

# Maths Key Stage 2

Curriculum map





# 1. Philosophy

## Six underlying attributes at the heart of Oak's curriculum and lessons.

Lessons and units are **knowledge and vocabulary rich** so that pupils build on what they already know to develop powerful knowledge.

Knowledge is **sequenced** and mapped in a **coherent** format so that pupils make meaningful connections.

Our **flexible** curriculum enables schools to tailor Oak's content to their curriculum and context.

Our curriculum is **evidence informed** through rigorous application of best practice and the science of learning.

We prioritise creating a **diverse** curriculum by committing to diversity in teaching and teachers, and the language, texts and media we use, so all pupils feel positively represented.

Creating an **accessible** curriculum that addresses the needs of all pupils is achieved to accessibility guidelines and requirements.



## 2. Units



KS2 Maths is formed of 56 units and this is the recommended sequence:

Unit Title	Recommended year group	Number of lessons
1 Number sense and exploring calculation strategies	Year 3	15
2 Place value	Year 3	10
3 Graphs	Year 3	5
4 Addition and subtraction	Year 3	15
5 Length and perimeter	Year 3	10
6 Multiplication and division	Year 3	15
7 Deriving multiplication and division facts	Year 3	15
8 Time	Year 3	10
9 Fractions	Year 3	15



<b>10</b>	<b>Angles and shape</b>	<b>Year 3</b>	<b>15</b>
<b>11</b>	<b>Measures</b>	<b>Year 3</b>	<b>15</b>
<b>12</b>	<b>Securing multiplication and division</b>	<b>Year 3</b>	<b>5</b>
<b>13</b>	<b>Exploring calculation strategies and place value</b>	<b>Year 3</b>	<b>10</b>
<b>14</b>	<b>Fractions: parts and wholes</b>	<b>Year 3</b>	<b>10</b>
<b>15</b>	<b>Reasoning with 4-digit numbers</b>	<b>Year 4</b>	<b>10</b>
<b>16</b>	<b>Addition and subtraction</b>	<b>Year 4</b>	<b>15</b>
<b>17</b>	<b>Multiplication and division</b>	<b>Year 4</b>	<b>20</b>
<b>18</b>	<b>Interpreting and presenting data</b>	<b>Year 4</b>	<b>10</b>
<b>19</b>	<b>Securing multiplication facts</b>	<b>Year 4</b>	<b>5</b>
<b>20</b>	<b>Fractions</b>	<b>Year 4</b>	<b>20</b>
<b>21</b>	<b>Time</b>	<b>Year 4</b>	<b>5</b>



<b>22</b> Decimals	Year 4	15
<b>23</b> Area and perimeter	Year 4	10
<b>24</b> Solving measure and money problems	Year 4	15
<b>25</b> 2-D Shape and Symmetry	Year 4	15
<b>26</b> Position and Direction	Year 4	5
<b>27</b> Reasoning with patterns and sequences	Year 4	10
<b>28</b> 3D Shape	Year 4	5
<b>29</b> Working with fractions	Year 4	20
<b>30</b> Taking fractions further	Year 4	23
<b>31</b> Reasoning with large whole numbers	Year 5	15
<b>32</b> Problem solving with integer addition and subtraction	Year 5	10
<b>33</b> Line graphs and timetables	Year 5	10



<b>34</b> Multiplication and division	Year 5	15
<b>35</b> 2-D shape, perimeter and area	Year 5	10
<b>36</b> Fractions and decimals	Year 5	15
<b>37</b> Angles	Year 5	15
<b>38</b> Fractions, decimals and percentages	Year 5	15
<b>39</b> Transformations	Year 5	15
<b>40</b> Converting units of measure	Year 5	15
<b>41</b> Calculating with whole numbers and decimals	Year 5	15
<b>42</b> 2-D and 3-D shape	Year 5	10
<b>43</b> Volume	Year 5	5
<b>44</b> Problem solving with whole numbers and decimals	Year 5	10
<b>45</b> Equivalent fractions	Year 5	20



<b>46</b> Integers & Decimals	Year 6	10
<b>47</b> Multiplication and division	Year 6	20
<b>48</b> Calculation problems	Year 6	10
<b>49</b> Fractions	Year 6	10
<b>50</b> Missing angles and lengths	Year 6	5
<b>51</b> Coordinates and shape	Year 6	10
<b>52</b> Fractions	Year 6	5
<b>53</b> Decimals and measures	Year 6	10
<b>54</b> Percentages and statistics	Year 6	10
<b>55</b> Proportion problems	Year 6	8
<b>56</b> Extending calculation strategies and additive reasoning	Year 6	30



# 3. Lessons

## Unit 1 Number sense and exploring calculation strategies

15 Lessons

Lesson number	Lesson question	Pupils will learn
1.	Exploring Number Sense	<ul style="list-style-type: none"><li>In this lesson, we will link and apply known facts using number sense, and explore different visual representations of numbers and their properties.</li></ul>
2.	Deriving New Facts From Number Bonds (Part 1)	<ul style="list-style-type: none"><li>In this lesson, we will investigate and find new facts from number bonds. We will investigate the effect of adding and subtracting 1 to numbers in a calculation, and the effect of adjusting the place value of digits.</li></ul>
3.	Number names	<ul style="list-style-type: none"><li>In this lesson, we will investigate the ways in which the names of numbers change as we make adjustments to the digits, and compare written numbers with their names.</li></ul>





<b>4.</b>	<b>Recognising the value of each digit in a 2 digit number</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate the place value of each digit in two digit numbers. We will look at visual representations of the value of each digit.</li></ul>
<b>5.</b>	<b>Using comparative symbols to compare numbers</b>	<ul style="list-style-type: none"><li>• In this lesson, we will introduce the greater than, and less than symbols <math>&gt;</math> and <math>&lt;</math>, and use them to accurately compare different numbers.</li></ul>
<b>6.</b>	<b>Deriving New Facts From Number Bonds (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at the properties of addition and subtraction, including the law of commutativity. We will revisit place value and consider addition and subtraction as inverse operations.</li></ul>
<b>7.</b>	<b>Finding number bonds for numbers up to 20</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be using number bonds and looking for patterns for numbers within 20. We will look at partitioning and part whole modelling.</li></ul>
<b>8.</b>	<b>Applying number bonds within ten to add and subtract</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be adding and subtracting 2 digit numbers without regrouping by using our number bond knowledge and using visual representations of place value.</li></ul>



<b>9.</b>	<b>Applying number bonds within twenty to add and subtract</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be adding and subtracting 2 digit numbers with regrouping by using our number bond knowledge. We will use number lines to visualise the process.</li></ul>
<b>10.</b>	<b>Adding and subtracting using round and adjust</b>	<ul style="list-style-type: none"><li>• In this lesson, we we will add and subtract 2 digit numbers by using the round and adjust strategy whereby numbers are rounded to the nearest five or ten, then adjusted again at the end of the calculation.</li></ul>
<b>11.</b>	<b>Using round and adjust strategies to subtract and add near doubles</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use round and adjust strategies to subtract and add near doubles. We will partition two digit numbers in order to make calculations easier.</li></ul>
<b>12.</b>	<b>Using an 'adding on' strategy to find the difference</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use an 'adding on' strategy to find the difference between two numbers. We will use real life shopping examples and look at model solutions.</li></ul>
<b>13.</b>	<b>Using bar models to solve word problems (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will solve word problems using bar models as a visual tool to aid comparison between two values.</li></ul>

**14.**

### **Using bar models to solve word problems (Part 2)**

- In this lesson, we will solve word problems using bar models as a visual tool to aid addition and money problems involving change.



