

Summer Term 2 Overview Year 5 – Maths

Summer Term 2 Book – Mortal Engines

Topic: Block 4 Measurement – Converting Units		Guide Time = 2 Weeks
Assessment:	<p>WRMH End of block / term assessments</p> <p>Weekly Arithmetic Tests / Skills checks</p> <p>NFER Summer assessments.</p> <p>Daily retention activities / quizzes to ensure children are revisiting prior learning.</p>	<p>Very Important Points (VIPs):</p> <p>'Kilo' in units of length means a thousand.</p> <p>Mass – refers to the weight of an object. It is measured in grams (g) and kilograms (kg).</p> <p>Length – is distance. How far from end to end. Or from one point to another.</p> <p>Capacity – the amount that something can hold. The amount that something can hold. Usually it means volume.</p> <p>The metric system is used to measure the length, weight or volume of an object. Length is measured in millimetres (mm), centimetres (cm), metres (m) or kilometres (km).</p> <p>Imperial units of measurement were used in the UK. The imperial system has gradually been replaced by the metric system, which is easier to understand as it deals with tens, hundreds and thousands.</p> <p>Length – inch, foot, yard, mile</p> <p>Mass – ounce, pound, stone</p> <p>Capacity – pint, gallon</p> <p>Units of length: 1000m = 1km 100cm = 1m 10mm = 1cm</p> <p>Converting length: To convert from metres into kilometres children must divide by 1000. To convert from kilometres into metres children must multiply by 1000.</p> <div> $\frac{1}{10} \text{ km} = 0.1 \text{ km} = 100 \text{ m}$ $\frac{1}{4} \text{ km} = 0.25 \text{ km} = 250 \text{ m}$ $\frac{1}{2} \text{ km} = 0.5 \text{ km} = 500 \text{ m}$ $\frac{3}{4} \text{ km} = 0.75 \text{ km} = 750 \text{ m}$ </div>
Links to prior learning (sequencing) and canon book	<p><u>Canon Book – Mortal Engines</u></p> <p>From their Year 4 learning, children will have prior knowledge of converting between different units of measure <i>[for example, kilometre to metre; hour to minute]</i>.</p> <p>Children will have prior knowledge of measuring and calculating the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>Children will have prior knowledge of finding the area of rectilinear shapes by counting squares.</p> <p>Children will have prior knowledge of estimating, comparing and calculating different measures, including money in pounds and pence.</p> <p>Children will have prior knowledge of time: reading, writing and converting time between analogue and digital 12- and 24-hour clocks as well as solving problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days.</p>	
Links to other learning (cross fertilisation)	<p><u>History</u> – children can analyse time differences between The Stone Age, Iron age and Bronze age and make comparisons to the length of these time periods. Children can explore the length of time these occurred in history compared to 2021.</p> <p>Children can further explore knowledge of time and measures during each of these time periods.</p> <p><u>DT</u> – children will apply their knowledge of measure to explore the weight of the different weight of motorised cities and make comparisons between them. They can explore distances these cities may travel compared to the distance and speed the airborne cities fly. Children could create their own airborne or motorised city based on cities they have explored in the book, using a range of recycling, which would support the fight against climate change.</p>	



Active Maths - provide additional maths questions / problems based around converting units of measure.
Consolidate and teach further concepts in an active way, which allows children to apply their knowledge and understanding mentally at another time / lesson.

Thematic Questions:

The World Beyond Us:

How could units of measure change in the future? Would this help or hinder our mathematical development?
Could our units of measure still be used to measure length and mass on the moon or other planets in the solar system? Would this be done in the same way as here on Earth? Explain your reasoning.

The World Around Us:

How has our understanding of time changed?
How would time have impacted the people living on the different motorised/airborne cities?

Modern Britain:

How has our knowledge and understanding of units of measure changed since the Stone age, Iron age and Bronze age?

Healthy Bodies & Healthy Minds:

How can time help and hinder our mental health and wellbeing? Why is balancing time effectively important to ensure we maintain a healthy mind?

Culture:

Explore and consider different countries approaches to metric and imperial units of measure.

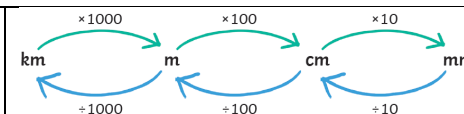
Technology in Action:

Compare how technology has helped or hindered our understanding of measures and converting between them.

How would technology and our knowledge of converting between a variety of units of measure, helped people build their motorised / airborne cities?

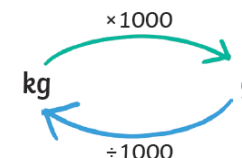
Links to future learning

The skills and knowledge taught in this block will be built upon and deepened throughout the year and support children's learning when in Year 6 and beyond. It will continue to provide a secure platform in a wider context for whole number and decimal place value, decimal and fraction equivalence, with clear, imperative links to real-life contexts, which allow children to reason.



