

## TERM 2 OVERVIEW YEAR 4 – Maths

Term 1 Book – The Lion, the Witch and the Wardrobe		
Topic(s) - Length and Perimeter, and Multiplication and Division		Guide Time = 6weeks
<b>Assessment:</b>	White Rose end of unit assessments End of term assessments Teacher judgements	<b>Very Important Points (VIPs):</b>  <b>Length and Perimeter</b> 1km = 1000m To convert km to m, multiply by 1000. To convert m to km, divide by 1000. Perimeter is the distance around the edge of a shape. Rectilinear shapes are shapes where all the straight line sides meet at right angles. To calculate the perimeter of a rectangle, add together the length of each side. In a rectangle, opposite sides are the same length.  <b>Multiplication and Division</b> Making a number ten times bigger is the same as multiply by ten or ten lots of. When multiplying by 10, all the digits move one place value to the left. The number becomes bigger. For multiplication the order of the numbers can change – the commutative law. Making a number a hundred times bigger is the same as multiply by a hundred or a hundred lots of. When multiplying by 100, all the digits move two place values to the right. The number becomes smaller. When dividing by 10, all the digits move one place value to the right. The number becomes smaller. When dividing by 100, all the digits move two place values to the right. The number becomes smaller. A number multiplied by 1 is itself. A number multiplied by 0 is always 0. A number divided by 1 is itself.
<b>Links to prior learning (sequencing) and canon book</b>	In Autumn 1, the children learned about place value and addition and subtraction. From Year 3: Children know the units mm, cm and m for measuring distance. Children can use different measuring equipment including rulers, tape measures, metre sticks and trundle wheels. They will know which equipment is the most appropriate depending on the object they are measuring. Children recognise that 100 cm is equivalent to 1 metre. They use this knowledge to convert other multiples of 100 cm into metres and vice versa. When looking at lengths that are not multiples of 100, they partition the measurement and convert into metres and centimetres. Children recognise that 10 mm is equivalent to 1 cm. They use this knowledge to convert other multiples of 10 mm into centimetres and vice versa. When looking at lengths that are not multiples of 10, they partition the measurement and convert into centimetres and millimetres. Children are not expected to use decimals for distance. Children compare and order lengths based on measurements in mm, cm and m. They use their knowledge of converting between units of measurement to help them compare and order. Children convert all the measurements to the same unit of length before comparing. Children add lengths given in different units of measurement. They convert measurements to the same unit of length to add more efficiently. Children use take-away and finding the difference to subtract lengths.	

Children have an understanding of perimeter. Children measure the perimeter of simple 2-D shapes.  
 Children may have explored different methods for calculating the perimeter of a shape. For example, repeated addition or connections to multiplication.

2D, right angles, names of shapes etc

**Multiplication and division**

In Year 3:

Children will have an increasing fluency in times table recall with a sound recall of the 2,3,4, 5, 8 and 10 times tables.

Children will understand multiplication as adding equal groups, repeated addition.

Children understand division as grouping into equal groups.

Children are introduced to the distributive law for multiplication.

Children understand that multiplication is the inverse of division and vice versa.

Children will be able to use their times table knowledge to represent calculations in a concrete and pictorial way.

Children will be able to solve multiplication and division problems using times table facts.

Children use their understanding of the properties of shape to calculate the perimeter of simple 2-D shapes. They may use repeated addition or they may make connections to multiplication. Children will use known multiplication facts to solve other multiplication problems such as numbers ten or a hundred times bigger.

Children can multiply a 2 digit number by a 1 digit number using the formal method of column multiplication alongside the concrete representation. They also apply their understanding of partitioning to represent and solve calculations. Children divide 2-digit numbers by a 1-digit number by partitioning into tens and ones and sharing into equal groups. They divide numbers that do not involve exchange or remainders. It is important that children divide the tens first and then the ones.

Children divide 2-digit numbers by a 1-digit number by partitioning into tens and ones and sharing into equal groups. Children use their times-tables to partition the number into multiples of the divisor.

Inverse means opposite. Multiplication is the inverse of division and vice versa.

Each multiple of 6 is double the equivalent multiple of 3.

Equivalent means equal in value.

**Fat Questions:**

Why might some units more appropriate than others when measuring?

Why are right angles important when calculating perimeter?

Where do we see right angles in everyday life? Why are they useful?

Why are units of measurement important?

Where are perimeters used in everyday life?

When might you need to calculate the perimeter? What job might you be doing where this is useful?

Are perimeters useful when playing games? If so, which games?

How is the commutative law useful when multiplying numbers?