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**15.**

### **Application Lesson**

- In this lesson, we will apply all that we have learnt in this unit and practise answering different styles of questions involving addition and subtraction with modeled solutions.
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Lesson number	Lesson question	Pupils will learn
1.	Reading and writing 3 digit numbers	<ul style="list-style-type: none"><li>In this lesson, we will use place value charts and Dienes blocks to help us read and write three digit numbers</li></ul>
2.	Partitioning numbers in different ways	<ul style="list-style-type: none"><li>In this lesson, we will use a die to create three digit numbers and then partition them in a variety of ways beyond simply partitioning hundreds, tens and ones.</li></ul>
3.	Ordering and comparing 3 digit numbers	<ul style="list-style-type: none"><li>In this lesson, we will order and compare three digit numbers using greater than and less than symbols, number lines, and placing numbers from a table in ascending order of size.</li></ul>
4.	Adding and subtracting 3 digit numbers	<ul style="list-style-type: none"><li>In this lesson, we will add and subtract with three digit numbers, we will also add and subtract with regrouping. We will compare the effect of adding and subtracting ten and one hundred, using Dienes blocks and place value tables to help us.</li></ul>



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| <b>5.</b> | <b>Rounding 2 and 3 digit numbers to the nearest 10</b>                               | <ul style="list-style-type: none"><li>• In this lesson, we will round both 2 and 3 digit numbers to the nearest 10. We will learn how to construct and use number lines appropriately to help us as a visual aid</li></ul>                 |
| <b>6.</b> | <b>Finding all possible numbers that could have been rounded to a multiple of ten</b> | <ul style="list-style-type: none"><li>• In this lesson, we will put on our investigation hats in order to find all the possible numbers that could have been rounded to a multiple of ten.</li></ul>                                       |
| <b>7.</b> | <b>Rounding 2 and 3 digit numbers to the nearest 100</b>                              | <ul style="list-style-type: none"><li>• In this lesson, we will round 3 digit numbers to the nearest 100. We will learn how to construct and use number lines appropriately to help us as a visual aid.</li></ul>                          |
| <b>8.</b> | <b>Applying place value knowledge to problem solving</b>                              | <ul style="list-style-type: none"><li>• In this lesson, we will investigate how to create the various 3 digit numbers with specific properties from the numbers 0-9, such as the largest odd or even number, or a multiple of 5.</li></ul> |
| <b>9.</b> | <b>Finding solutions to a problem</b>   | <ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of place value to solve different worded problems where we will have to select numbers that have certain properties from a set.</li></ul>                |

**10.**

## **Place value application lesson**

- In this lesson, we will consolidate our understanding of place value, addition and subtraction from the previous lessons.
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Lesson number	Lesson question	Pupils will learn
1.	Reading and understanding pictograms	<ul style="list-style-type: none"><li>In this lesson, we will consider what data is and how this can be represented using pictograms, including where pictures represent more than 1.</li></ul>
2.	Constructing pictograms	<ul style="list-style-type: none"><li>In this lesson, we will apply our knowledge of reading pictograms to edit, correct and construct our own.</li></ul>
3.	Reading and interpreting bar graphs	<ul style="list-style-type: none"><li>In this lesson, we will build on knowledge of data to accurately read and understand a range of bar charts.</li></ul>
4.	Collecting and presenting data using tallies, tables and graphs	<ul style="list-style-type: none"><li>In this lesson, we will learn how to present and interpret data in a variety of formats including tallies, tables, pictograms and charts.</li></ul>
5.	Interpreting and presenting data in pictograms and bar charts	<ul style="list-style-type: none"><li>In this lesson, we will construct pictograms and bar charts from given data, as well as looking at the limitations of graphs.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Adding and subtracting 1-digit numbers to/from 3-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will investigate different mental strategies to add and subtract, including regrouping.</li></ul>
2.	<b>Adding multiples of 10 to 3-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use known number facts in order to mentally add multiples of 10 to 3-digit numbers. We will look at partitioning strategies and analyse place value to make mental addition more efficient.</li></ul>
3.	<b>Subtracting multiples of 10 from 3-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use known number facts in order to mentally subtract multiples of 10 from 3-digit numbers. We will look at partitioning strategies and analyse place value to make mental subtraction more efficient.</li></ul>
4.	<b>Adding and subtracting multiples of 100 to/from 3-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use known number facts in order to mentally add and subtract multiples of 100 to and from 3-digit numbers. We will look at partitioning strategies and analyse place value to make mental addition and subtraction more efficient.</li></ul>





<b>5.</b>	<b>Adding two 3-digit numbers (without regrouping)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to partition 3-digit numbers in order to mentally add them accurately.</li></ul>
<b>6.</b>	<b>Subtracting two 3-digit numbers (without regrouping)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to partition 3-digit numbers in order to mentally subtract them accurately.</li></ul>
<b>7.</b>	<b>Applying rounding for estimating (adding)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will build on our knowledge of the 10 times table in order to estimate by rounding. We will do this to answer addition questions.</li></ul>
<b>8.</b>	<b>Applying rounding for estimating (subtracting)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will build on our knowledge of the 10 times table in order to estimate by rounding. We will do this to answer subtraction questions.</li></ul>
<b>9.</b>	<b>Adding two 3-digit numbers (regrouping in one column)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will build on our knowledge of partitioning and estimating and introduce column addition.</li></ul>
<b>10.</b>	<b>Adding two 3-digit numbers (regrouping in multiple columns)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at using column addition when a number requires regrouping in more than one column when adding.</li></ul>



<b>11.</b>	<b>Subtracting 3-digit numbers (regrouping tens to ones)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will build on our knowledge of column addition and introduce regrouping for column subtraction.</li></ul>
<b>12.</b>	<b>Subtracting 3-digit numbers (regrouping hundreds to tens)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will focus on column subtraction where regrouping from the hundreds into the tens column is needed.</li></ul>
<b>13.</b>	<b>Subtracting 3-digit numbers (regrouping in multiple columns)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will consolidate learning on column subtraction and will practise regrouping across all columns</li></ul>
<b>14.</b>	<b>Solving addition and subtraction word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will consolidate learning on column addition and subtraction by applying this knowledge to word problems.</li></ul>
<b>15.</b>	<b>Solving word problems with unknown values</b>	<ul style="list-style-type: none"><li>• In this lesson, we will answer addition and subtraction word problems which require us to identify the unknown quantity.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Measuring lengths to the nearest cm or mm	<ul style="list-style-type: none"><li>In this lesson, we will learn how to use our rulers accurately and begin measuring in cm and mm</li></ul>
2.	Measuring length and drawing lines of a given length in mixed units	<ul style="list-style-type: none"><li>In this lesson, we will use our rulers accurately and draw and measure lines in cm and mm</li></ul>
3.	Making Appropriate Estimates of Length by Comparing	<ul style="list-style-type: none"><li>In this lesson, we will make appropriate estimates of length by using our cm estimators or Dienes. We will also be comparing our estimates and the actual lengths</li></ul>
4.	Length and Measurement Application	<ul style="list-style-type: none"><li>In this lesson, we will apply all that we have learnt in this unit so far and practise answering different styles of questions on length and measure</li></ul>
5.	To calculate perimeters of 2D shapes in cm and mm	<ul style="list-style-type: none"><li>In this lesson, we will investigate different 2D shapes and calculate their perimeters in cm and mm, including regular shapes without all measurements provided, and irregular shapes.</li></ul>



