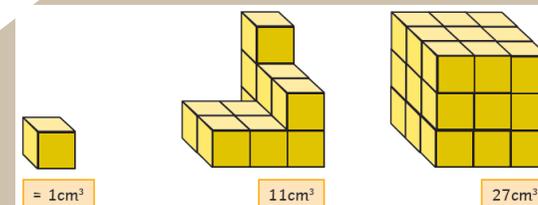
can then compare these to other significant castles of history and our country.

Volume of cuboids:
The volume of a cuboid = length x width x **height**

Multiply dimensions in **any** order:
3cm × 6cm × 4cm
volume = 72cm³

Fat Questions:
Explore measurement – why is this a vital aspect of learning for your everyday life? How can it support us in life now and in the future?

True or false? Knowledge and understanding of perimeter, area and volume is vital to your learning when computing?

How could the Allies have benefitted from and used their knowledge of perimeter, area and volume to ensure their defeated the axis at a quicker rate?

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
Week 1 - 2 Measurement: Perimeter, area and volume	To find and draw rectilinear shapes that have the same area. To calculate the area and perimeter of rectilinear shapes. To use estimation to work out the area of different triangles by counting. To use formulae to calculate the area of a right-angled triangle. To use formulae to calculate the	Recognise that shapes with the same areas can have different perimeters and vice versa. Recognise when it is possible to use formulae for area and volume of shapes. Calculate the area of parallelograms and triangles. Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm^3, m^3 and	Length: length, width, height, depth, breadth long, short, tall, high, low wide, narrow, deep, shallow, thick, thin longer, shorter, taller, higher… longest, shortest, tallest, highest… far, further, furthest, near, close distance apart/between, distance to… from… edge, perimeter, circumference kilometre (*km*), metre (*m*) centimetre (*cm*), millimetre (*mm*) mile, yard, feet, foot, inch ruler, metre stick, tape measure, compasses	Use of real-life contexts should always be used to support all children's learning as they are able to see the relevance and purpose of this learning and apply it to an 'everyday' situation. GD: Children are introduced to more complex and wider reasoning and problem-solving questions / concepts. They will begin on this in order to develop and apply their depth in knowledge and understanding immediately. Children will have multi-step reasoning problems to solve, applying prior learning as well as current. Children will need to use depth of mathematical	If children do not master basic prior understanding of 2D and 3D shapes taught earlier in the key stage, they will struggle with the understanding of finding measures linked to them and often confuse their understanding and their application. So even if you are teaching year 6, it is important to go back to 'basics' and children's prior learning to ensure they understand the essential knowledge and terminology. Children will confuse their understanding of perimeter and area and could therefore misinterpret shapes having the same area and/or perimeter. Children will confuse the formula for calculating the perimeter and area of rectangles. Children will confuse the unit measurements for area and volume.	Pre-teaching of key concepts is vital to allow for children to commence tasks immediately within lessons and ensure prior learning is revisited and secure. DTMs to be created using the following resources and based on CTs AFL of their class/cohort. Further cross-curricular links can and should be made to the 6 themes, for a wider context, which develops children's wider development / character. WRMH: click here Third Space Learning: https://thirdspacelearning.com/ Classroom Secrets: click here NCETM – resources / activities for DTMs Mastery_Assessment_ Y6_High_Res.pdf Maths Frame: click here Slides / resources saved on trust shared.

area of any triangle. To find and calculate the area of a parallelogram. To understand volume through counting cubic units. To use formula to calculate the volume of a cuboids. A range of models / contexts / problems will be used for children to develop their understanding of perimeter, area and volume.	extending to other units (mm^3, km^3)	cubic mm, cm, m, Km Area: area, covers, surface square centimetre (*cm2*), square metre (*m2*) square millimetre (*mm2*) perimeter Volume: full, half full, empty, space, litre (*l*), half-litre, centilitre (*cl*), millilitre (*ml*) pint, gallon container, measuring cylinder	knowledge to provide clear mathematical explanation and reasoning to problems. SEND: Assessment and analysis of prior knowledge is needed. Teacher to assess and base planning and resources in a bespoke manner. Children will focus on and use concrete and pictorial resources to support and develop their understanding. Allowing them to complete measures and work practically to support and secure their understanding.	When calculating the area of a triangle children will not divide by 2, resulting in them finding the area of a rectangle. Children do not use all of the given measurements and roughly estimate some. Children will only apply their knowledge of finding the area of a quadrilateral instead of using the formula to find the area of a parallelogram. Children will only multiply the length and width together when calculating the volume and not apply the formula: length x width x height. *AFL to be consistently used, to address misconceptions found within own classes / cohorts of children and address where applicable.*	

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 > Spring 1: Goodnight Mr Tom > Maths > Year 6

Week 1 L1-4

Week 2 L5-8