Are formal methods always the most appropriate when multiplying and dividing?

When might you use multiplication or division in real life?

	<p>Children may have moved onto solving division problems with a remainder.          Links are made between division and repeated subtraction, Children may be able to use bar models.          Children list systematically the possible combinations resulting from two groups of objects. Encourage the use of practical equipment and ensure that children take a systematic approach to each problem.          Children should be encouraged to calculate the total number of ways without listing all the possibilities. e.g. Each T-shirt can be matched with 4 pairs of trousers so altogether <math>3 \times 4 = 12</math> outfits.</p>	
<b>Links to other learning (cross fertilisation)</b>	<p>Links to our history topic of Romans when learning about and using roman numerals. Children will write the roman numeral date each day to continue building on their roman numeral knowledge throughout the year.</p> <p>There will be a link within PE when learning times tables within active maths sessions. They can also be active when recapping previous sessions through the maths starters.</p> <p>The understanding of ordering numbers helps with understanding timelines in history.</p>	
<b>Links to future learning</b>	<p>The skills taught this half term will be applied and built upon throughout the year. Helping children to build on prior knowledge to use during arithmetic tests, termly tests and to prepare for the following year.</p> <p><b>Thematic questions:</b>  <b>The world beyond us:</b>          How many times bigger/smaller are the sun, earth and moon?</p> <p><b>Modern Britain:</b>          Where are perimeters used in everyday life?</p> <p><b>Healthy bodies, healthy minds:</b>          How does measuring distance help with keeping fit and healthy?          How could you use these skills during PE?</p>	

	<p><b>The world around us:</b>        Where do you see groups of amounts in nature?        Where are perimeters used across the world? Do these perimeters cause problems?        Where do you see right angles? Why are they important.        When in shops, where might you see amounts divided by 100?</p> <p><b>Culture:</b>        How and why has distance become so important in everyday life?        How are perimeters used in sports?</p> <p><b>Technology in action:</b>        Is using a calculator the most efficient tool when multiplying and dividing?        How might vast distances and perimeters be measured?</p>	
<p><b>Character/Wider Development ('50 things', cultural capital, skills)</b></p>	<p>50 Things are personal to each school.</p> <p>If you can visit a castle – do you see rectilinear shapes? What often marks the perimeter of castle grounds? Think about how far you walk, and how you measure it?</p> <p>When swimming, find the length and width of the bath. Count your widths or lengths and work out how far you have swum. What shapes do you see? Do you see right angles? Why might this be?</p> <p>When visiting the theatre, for the pantomime, find out how much each ticket costs. From this work out how much the school paid for everyone to attend.</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
<b>Length and Perimeter</b>  (Week 1)	To convert between kilometres and metres.  End of block test	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.  Convert between different units of measure (for example, kilometre to metre).	distance length kilometre metre perimeter rectilinear rectangle square right angle units	GD: Children to complete challenges linked to reasoning and problem solving showing clear understanding. Clearly showing their methods with written feedback on why and how they have got to an answer.  Provide opportunities to investigate new areas in depth.  Ensure they manage their own learning using learning tools independently and recognising they need these learning tools independently.  Model complex ideas to help encourage deeper thinking.  Teaching peers in class.	When calculating the perimeter, children count squares rather than along the line.  Children confusing area and perimeter.  Children forgetting that opposite side of a rectangle are the same length.  When dividing or multiplying by 1000, forgetting to move all the digits.	<a href="https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/">https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/</a>  - Length and perimeter knowledge organiser. - Classroom secrets linked to the NC objective. - Third space learning tools.