<b>6.</b>	<b>To Calculate Perimeters of 2D Shapes in Mixed Units</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate different 2D shapes and calculate their perimeters in mixed units such as cm and mm</li></ul>
<b>7.</b>	<b>Measuring and comparing length in mixed units (cm and mm)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will measure different 2D shapes and compare their perimeters in mixed units. We will compare lengths that are measured in different units to determine which is longer using greater than and less than symbols.</li></ul>
<b>8.</b>	<b>Calculating the perimeters of shapes in m and cm</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at regular and irregular 2D shapes and calculate their perimeters in mixed units</li></ul>
<b>9.</b>	<b>Applying problem solving strategies to length</b>	<ul style="list-style-type: none"><li>• In this lesson, we will apply problem solving strategies in the context of worded questions involving measuring length. We will walk through potential approaches together.</li></ul>
<b>10.</b>	<b>Length and perimeter application lesson</b>	<ul style="list-style-type: none"><li>• In this lesson, we will apply all that we have learnt in this unit and practise answering different styles of questions around length and measurements.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Recalling the 3 times table	<ul style="list-style-type: none"><li>In this lesson, we will introduce the 3 times table and look at the key vocabulary 'products' and 'multiples'. We will use visual representations to aid our understanding including number lines, and real life objects.</li></ul>
2.	Recalling the 4 times table	<ul style="list-style-type: none"><li>In this lesson, we will introduce the 4 times table through skip-counting, and represent multiples of 4 in a number of visual ways. We will compare the terms multiple and product.</li></ul>
3.	Using arrays to represent the 3 and 4 times tables	<ul style="list-style-type: none"><li>In this lesson, we will create and use arrays to visually aid multiplication, and accurately answer questions. We will study the difference between visualising columns and rows, and the effect on how the calculation is written.</li></ul>
4.	Understanding multiplication can be completed in any order	<ul style="list-style-type: none"><li>In this lesson, we will introduce the term 'commutativity', and study the properties and laws of multiplication. We will use arrays to prove that multiplication is commutative.</li></ul>



<b>5.</b>	<b>Using bar models to represent known times tables</b>	<ul style="list-style-type: none"><li>In this lesson, we will compare arrays and bar models, and use them as ways of visualising multiplication questions. We will use bar models to help us solve multiplication problems.</li></ul>
<b>6.</b>	<b>Understanding that multiplication and division are inverse operations</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore the concept of inverse operations with regards to multiplication and division. As a result, we will use our times tables knowledge to help us answer division questions.</li></ul>
<b>7.</b>	<b>Using the inverse operation to find missing numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use our knowledge of multiplication and division 'fact families' in order to find the missing number in a range of questions. We will use arrays to represent the relationship between inverse operations, and explore how fact families around multiplication and division help us discover new facts about multiplication and division.</li></ul>
<b>8.</b>	<b>Recalling multiplication and division facts</b>	<ul style="list-style-type: none"><li>In this lesson, we will consolidate our knowledge of multiplication and division and apply our new strategies to further problems including incomplete multiplication tables and 'spot the error' activities.</li></ul>

## **9. Using factors and products to solve division problems**

- In this lesson, we will be using and applying known facts around fact families, multiples and factors to solve problems. We will, for example, look at how factors of a number help us determine multiples of near numbers.



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## **10. Consolidating multiplication and division knowledge (Part 1)**

- In this lesson, we will revisit arrays and bar models as ways of representing multiplication, as well as solving questions involving inverse operations and commutativity.

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## **11. Solving correspondence problems**

- In this lesson, we will investigate different factor pairs and look at the number of combinations possible within a set, summarised in data tables to find patterns.

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## **12. Using doubles to multiply**

- In this lesson, we will look at the effect of doubling a number on the factors of that number, and investigate how the size of the number changes proportionally as we keep doubling.

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## **13. Using ten times greater for known times tables**

- In this lesson, we will learn how to solve 'ten times bigger' questions. We will look at different visual representations of making things ten times bigger, including number lines, bar models and Deines blocks.
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**14.**

**Using bar models to represent word problems**

- In this lesson, we will explore the use of, construction of, and selection of the most appropriate bar-models to help answer different types of multiplication and division questions.



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**15.**

**Consolidating multiplication and division knowledge (Part 2)**

- In this lesson, we will revisit the use of factors and products to help solve multiplication and division problems, and revise the effects of multiplying a number by ten.
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Lesson number	Lesson question	Pupils will learn
1.	Looking at multiplication strategies and the effect on the product	<ul style="list-style-type: none"><li>In this lesson, we will explore whether the product changes if different multiplication strategies are used. We will evaluate which calculation approaches are and are not correct for given problems.</li></ul>
2.	Multiplying numbers by 10 and 100	<ul style="list-style-type: none"><li>In this lesson, we will learn to multiply numbers by 10 and 100. We will investigate the patterns that occur when multiplying numbers by 10 and 100, and describe these patterns using place value and place holders.</li></ul>
3.	Linking place value and multiplication	<ul style="list-style-type: none"><li>In this lesson, we will study the importance of place value and place holders when multiplying by 10 and 100. We will practise multiplying by 10 and 100 by drawing place value tables.</li></ul>
4.	Dividing by 10 using place value	<ul style="list-style-type: none"><li>In this lesson, we will learn how to divide by 10 using our understanding of place value. We will investigate the patterns that occur when dividing numbers by 10, and describe these patterns using place value.</li></ul>



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| 5. | <b>Multiplying and dividing by 100</b>                               | <ul style="list-style-type: none"><li>• In this lesson, we will learn how to multiply and divide whole numbers by 100. We will look at the properties of numbers that are a multiple of 100, and study examples and non-examples. We will discuss multiplying and dividing by 100 in terms of place value and place holders.</li></ul> |
| 6. | <b>Exploring division strategies</b>                                 | <ul style="list-style-type: none"><li>• In this lesson, we will explore division strategies in depth, including dividing using arrays, and dividing using place value tables and counters.</li></ul>   |
| 7. | <b>Deriving new facts from multiplication facts</b>                  | <ul style="list-style-type: none"><li>• In this lesson, we will use the commutative property of multiplication, and our knowledge of inverse operations to help us derive new facts about general multiplication by, for example, rearranging equations in different ways.</li></ul>   |
| 8. | <b>Using arrays to multiply a 2 digit number by a 1 digit number</b> | <ul style="list-style-type: none"><li>• In this lesson, we will learn to multiply 2 digit numbers by 1 digit numbers using arrays. We will construct suitable arrays to represent a number, and partition them to make a multiplication calculation clearer.</li></ul>   |



## **9. Using Dienes to multiply a 2 digit number by a 1 digit number**

- In this lesson, we will learn to multiply 2 digit numbers by 1 digit numbers using Dienes blocks. We will use visual representations to make multiplication processes clearer, and we will investigate when to regroup quantities when using Dienes blocks.
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## **10. Exploring commutativity in multiplication**

- In this lesson, we will explore the commutative law in multiplication. We will investigate how partitioning a number in multiplication can help us compare two multiplication calculations and see if they have the same product.
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## **11. Exploring commutativity**

- In this lesson, we will investigate the commutative law in multiplication, and compare the property with how division behaves. We will explore the terms 'product' and 'dividend'.
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## **12. Dividing by a one digit number (no regrouping)**

- In this lesson, we will learn how to divide a two digit number by a one digit number without regrouping. We will look at the key vocabulary: divisor, dividend and quotient. Lastly, we will represent division problems using Dienes blocks.
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### **13. Solving multiplication and division problems using the bar model**

- In this lesson, we will learn how to use the bar model when solving multiplication and division problems. We will analyse word problems to select the most important part of the text and determine the maths required, then translate this into a suitable bar model to help us solve the problem.