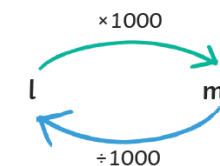
Units of mass: 1000g = 1kg

Converting mass: To convert from grams into kilograms children must divide by 1000.
To convert from kilograms into grams children must multiply by 1000



Units of capacity: 1000ml = 1l

Converting capacity: To convert from litres into millilitres children must multiply by 1000.
To convert from millilitres into litres children must multiply by 1000.



Units of time:

1 minute = 60 seconds
1 hour = 60 minutes
24 hours = 1 day
7 days = 1 week
1 Fortnight = 2 weeks
52 weeks = 1 year

$$\frac{1}{10} \text{ kg} = 0.1 \text{ kg} = 100 \text{ g}$$

$$\frac{1}{4} \text{ kg} = 0.25 \text{ kg} = 250 \text{ g}$$

$$\frac{1}{2} \text{ kg} = 0.5 \text{ kg} = 500 \text{ g}$$

$$\frac{3}{4} \text{ kg} = 0.75 \text{ kg} = 750 \text{ g}$$

$$\frac{1}{10} \text{ l} = 0.1 \text{ l} = 100 \text{ ml}$$

$$\frac{1}{4} \text{ l} = 0.25 \text{ l} = 250 \text{ ml}$$

$$\frac{1}{2} \text{ l} = 0.5 \text{ l} = 500 \text{ ml}$$

$$\frac{3}{4} \text{ l} = 0.75 \text{ l} = 750 \text{ ml}$$

$$\frac{1}{100} \text{ l} = 0.01 \text{ l} = 10 \text{ ml}$$

	<p>Children will further development their understanding and ability to solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate. They will continue to use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places.</p> <p>Children will also develop their understanding of metric and imperial conversions to convert between miles and kilometres and they will build upon existing knowledge and develop their ability to calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]. These will be calculated in a range of contexts, which they are able to apply to Year 6 mathematical learning and beyond.</p>	<p>1 year = 365 days / 12 months 1 leap years = 366 days 1 decade = 10 years 1 Century = 100years 1 Millennium = 1000 years</p> <p>Fat Questions: Explore the difference between metric and imperial units of measure. How do their use vary between countries in our modern day world?</p> <p>True or false? Units of measure did not exist during the Iron age, Stone age, Bronze age.</p>
Character/Wider Development ('50 things', cultural capital, skills)	<p>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.</p> <p><u>Communicate in a different language</u> – Spanish: children will relate their mathematical understanding of decimal numbers and place value to speak and recognise these in Spanish and link to their understanding of money in Spanish.</p> <p><u>Visit a person in their place of work</u>: children could research and visit a range of people in their place of work, which links to the use of money i.e. a bank or someone who works with computer and spreadsheets. The use of decimal numbers could also link to the work completed by a programmer who designs apps.</p> <p><u>Travel on a range of different transport</u> – children can explore and apply their understanding of decimal place value through money and how this is used and applied before, during and after their journeys to ensure they can travel.</p> <p><u>Jump over the Waves</u> – children could explore the water tides and timings of these; using and applying their understanding of them alongside decimal place value. They can then find equivalent fractions and percentages to support this.</p>	

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: Converting Units	<p>To convert between units of length: metres and kilometres.</p> <p>To convert between units of mass: grams and kilograms.</p> <p>To recognise and convert between units of length and mass: metres and millimetres; litres and millilitres.</p> <p>To convert between different metric units of length; choosing the appropriate unit for measurement.</p>	<p>Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml].</p> <p>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</p> <p>Solve problems involving converting between units of time.</p>	<p>Length: 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... Kilometre (<i>km</i>), metre (<i>m</i>) centimetre (<i>cm</i>), millimetre (<i>mm</i>) inches, mile ruler, metre stick, tape measure.</p> <p>Mass: big, bigger, small, smaller, balances</p> <p>Weight: heavy / light, heavier /</p>	<p>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.</p> <p>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. This could be exploring timetables and schedules in more in-depth and confidently converting between the 12- and 24-hour clock when providing explanations.</p> <p>They will recognise errors in conversions between different units</p>	<p>If children do not master basic prior understanding of whole number place value taught earlier in the key stage, they will struggle with the understanding of measuring using larger numbers and then consequently making conversions. Even if you are teaching year 5, it is important to go back to 'basics' and ensure children's prior learning is secure and that they understand the essential knowledge and terminology and, using manipulatives to support where necessary before moving on.</p> <p>Children may think... Weight and volume units of measure are the same.</p> <p>Children confuse and lack understanding between mass and weight.</p> <p>Children select the inappropriate unit for measurement e.g. they think they can use metres for large</p>	<p>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.</p> <p>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.</p> <p><u>Possible example DTM's:</u> Same and different? What is the same and what is different about converting from kg to g and km to m. Explain your reasons, with evidence.</p> <p>True or false? Milli and Kilo both mean a thousand.</p> <p>Which has the greater mass? 1/5kg or 1/10 kg. Explain why.</p> <p>A litre of water is approximately a pint and three quarters. How many pints are equivalent to 2 litres of water? Using the approximation, when will the number of litres and the equivalent number of pints be whole numbers?</p>