				<p><b>SEND:</b> Allow time to recap and go through previous learning.</p> <p>Access to helpful peers and clear modelling from adults.</p> <p>Children to complete varied fluency questions with opportunity to move onto reasoning and problem solving.</p>		
<p><b>Multiplication and division</b></p> <p>(Weeks 2-4)</p>	<p>To multiply by 10.</p> <p>To multiply by 100.</p> <p>To divide by 10.</p> <p>To divide by 100.</p> <p>To multiply by 1 and 0.</p> <p>To divide by 1 and itself.</p> <p>To multiply and divide by 6.</p>	<p>Recall multiplication and division facts for multiplication tables up to 12.</p> <p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.</p> <p>Recognise and use factor pairs</p>	<p>dividend</p> <p>divisor</p> <p>quotient</p> <p>product</p> <p>multiplication</p> <p>multiplying</p> <p>division</p> <p>dividing</p> <p>commutative law</p> <p>associative law</p> <p>base 10 calculation</p> <p>calculating</p> <p>place value</p> <p>whole number</p> <p>fact family</p> <p>pictorial representation</p> <p>group</p> <p>grouping</p> <p>share</p>	<p>GD: Children to complete challenges linked to reasoning and problem solving showing clear understanding. Clearly showing their methods with written feedback on why and how they have got to an answer.</p> <p>Provide opportunities to investigate new areas in depth.</p> <p>Ensure they manage their own learning using learning tools independently and recognising they</p>	<p>Children writing division calculations incorrectly – mixing the order of the dividend and divisor. For example <math>56 \div 7 = 8</math>, not <math>7 \div 56 = 8</math>.</p> <p>Moving all the digits when multiplying and dividing by 10 or 100. For example, <math>26 \times 100 = 2600</math>, not 2006.</p> <p>When multiplying by 0, not to multiply by 1 and give the amount being multiplied e.g. <math>34 \times 0 = 34</math> rather than <math>34 \times 0 = 0</math>.</p>	<p><a href="https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/">https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/</a></p> <ul style="list-style-type: none"> <li>- Multiplication and Division knowledge organiser.</li> <li>- Classroom secrets linked to the NC objective.</li> <li>- Third space learning tools.</li> </ul>

	<p>To recall and use 6 times table and division facts.</p> <p>To multiply and divide by 7.</p> <p>To recall and use 7 times table and division facts.</p> <p>To multiply and divide by 9.</p> <p>To recall and use 9 times table and division facts.</p>	<p>and commutativity in mental calculations.</p> <p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</p>	<p>sharing equal equivalent inverse operations</p>	<p>need these learning tools independently.</p> <p>Model complex ideas to help encourage deeper thinking.</p> <p>Teaching peers in class.</p> <p>SEND: Allow time to recap and go through previous learning.</p> <p>Access to helpful peers and clear modelling from adults.</p> <p>Children to complete varied fluency questions with opportunity to move onto reasoning and problem solving.</p>		
--	--	--	--	--	--	--

**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. As they grow throughout primary education we want them to feel a sense of pride and achievement within this core subject. A subject that will impact their daily lives.

A key factor of this will be the positive attitude we have and will pass onto the children as they learn important mathematical concepts during their mathematics learning journey. We include VIPs (Very Important Points) to help retain and repeat important knowledge and skills over time. These are a bank of important skills that all of our children will have access to.

Mistakes and misconceptions are a key part of the successes during their learning journey as these moments help to show resilience, perseverance and commitment to learning mathematical concepts. At our school, the majority of children will be taught the content from their year group only. All children will have the opportunity to progress, build on prior knowledge, and have access to reasoning and problem solving questions. These questions help to secure and deepen their thinking and learning with mathematics. Another key factor is cross fertilization at every opportunity. As a whole, the children will spend their time learning, applying and mastering key skills that they will need throughout their life. They will learn new skills that will be incredibly important as they progress through their education.

In year 4, they will build on their mathematical knowledge which they can take forward with them as they go into year 5 and beyond.



## Intent

To understand the importance of units when measuring distance. To develop an understanding of the relationship between the units of measurement. To understand that perimeter is the length of the boundary or edge of a 2-D shape. That we can use the knowledge that because the sides of rectilinear shapes always meet at right angles we can work out missing distances.

## Fat Questions

Why are right angles important when calculating perimeter?

Where do we see right angles in everyday life? Why are they useful?

Why are units of measurement important?

Where are perimeters used in everyday life?

When might you need to calculate the perimeter? What job might you be doing where this is useful?

Are perimeters useful when playing games? If so, which games?

## Key vocabulary

distance, length, kilometre, metre, perimeter, rectilinear, rectangle, square, right angle, units

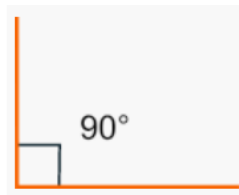
## Right Angle

A right angle can be described several ways:

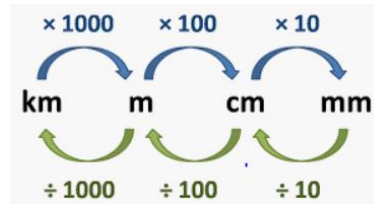
Where two lines meet at 90°.

Where two perpendicular lines meet.

A quarter turn.



## Converting Between Units



## VIPs

### Length and Perimeter

1 km = 1000m

To convert km to m, multiply by 1000.

To convert m to km, divide by 1000.

Perimeter is the distance around the edge of a shape.

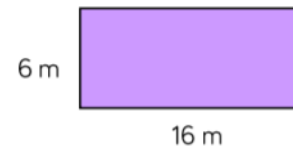
Rectilinear shapes are shapes where all the sides meet at right angles.