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### **14. Solving multiplication and division problems by drawing the bar model**

- In this lesson, we will learn how to draw a bar model to solve multiplication and division problems. We will match appropriate calculations to the correct bar model diagram to help learn how they are constructed and how to interpret them.

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### **15. Identifying known and unknown relationships**

- In this lesson, we will deconstruct word problems to understand what maths questions are being asked. We will use bar models to help us interpret questions and we will decide what calculations are required to solve them.
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Lesson number	Lesson question	Pupils will learn
1.	Understanding that clocks have more than one scale	<ul style="list-style-type: none"><li>In this lesson, we will study the measure of time on clock faces. We will look at different examples of time displays, and investigate the need for two different scales on a clock face to represent minutes and hours. We will also look at time related vocabulary such as 'past' and 'to'.</li></ul>
2.	Reading analogue time to the nearest minute	<ul style="list-style-type: none"><li>In this lesson, we will learn to read an analogue clock to the nearest minute. We will use vocabulary around 'to' and 'past', and utilise linear time lines to compare times on clocks to number lines.</li></ul>
3.	Telling the time to am and pm	<ul style="list-style-type: none"><li>In this lesson, we will practise using 'to' and 'past' when telling the time from an analogue clock, and we will learn about the terms a.m. and p.m. We will use these new terms in sentences related to time and relate them to a linear time line.</li></ul>



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| <b>4.</b> | <b>Telling 'minutes past' on a digital clock</b> | <ul style="list-style-type: none"><li>• In this lesson, we will learn how to tell the time on a 12-hour digital clock, and compare the method with reading an analogue clock by matching times.</li></ul> |
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| <b>5.</b> | <b>Reading and ordering time (presented in different ways)</b> | <ul style="list-style-type: none"><li>• In this lesson, we will learn to read and order the time on both analogue and digital clocks and match identical times across the two versions. We will also discuss a.m. and p.m. on digital clocks, and read and organise different times in order of earliest to latest in written form.</li></ul> |
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| <b>6.</b> | <b>Exploring units of measured time</b> | <ul style="list-style-type: none"><li>• In this lesson, we will learn the different ways to measure intervals of time. We will select the most suitable unit of time for different measures, for example, seconds for short tasks, and minutes for longer tasks. We will recap the different units used in time and their equivalencies. We will look at different time measuring tools.</li></ul> |
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| <b>7.</b> | <b>Measuring time in seconds</b> | <ul style="list-style-type: none"><li>• In this lesson, we will estimate the time it takes to do certain tasks, and then time them using time measuring tools such as stopwatches. We will then compare our estimate with our results to help us determine how long a second is in real time.</li></ul> |
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## **8. Calculating and comparing intervals of time**

- In this lesson, we will learn how to calculate and compare intervals of time when given the start and finish times. We will look at TV schedules and cinema times to help us calculate the length of programmes and films based upon their start and finish times, using number lines to help us.
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## **9. Applying knowledge of time to solve problems**

- In this lesson, we will solve and model several challenging word time problems. We will use many of the skills covered in this unit to help us determine the length of events, identifying digital times, and matching times using roman numerals.
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## **10. Further applying knowledge of time to solve problems**

- In this lesson, we will solve time related problems including reading from analogue clocks, counting backwards to find suitable departure times for trips, and planning timetables for events.
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Lesson number	Lesson question	Pupils will learn
1.	To describe the part whole relationship	<ul style="list-style-type: none"><li>In this lesson, we will explore and describe the part-whole relationship. We will look at what a whole is and various examples in real-life situations. We will then use this understanding to explore different examples of parts which make up the whole.</li></ul>
2.	To recognise parts that are equal and parts that are unequal	<ul style="list-style-type: none"><li>In this lesson, we will build upon our understanding of the whole and parts of a whole. We will explore the ideas around equal and unequal parts, using drawings and practical resources to help and support us.</li></ul>
3.	To recognise, identify and describe unit fractions	<ul style="list-style-type: none"><li>In this lesson, we will build on equal parts by looking at sharing amounts equally. We will name the fractions, and using our understanding of the numerator, the vinculum and the denominator we will write the fraction.</li></ul>





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| <b>4.</b> | <b>To find unit fractions of a given quantity</b>             | <ul style="list-style-type: none"><li>• In this lesson, we will continue to focus on unit fractions by finding fractions in different contexts. We will use pictorial representations alongside multiplication and division facts to solve a range of problems.</li></ul>   |
| <b>5.</b> | <b>To describe unit and non-unit fractions</b>                | <ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge and understanding of unit fractions to explore the idea of non-unit fractions. We will use images and visual resources to help us with this.</li></ul>  |
| <b>6.</b> | <b>To Identify and describe non-unit fractions</b>            | <ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of fractions to understand what the term 'non-unit fraction' means. We will explore various shapes and begin to identify the non-unit fractions that are represented.</li></ul>   |
| <b>7.</b> | <b>Finding non-unit fractions of quantities</b>               | <ul style="list-style-type: none"><li>• In this lesson, we will revisit what a non-unit fraction is. We will then use a 'bar modelling' strategy to help us calculate non-unit fractions of amounts. Finally, we will work backwards by applying this knowledge to use the value of the parts to help us calculate the total value of the quantity (whole).</li></ul> |
| <b>8.</b> | <b>Consolidating finding non-unit fractions of quantities</b> | <ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of fractions to consolidate finding non-unit fractions of a given quantity</li></ul>  |



<b>9.</b>	<b>Comparing fractions with the same denominator</b>	<ul style="list-style-type: none"><li>In this lesson, we will start to use pictorial representations to help identify and compare the size of fractions with the same denominator. We will then apply this learning to think more abstractly about what procedure is used to compare fractions with the same denominator.</li></ul>
<b>10.</b>	<b>Compare and order unit fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore the size of different unit fractions. We will compare and order these fractions, focusing on their denominators before we apply this knowledge to compare unit fractions of the same quantity.</li></ul>
<b>11.</b>	<b>Fractions: Recognising equivalent fractions (Part 1)</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore fractions with different denominators and numerators that are equal to each other.</li></ul>
<b>12.</b>	<b>Fractions: Recognising equivalent fractions (Part 2)</b>	<ul style="list-style-type: none"><li>In this lesson, we will continue to explore fractions with different denominators and numerators that are equal to each other, focusing on thirds and sixths.</li></ul>
<b>13.</b>	<b>Fractions: Adding fractions with the same denominator</b>	<ul style="list-style-type: none"><li>In this lesson, we will be using our knowledge of addition to add fractions with the same denominator. We will use lots of different pictures of fractions, as well as the part/whole model to help us.</li></ul>

**14.**

**Fractions: Subtracting fractions with the same denominator**

- In this lesson, we will be using our knowledge of subtraction to take-away fractions with the same denominator. We will use lots of different pictures of fractions, as well as the part/whole model to help us.