	<p>To understand imperial units of measure and use approximate equivalences between metric and common imperial units.</p> <p>To convert between different units of time.</p> <p>To convert between different units of time to solve problems using timetables.</p>		<p>lighter, heaviest / lightest weigh, weighs kilogram (<i>kg</i>), half-kilogram, gram (<i>g</i>) balance, scales</p> <p>Capacity: full, half full, empty holds, contains litre (<i>l</i>), half-litre, millilitre (<i>ml</i>) pint, gallon, container, measuring cylinder</p> <p>Time: days of the week: Monday, Tuesday... Months of the year: January, February... Seasons: spring, summer, autumn, winter. Day, week, fortnight, month year, leap year, century, millennium weekend, birthday, holiday calendar, date, date of birth morning, afternoon, evening, night</p>	<p>of measure and confidently explain reasons behind common misconceptions here.</p> <p>Children will have multi-step reasoning problems to solve, applying prior learning as well as current, e.g. drawing upon fraction and decimal knowledge when identifying, exploring and converting units of measure and providing in-depth responses as explanations.</p> <p>Children will use the most efficient methods when converting between different units of measure and explain why they have selected that chosen method.</p> <p>Children will need to use depth of mathematical knowledge to provide clear mathematical explanation and reasoning to problems.</p> <p>SEND: Assessment and analysis of prior knowledge is needed. Teacher to assess and</p>	<p>measurements of length instead of kilometres.</p> <p>Children divide or multiply by 100 rather than 1000 when converting between kg and g, m and km.</p> <p>Children confuse imperial units of measure with metric.</p> <p>Children struggle to recognise and explain the difference between the 12- and 24-hour clock.</p> <p>They believe units of time are decimals. They think time goes past 60 minutes, when counting and calculating conversions using timetables for example.</p> <p><i>AFL to be consistently used, to address misconceptions found within own classes / cohorts of children and address where applicable.</i></p>	<p>WRMH: click here Use of Flashbacks are encouraged to provide further opportunity for children to apply their understanding of prior learning and ensure key knowledge / VIPs have been retained.</p> <p>WRMH Editable R&PS resources are saved in Trust shared and should be used to further support children's application of understanding and allow for depth in wider contexts to be developed.</p> <p>Third Space Learning: https://thirdspacelearning.com/</p> <p>Classroom Secrets: click here</p> <p>NCETM – resources / activities for DTMs</p> <div data-bbox="1702 764 1753 826" data-label="Image"> </div> <p>Mastery_Assessment_Y5_High_Res.pdf</p> <p>Maths Frame: click here</p> <p>Slides / resources saved on trust shared.</p>
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			<p>am, pm, noon, midnight</p> <p>base planning and resources in a bespoke manner.</p> <p>Use of weights so children physically feel the weight are need to support their understanding, alongside real-life contexts of foods (for example) so children can apply this weight to a meaning. They can discuss and compare different weights and identify which is heavier for example.</p> <p>Bar models and/or double number lines need to be used to support children's visual understanding.</p> <p>Using rulers, metre sticks, jugs and bottles will help support children's understanding of conversions and help them apply this to real-life contexts.</p> <p>Real-life objects that are appropriate to the children are better used when measuring as it allows them to apply it appropriately in context.</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: T:\Primaries\Departments\KS2\Year 5 & 6 Curriculum Planning\Cycle B\Summer - Mortal

Year 5 Knowledge Organiser: Converting Units

Fat Questions:

Explore the difference between metric and imperial units of measure. How do their use vary between countries in our modern day world?

True or false? Units of measure did not exist during the Iron age, Stone age, Bronze age.

Key vocabulary

Mass
Grams
Kilograms
Length
Metre
Kilometre
Centimetres
Capacity
Litres
Millilitres
Volume
Metric
Imperial
Weight
Time

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

Intent

We aim to develop and progress our skills in units of measure in order to equip us with the ability to solve real world problems that require a mathematical solution. With these skills, we can carry out a range of different conversions that we will then apply to a wide range of contexts and situations. help to improve the world in which we live.

VIPs:

'Kilo' in units of length means a thousand.

Mass – refers to the weight of an object. It is measured in grams (g) and kilograms (kg).

Length – is distance. How far from end to end. Or from one point to another.

Capacity – the amount that something can hold. The amount that something can hold. Usually it means volume.

The **metric system** is used to measure the length, weight or volume of an object. Length is measured in **millimetres (mm)**, **centimetres (cm)**, **metres (m)** or **kilometres (km)**.

Imperial units of measurement were used in the UK. The imperial system has gradually been replaced by the metric system, which is easier to understand as it deals with tens, hundreds and thousands.