To calculate the perimeter of a rectangle, add together the length of each side.

In a rectangle, opposite sides are the same length.

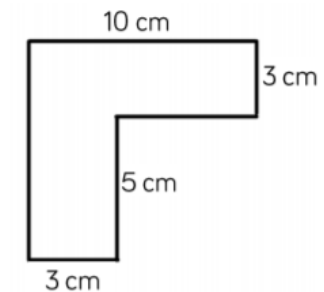
## Rectangle

The opposite sides of a rectangle are the same length. The corners are right angles.



## Rectilinear Shapes

Rectilinear shapes are made of straight lines and right angles.



## Equivalent Distances

$\frac{1}{2}$  km = 500 m

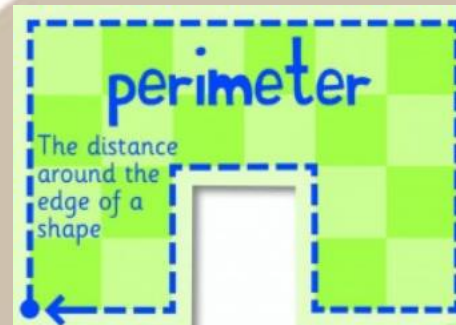
$\frac{1}{4}$  km = 250 m

$\frac{3}{4}$  km = 750m

0.5 km = 500 m

0.25 km = 250 m

0.75 km = 750 m



## VIPs

Making a number ten times bigger is the same as multiply by ten or ten lots of.

Making a number a hundred times bigger is the same as multiply by a hundred or a hundred lots of.

When multiplying by 10, all the digits move one place value to the left. The number becomes bigger.

When multiplying by 100, all the digits move two place values to the right. The number becomes bigger.

For multiplication the order of the numbers can change – the commutative law.

When dividing by 10, all the digits move one place value to the right. The number becomes smaller.

When dividing by 100, all the digits move two place values to the right. The number becomes smaller.

A number multiplied by 1 is itself.

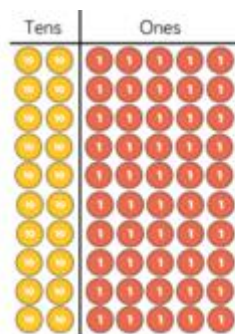
A number multiplied by 0 is always 0.

A number divided by 1 is itself.

Inverse means opposite. Multiplication is the inverse of division and vice versa.

Each multiple of 6 is double the equivalent multiple of 3.

## Multiplying by 10



$$25 \times 10 = 250$$

10 lots of 25

## Multiplying by 1

$$34 \times 1 = 34 \quad 1 \times 65 = 65$$

The answer is always itself.

## Multiplying by 0

$$34 \times 0 = 0 \quad 5 \times 0 \times 8 = 0$$

The answer is always 0.

## Commutative law

$$4 \times 8 \times 5 = 4 \times 5 \times 8$$

The order of the numbers can change for multiplication.

## Dividing by 1

$$23 \div 1 = 23 \quad 5 \div 1 = 5$$

The answer is always itself.

## Key vocabulary

dividend, divisor, quotient, product, multiplication, multiplying, division, dividing, commutative law, associative law, base 10, calculation, calculating, place value, whole number, fact family, pictorial representation, group, grouping, share, sharing, equal, equivalent, inverse, operations

## Fat Questions

How is the commutative law useful when multiplying numbers?

Are formal methods always the most appropriate when multiplying and dividing?

When might you use multiplication or division in real life?

## Using Place Value to Multiply and Divide by 10, 100 and 1000

### Multiplying

X 10 digits move LEFT 1 space  
X 100 digits move LEFT 2 spaces  
X 1000 digits move LEFT 3 spaces

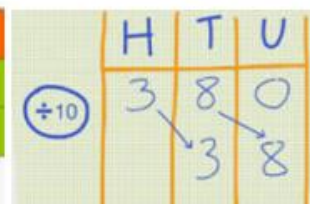


### Dividing

÷ 10 digits move RIGHT 1 space  
÷ 100 digits move RIGHT 2 spaces  
÷ 1000 digits move RIGHT 3 spaces



$$23 \times 10 = 230$$



## Intent

To build on place value understanding that multiplying and dividing by 10 or 100 means the digits remain the same, but change their value and how this links to money in everyday use. To understand that the order of numbers in a multiplication can change which may make a calculation easier and contrast with how the order for division is important. To understand why dividing and multiplying by 1 give the same answer and to understand the effect of "no lots of".