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**15.**

**Fractions: To revise learning on fractions**

- In this lesson, we will revise what we have learnt about fractions throughout this unit. We will look at fractions as equal parts of a whole and explore how these can be represented in different ways. We will also revisit unit and non-unit fractions, add and subtract fractions with the same denominator and equivalent fractions.
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Lesson number	Lesson question	Pupils will learn
1.	To identify and recognise angles	<ul style="list-style-type: none"><li>In this lesson, we will start to understand what the word 'angle' means. We will begin to identify angles within objects and shapes before we start to compare the size of angles.</li></ul>
2.	To identify angles inside 2D shapes	<ul style="list-style-type: none"><li>In this lesson, we will review what an angle is. We will begin to explore various angles that are found inside 2D shapes and identify patterns between the number of sides and the number of angles.</li></ul>
3.	To recognise right angles	<ul style="list-style-type: none"><li>In this lesson, we will build on our knowledge of angles and focus specifically on right angles. We will explore these on their own, in shapes and in everyday objects.</li></ul>
4.	To recognise obtuse and acute angles	<ul style="list-style-type: none"><li>In this lesson, we will build on our angle knowledge by introducing the terms 'acute' and 'obtuse' for those angles which are smaller (acute) and greater (obtuse) than right angles. We will have time to look at these angles separately and within different shapes.</li></ul>



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| <b>5.</b> <b>To revise angles</b>                           | <ul style="list-style-type: none"><li>• In this lesson, we will revisit our knowledge of angles. We will revise what is meant by right, acute and obtuse angles. We will then have an opportunity to identify these angles and draw them.</li></ul>   |
| <b>6.</b> <b>To identify perpendicular lines</b>            | <ul style="list-style-type: none"><li>• In this lesson, we will build on our knowledge of angles, in particular right angles, and learn to identify perpendicular lines. We will look at these individually and within 2D shapes, as well as having a chance to find these ourselves.</li></ul> |
| <b>7.</b> <b>To draw perpendicular lines</b>                | <ul style="list-style-type: none"><li>• In this lesson, we will look in detail at horizontal and vertical lines and how these relate to perpendicular pairs of lines. We will then identify where we find these in the real world and begin to draw them.</li></ul>                             |
| <b>8.</b> <b>To identify and explain parallel lines</b>     | <ul style="list-style-type: none"><li>• In this lesson, we will build on our knowledge of lines and angles to identify pairs of parallel lines. We will identify these individually and within 2D shapes, as well as looking in detail at their meaning.</li></ul>                              |
| <b>9.</b> <b>To revise parallel and perpendicular lines</b> | <ul style="list-style-type: none"><li>• In this lesson, we will revisit pairs of parallel and perpendicular lines. We will look at how they differ and what they have in common, as well as where they occur in 2D shapes.</li></ul>  |



<b>10.</b>	<b>To identify rectangles including squares</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look in detail at the properties of rectangles and learn to identify these properties. This will build on our work on angles, particularly right angles.</li></ul>
<b>11.</b>	<b>To describe 2-D shapes based on their properties</b>	<ul style="list-style-type: none"><li>• In this lesson, we will recap what the various properties of 2D shapes are and begin to identify them within 2D shapes. We will think about how to work efficiently and systematically.</li></ul>
<b>12.</b>	<b>To draw 2-D shapes based on their properties</b>	<ul style="list-style-type: none"><li>• In this lesson, we will apply 2D shape vocabulary to accurately describe and draw them 2D shapes.</li></ul>
<b>13.</b>	<b>To describe the properties of 3D shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look in detail at the properties of 3D shapes and learn to identify these properties. This will build on our work on angles and 2D shapes.</li></ul>
<b>14.</b>	<b>To Identify and Describe Lines of Symmetry in 2-D Shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look in detail at the definition of symmetry and how to recognise this in familiar 2D shapes. This will build on our work on the properties of 2D shapes.</li></ul>

**15.**

## **To revise shapes**

- In this lesson, we will revise our knowledge of 2D and 3D shapes. This will include describing 2D and 3D shapes, lines of symmetry and the new vocabulary we have encountered in relation to these areas.
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Lesson number	Lesson question	Pupils will learn
1.	Reading weighing scales with different intervals	<ul style="list-style-type: none"><li>In this lesson, we will identify the value of intervals on a scale in order to round mass of an object to the nearest interval.</li></ul>
2.	Weighing and comparing masses in mixed units	<ul style="list-style-type: none"><li>In this lesson, we will weigh different masses in mixed units of kilograms and grams.</li></ul>
3.	Estimating masses	<ul style="list-style-type: none"><li>In this lesson, we will use prior knowledge to estimate masses and then work out any differences compared to the actual mass.</li></ul>
4.	Measuring volume	<ul style="list-style-type: none"><li>In this lesson, we will identify the value of intervals on a scale in order to round the volume of a container.</li></ul>
5.	Measuring and comparing capacities in mixed units	<ul style="list-style-type: none"><li>In this lesson, we will measure capacities of different containers in litres and millilitres.</li></ul>





<b>6.</b>	<b>Estimating capacity</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use prior knowledge to estimate capacity and then work out the difference with the actual capacity.</li></ul>
<b>7.</b>	<b>Mass and capacity</b>	<ul style="list-style-type: none"><li>• In this lesson, we will review the difference between mass and capacity by reading scales and estimating mass and capacity.</li></ul>
<b>8.</b>	<b>Using bar models for addition and subtraction problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will review bar models and match bar models to word problems.</li></ul>
<b>9.</b>	<b>Drawing bar models to represent word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to add and subtract in mixed units to help us draw bar models to represent word problems</li></ul>
<b>10.</b>	<b>Using bar models to represent addition and subtraction word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of bar models to interpret if a word problem requires addition or subtraction.</li></ul>
<b>11.</b>	<b>Using bar modelling to represent multiplication and division word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of bar models to match bar models to multiplication and division word problems.</li></ul>

<b>12.</b>	<b>Drawing bar models to represent multiplication and division word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of bar models to help us answer multiplication and division word problems.</li></ul>
<b>13.</b>	<b>Using bar models to represent measurement problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of bar models to interpret if a word problem requires multiplication or division.</li></ul>
<b>14.</b>	<b>Drawing bar models to help us with measuring word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will review all the skills learnt about drawing bar models for addition, subtraction, multiplication and division word problems.</li></ul>
<b>15.</b>	<b>Solving problems using measures</b>	<ul style="list-style-type: none"><li>• In this lesson, we will plan a trip to the beach to celebrate all our fantastic work. We will use all our knowledge about measuring mass and capacity and using bar models to help us find solutions.</li></ul>





Lesson number	Lesson question	Pupils will learn
1.	<b>Commutativity between multiplication and division</b>	<ul style="list-style-type: none"><li>In this lesson, we will develop our understanding of the relationship between multiplication and division. We will explore the inverse and commutativity of this relationship and practise how using known facts can help us answer questions we have not encountered before.</li></ul>
2.	<b>Use known multiplication facts to derive our 6 times table</b>	<ul style="list-style-type: none"><li>In this lesson, we will develop our understanding of the relationships and links between different times tables and use what we already know in order to solve new problems involving our 6 times table.</li></ul>
3.	<b>Use known multiplication facts to derive our 8 times table</b>	<ul style="list-style-type: none"><li>In this lesson, we will develop our understanding of the relationships and links between different times tables and use what we already know in order to solve new problems involving our 8 times table.</li></ul>
4.	<b>Multiply 2-digit numbers by 6 using the partitioning method</b>	<ul style="list-style-type: none"><li>In this lesson, we will build on our knowledge of the 6 times table and use partitioning to multiply larger numbers accurately.</li></ul>

**5.**

**Multiply 2-digit numbers by 8 using the partitioning method**

- In this lesson, we will build on our knowledge of the 8 times table and use partitioning to multiply larger numbers accurately.
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Lesson number	Lesson question	Pupils will learn
1.	<b>Applying a range of strategies to mentally calculate addition</b>	<ul style="list-style-type: none"><li>In this lesson, we will use mental strategies such as partitioning and adjustment to multiples of ten to add a range of two digit numbers together. .</li></ul>
2.	<b>Applying a range of strategies to mentally calculate subtraction</b>	<ul style="list-style-type: none"><li>In this lesson, we will use different mental strategies to calculate subtraction such as partitioning, counting on and using known facts.</li></ul>
3.	<b>Applying addition and subtraction strategies within context</b>	<ul style="list-style-type: none"><li>In this lesson, we will be implementing a variety of addition and subtraction strategies to real world scenarios.</li></ul>
4.	<b>Using commutativity and associativity to multiply</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore the laws of multiplication, and use known facts and the laws of commutativity and associativity to perform efficient multiplication.</li></ul>
5.	<b>Using doubling or halving to calculate efficiently</b>	<ul style="list-style-type: none"><li>In this lesson, we will use doubling and halving skills to efficiently calculate multiplication and division involving a factor of 2.</li></ul>



<b>6.</b>	<b>Identifying values in four digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will extend our knowledge of place value into the thousands place, and look at unit conversions that require knowledge of four digit numbers.</li></ul>
<b>7.</b>	<b>Comparing four digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use place value knowledge to count in hundreds, investigate the number 1000 and compare the value of each digit in different four digit numbers.</li></ul>
<b>8.</b>	<b>Comparing and ordering four digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use place value knowledge to compare four digit numbers and place them in ascending and descending order of size.</li></ul>
<b>9.</b>	<b>Adding and subtracting 1000</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn how to add and subtract 1000 using our understanding of place value. We will also investigate a range of visual representations of subtraction.</li></ul>
<b>10.</b>	<b>Rounding to the nearest multiple of 1000</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to round four digit numbers to the nearest multiple of 1000 using different visual representations such as number lines and bead strings.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Explore the whole and part relationship in familiar contexts, using area, linear and quality models	<ul style="list-style-type: none"><li>In this lesson, we will learn about fractions through the context of part and whole modelling. We will practise using the terms 'part' and 'whole' correctly in sentences to model fractions.</li></ul>
2.	Explore the whole and part relationship and generalise that a part is always smaller than the whole	<ul style="list-style-type: none"><li>In this lesson, we will continue to learn about fractions through the context of part and whole. We will also think about whether stating that a part is smaller than the whole is true or false.</li></ul>
3.	Explore the Concept of 'Equal' and 'Unequal' Parts	<ul style="list-style-type: none"><li>In this lesson, we will explore the concept of 'equal' and 'unequal' parts demonstrated through a rectangle separated into parts.</li></ul>
4.	Embed the concept of equal parts and unequal parts	<ul style="list-style-type: none"><li>In this lesson, we will explore the concept of 'equal' and 'unequal' parts demonstrated through three strips of paper. We will look at shapes and decide if they have been separated into equal or unequal parts.</li></ul>



<b>5.</b>	<b>Develop understanding that equal sized parts do not have to look the same</b>	<ul style="list-style-type: none"><li>• In this lesson we will think about a set of objects as a whole, split them into parts and work out if they are equal or unequal.</li></ul>
<b>6.</b>	<b>Compare the size of parts when the whole is defined using familiar contexts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will compare the size of parts using the language 'smaller and 'larger'. This will be demonstrated through filling glasses with water</li></ul>
<b>7.</b>	<b>Explore that size of part is relative to the size of the whole using familiar contexts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore the concept that the size of the part is relative to the size of the whole using familiar concepts, such as filling glasses or containers with liquid.</li></ul>
<b>8.</b>	<b>Consider part whole relationships within the context of quantity models</b>	<ul style="list-style-type: none"><li>• In this lesson, we will consider part and whole relationships within the context of quantity models.</li></ul>
<b>9.</b>	<b>Build a whole when a part is known</b>	<ul style="list-style-type: none"><li>• In this lesson, we will work out how many equal and unequal parts the whole has and if we can build a whole once we know a part.</li></ul>
<b>10.</b>	<b>Explore different contexts for building a whole when a part is known</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate the ways we can build a whole once we know the size of one equally divided part..</li></ul>





Lesson number	Lesson question	Pupils will learn
1.	<b>Recognising the place value of each digit in a 4-digit number</b>	<ul style="list-style-type: none"><li>In this lesson, we will look at 4-digit numbers, how to represent them in different ways and how to consider how many thousands, hundreds, tens and ones are in different numbers.</li></ul>
2.	<b>Ordering and comparing numbers beyond 1000</b>	<ul style="list-style-type: none"><li>In this lesson, we will look at how to work out whether a number is greater than or less than another number. We will also order and compare numbers.</li></ul>
3.	<b>Ordering and comparing a set of numbers beyond 1000</b>	<ul style="list-style-type: none"><li>In this lesson, we will look at how we can use place value to create the largest or smallest number. We will also compare and order two or more numbers.</li></ul>
4.	<b>Finding 10, 100 or 1000 more than a given number</b>	<ul style="list-style-type: none"><li>In this lesson, we will use our place value knowledge to find 10, 100 or 1000 more than a given number and consider how the digits change when we are required to regroup.</li></ul>



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| <b>5.</b> | <b>Finding 10, 100 or 1000 less than a given number</b> | <ul style="list-style-type: none"><li>• In this lesson, we will use our place value knowledge to find 10, 100 or 1000 less than a given number and consider how the digits change when we are required to regroup.</li></ul>                                  |
| <b>6.</b> | <b>Rounding numbers to the nearest 10</b>               | <ul style="list-style-type: none"><li>• In this lesson, we will use counting sticks and number lines to record the two nearest multiples of 10, position a number on a number line and decide which is the closer multiple of 10 to the number.</li></ul>     |
| <b>7.</b> | <b>Rounding numbers to the nearest 100</b>              | <ul style="list-style-type: none"><li>• In this lesson, we will use counting sticks and number lines to record the two nearest multiples of 100, position a number on a number line and decide which is the closer multiple of 100 to the number.</li></ul>   |
| <b>8.</b> | <b>Rounding numbers to the nearest 1000</b>             | <ul style="list-style-type: none"><li>• In this lesson, we will use counting sticks and number lines to record the two nearest multiples of 1000, position a number on a number line and decide which is the closer multiple of 1000 to the number.</li></ul> |
| <b>9.</b> | <b>Finding the odd one out</b>                          | <ul style="list-style-type: none"><li>• In this lesson, we will find the odd one out by using our knowledge of place value and rounding.</li></ul>  |

**10.**

**Applying and consolidating: Reasoning  
with 4-digit numbers**

- In this lesson, we will apply and consolidate our knowledge of place value and rounding by recapping the key learning from previous lessons in the unit. We will then apply our learning to answer different questions.
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Lesson number	Lesson question	Pupils will learn
1.	Deriving addition and subtraction facts	<ul style="list-style-type: none"><li>In this lesson, we will derive addition and subtraction facts by using part whole models to show how related facts can be derived from scaling up by 10, 100 or 1000.</li></ul>
2.	Deriving addition and subtraction facts by using given calculations	<ul style="list-style-type: none"><li>In this lesson, we will derive addition and subtraction facts by using given calculations, consider how the whole or parts have changed and the impact this has on the new calculation.</li></ul>
3.	Choosing appropriate addition strategies	<ul style="list-style-type: none"><li>In this lesson, we will look at addition equations and decide the best and most efficient strategy we could use to solve them.</li></ul>
4.	Choosing appropriate subtraction strategies	<ul style="list-style-type: none"><li>In this lesson, we will look at subtraction equations and decide the best and most efficient strategy we could use to solve them.</li></ul>



<b>5.</b>	<b>Applying and consolidating: Related number facts and appropriate strategies</b>	<ul style="list-style-type: none"><li>• In this lesson, we will apply and consolidate our knowledge of deriving related number facts and most efficient strategies for calculating addition and subtraction equations. We will recap our key learning and apply that learning to answer different questions.</li></ul>
<b>6.</b>	<b>Adding using the column method</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use the column method to add two four digit numbers where regrouping is required in one column.</li></ul>
<b>7.</b>	<b>Adding using the column method, when multiple columns require regrouping</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use the column method to add two four digit numbers where regrouping is required in multiple columns.</li></ul>
<b>8.</b>	<b>Subtracting using the column method</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use the column method to subtract two four digit numbers where regrouping is required in one column.</li></ul>
<b>9.</b>	<b>Subtracting using the column method, when multiple columns require regrouping</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use the column method to subtract two four digit numbers where regrouping is required in multiple columns.</li></ul>
<b>10.</b>	<b>Subtracting from multiples of 1000</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore how to calculate from a multiple of 1000.</li></ul>



<b>11.</b>	<b>Applying and consolidating: Column method for addition and subtraction</b>	<ul style="list-style-type: none"><li>• In this lesson, we will consolidate our knowledge of the column method for both addition and subtraction by recapping the method, completing examples and applying our learning.</li></ul>
<b>12.</b>	<b>Representing one-step word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use bar models to represent addition and subtraction in one-step word problems.</li></ul>
<b>13.</b>	<b>Representing comparison word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use comparison bar models to represent addition and subtraction in one-step word problems.</li></ul>
<b>14.</b>	<b>Solving two-step word problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use bar models to represent two-step addition and subtraction word problems.</li></ul>
<b>15.</b>	<b>Applying and consolidating: Word problems and bar models</b>	<ul style="list-style-type: none"><li>• In this lesson, we will recap our knowledge of how to use bar models to represent word problems which require addition or subtraction.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Multiplication and Division</b>	<ul style="list-style-type: none"><li>In this lesson, we will look at showing division and multiplication equations using pictorial representations. We will explore how multiplication is commutative and how multiplication is the inverse to division.</li></ul>
2.	<b>Representing word problems using bar models</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore how to represent word problems using bar models. We will learn how to identify bar models that represent division or multiplication problems.</li></ul>
3.	<b>Representing 2-Step Word Problems</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore how to represent two-step word problems using bar models. We will learn how to identify bar models that represent division or multiplication equations.</li></ul>
4.	<b>Deriving Multiplication Facts</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn how to represent multiplication equations pictorially. Then, we will explore how we can derive new facts from known multiplication facts.</li></ul>



<b>5.</b>	<b>Deriving Division and Multiplication Facts</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore how division is the inverse to multiplication. Then, we will learn how to derive division facts from known facts using our times tables knowledge.</li></ul>
<b>6.</b>	<b>To calculate multiplication facts using the distributive law</b>	<ul style="list-style-type: none"><li>In this lesson, we will solve multiplication equations using the distributive law. We will use arrays and area models to represent our calculations.</li></ul>
<b>7.</b>	<b>Solving 2-digit multiplication calculations using the distributive law</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore the distributive law in multiplication. We will solve 2-digit multiplication problems using the partitioning method and the compensating method.</li></ul>
<b>8.</b>	<b>Solving three 1 digit multiplication equations</b>	<ul style="list-style-type: none"><li>In this lesson, we will multiply three 1-digit numbers by each other and explore the associative law.</li></ul>
<b>9.</b>	<b>Multiplying 3-digit numbers by 1-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use short multiplication to multiply 3-digit numbers by 1-digit numbers. We will learn to regroup in the ones and tens column.</li></ul>





<b>10.</b>	<b>Multiplying 3-digit numbers by 1-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will use short multiplication to multiply 3-digit numbers by 1-digit numbers. We will learn to regroup in multiple columns and when zero is a place value holder.</li></ul>
<b>11.</b>	<b>Exploring multiplication strategies</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore a range of strategies to solve multiplication problems. We will use mental and written strategies to solve problems.</li></ul>
<b>12.</b>	<b>Consolidating multiplication strategies</b>	<ul style="list-style-type: none"><li>In this lesson, we will consolidate different multiplication strategies and apply different methods in reasoning questions.</li></ul>
<b>13.</b>	<b>Dividing mentally</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore a range of mental division methods, including partitioning through the distributive law and using our known multiplication facts.</li></ul>
<b>14.</b>	<b>Dividing using knowledge of multiples</b>	<ul style="list-style-type: none"><li>In this lesson, we will use our known multiplication facts to help us divide mentally.</li></ul>
<b>15.</b>	<b>Short division (Part 1)</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore how to use the short division algorithm with regrouping in one place value column.</li></ul>

<b>16.</b>	<b>Short division (Part 2)</b>	<ul style="list-style-type: none"> <li>In this lesson, we will explore how to use the short division algorithm with multiple regroupings.</li> </ul>
<b>17.</b>	<b>Short division (Part 3)</b>	<ul style="list-style-type: none"> <li>In this lesson, we will explore how to use the short division algorithm, regrouping through zero.</li> </ul>
<b>18.</b>	<b>Problem solving: Choosing operations</b>	<ul style="list-style-type: none"> <li>In this lesson, we will explore a multi-step problem and decide which of the following operations will solve each step; addition, subtraction, multiplication or division.</li> </ul>
<b>19.</b>	<b>Problem solving: Using all four operations</b>	<ul style="list-style-type: none"> <li>In this lesson, we will solve a multi-step problem using all four operations; addition, subtraction, multiplication and division.</li> </ul>
<b>20.</b>	<b>Consolidating division strategies</b>	<ul style="list-style-type: none"> <li>In this lesson, we will consolidate division strategies by solving a variety of division reasoning questions.</li> </ul>



## Unit 18 Interpreting and presenting data

10 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Reading, interpreting and comparing pictograms	<ul style="list-style-type: none"><li>In this lesson, we will interpret different tally charts, frequency tables and pictograms.</li></ul>
2.	Construct pictograms	<ul style="list-style-type: none"><li>In this lesson, we will use and interpret data to construct your own pictogram.</li></ul>
3.	Read, interpret and compare bar charts	<ul style="list-style-type: none"><li>In this lesson, we will read, interpret and compare bar charts.</li></ul>
4.	Constructing bar charts	<ul style="list-style-type: none"><li>In this lesson, we will use data to construct our own bar chart.</li></ul>
5.	Consolidation lesson: Bar chart	<ul style="list-style-type: none"><li>In this lesson, we will collect our own data and use it to construct a bar chart.</li></ul>
6.	Read and interpret time graphs	<ul style="list-style-type: none"><li>In this lesson, we will read and interpret time graphs.</li></ul>

## **7. Comparing time graphs**

- In this lesson, we will use data and compare time graphs.



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## **8. Interpret time graphs**

- In this lesson, we will read and interpret time graphs.

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## **9. Construct a time graph**

- In this lesson, we will use data to construct your own time graph.

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## **10. Consolidation lesson: Time graph**

- In this lesson, we will collect your own data and use it to construct a time graph.
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Lesson number	Lesson question	Pupils will learn
1.	Multiplication patterns	<ul style="list-style-type: none"><li>In this lesson, we will explore the patterns which different multiplication tables create on a 10 x 10 square. We will share the efficient mental strategies which allow us to identify multiplication facts in the 6x and 12x multiplication tables. We will then explore other multiplication tables, shading the multiples and exploring the patterns, similarities and differences that exist within them.</li></ul>
2.	Investigating multiplication patterns	<ul style="list-style-type: none"><li>In this lesson, we will continue to look at different sized grids which are shaded with different multiplication tables. We can then investigate different multiplication grids, consider what grid it could be a part of, and what multiplication table it could show.</li></ul>
3.	The nine times table	<ul style="list-style-type: none"><li>In this lesson, we will look at the nine times table and consider what patterns there are. We can then apply our knowledge of this table in a 'swap the digits' activity.</li></ul>

**4.**

## **Representing the seven times table**

- In this lesson, we will look at a range of representations for multiplications in the seven times table before creating our own concrete, pictorial and abstract representations. We will also briefly introduce commutative law when using written multiplication equations.



**5.**

## **Consolidation and review lesson**

- In this lesson, we will consolidate our multiplication knowledge by using the learning from the key concepts and strategies taught across the unit to complete a series of tasks and problems.



Lesson number	Lesson question	Pupils will learn
1.	<b>Recognising fractions as different representations</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore different ways of representing fractions including as part of a whole, as a number, as a result of division and as part of a set.</li></ul>
2.	<b>Calculating unit fractions of quantities</b>	<ul style="list-style-type: none"><li>In this lesson, we will identify fractions of quantities for unit fractions only (where the numerator is one).</li></ul>
3.	<b>Recognising equivalent fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will use fraction bars to help us recognise equivalent fractions.</li></ul>
4.	<b>Recognising equivalent fractions (2)</b>	<ul style="list-style-type: none"><li>In this lesson, we will use fraction bars to help us recognise equivalent fractions.</li></ul>
5.	<b>Calculating non-unit fractions of quantities</b>	<ul style="list-style-type: none"><li>In this lesson, we will identify fractions of quantities for non-unit fractions (where the numerator is more than one).</li></ul>



<b>6.</b>	<b>Equivalent fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will take a closer look at equivalent fractions. We will explore the relationship between the numerator and denominator in pairs of equivalent fractions.</li></ul>
<b>7.</b>	<b>Fractions and division</b>	<ul style="list-style-type: none"><li>In this lesson, we will use pizza problems to explore the connection between fractions and division.</li></ul>
<b>8.</b>	<b>Comparing fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will compare pairs of fractions. We will compare pairs of fractions with the same denominator, and then we will compare pairs of fraction with different denominators.</li></ul>
<b>9.</b>	<b>Ordering fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will order a set of fractions with denominators that are multiples or factors of each other. We will place them in order on a number line.</li></ul>
<b>10.</b>	<b>Using mixed numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn about mixed numbers and learn how to read, write and represent them.</li></ul>
<b>11.</b>	<b>Using improper fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn about improper fractions and learn how to read, write and represent them. Then we will begin to relate improper fractions to mixed numbers.</li></ul>





<b>12.</b>	<b>Converting mixed numbers into improper fractions</b>	<ul style="list-style-type: none"><li>• In this lesson we will explore representations to connect mixed numbers and improper fractions, before using multiplication more formally to convert mixed numbers into improper fractions.</li></ul>
<b>13.</b>	<b>Adding fractions (up to one whole)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use bar models to support our understanding of adding fractions where the total does not exceed one.</li></ul>
<b>14.</b>	<b>Subtracting fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use bar models to support our understanding of subtracting fractions and create our own subtraction problems involving fractions.</li></ul>
<b>15.</b>	<b>Adding fractions (with a total greater than one)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore fractions that total one or greater than one using fraction bars to support understanding.</li></ul>
<b>16.</b>	<b>Subtracting fractions (2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore subtracting fractions involving fractions greater than one using fraction bars and number lines to build our understanding.</li></ul>
<b>17.</b>	<b>Calculating unit fractions of quantities</b>	<ul style="list-style-type: none"><li>• In this lesson, we will solve word problems which require us to find unit fractions of quantities.</li></ul>

**18. Calculating non-unit fractions of quantities**

- In this lesson, we will solve word problems which require us to find non-unit fractions of quantities.



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**19. Comparing non-unit fractions of quantities**

- In this lesson, we will use bar models to solve word problems that compare fractions of quantities.

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**20. Reasoning with fractions**

- In this lesson, we will apply our knowledge of fractions to three reasoning problems.
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Lesson number	Lesson question	Pupils will learn
1.	Reading analogue and digital 12 hour clocks	<ul style="list-style-type: none"><li>In this lesson, we will read and compare times on analogue and digital clocks.</li></ul>
2.	Reading, writing and converting time between 12 hour and 24 hour clocks	<ul style="list-style-type: none"><li>In this lesson, we will convert time between 12 and 24 hour digital clocks.</li></ul>
3.	Converting between hours, minutes and seconds	<ul style="list-style-type: none"><li>In this lesson, we will convert time measures from hours, minutes and seconds, to minutes and seconds.</li></ul>
4.	Converting between years, months and weeks	<ul style="list-style-type: none"><li>In this lesson, we will convert time between years, months and weeks.</li></ul>
5.	Solving word problems with time	<ul style="list-style-type: none"><li>In this lesson, we will work through and model some time based word problems which involve converting flight times from hours and minutes into minutes only.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Recognising Decimal Tenths (Part 1)	<ul style="list-style-type: none"><li>In this lesson, we will represent tenths using fractions and decimals and we will accurately read decimal tenths.</li></ul>
2.	Recognising decimal tenths (Part 2)	<ul style="list-style-type: none"><li>In this lesson, we will interpret and measure the amount of liquid or sand in a given container, using decimal tenths. We will place fractions on a number line and compare with decimal equivalents.</li></ul>
3.	Comparing Decimals	<ul style="list-style-type: none"><li>In this lesson, we will compare decimal and fractional equivalencies using Dienes blocks. We will place decimals on a suitable number line in the correct position.</li></ul>
4.	Rounding Decimals (Part 1)	<ul style="list-style-type: none"><li>In this lesson, we will learn how to round numbers with one decimal place, using visual prompts such as a number line.</li></ul>



<b>5.</b>	<b>Rounding Decimals (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate and model solutions to a number of rounding problems which include rounding to the nearest 10, 100 and 1000.</li></ul>
<b>6.</b>	<b>Decimal Number Bonds</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of whole-number number bonds to solve decimal-number number bonds.</li></ul>
<b>7.</b>	<b>Mental Addition and Subtraction</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use mental calculation strategies to add and subtract decimal numbers.</li></ul>
<b>8.</b>	<b>Recognising Decimal Hundredths (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will represent hundredths using fractions and decimals and learn how to accurately read hundredths represented in these ways.</li></ul>
<b>9.</b>	<b>Recognising Decimal Hundredths (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will represent hundredths using the visual representation of a bead string.</li></ul>
<b>10.</b>	<b>Recognising Common Decimal Equivalents</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore and identify common decimal equivalents to fractions (quarter, half and three quarters).</li></ul>

## 11. Ordering Decimals

- In this lesson, we will organise decimal numbers up to two decimal places in both ascending and descending order.



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## 12. Multiplying and Dividing by 10 (Part 1)

- In this lesson, we will learn to multiply and divide by 10 including with decimals. We will represent these calculations using a variety of visuals such as Dienes blocks and place value tables.

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## 13. Multiplying and Dividing by 10 (Part 2)

- In this lesson, we will learn to multiply and divide by 10 including with decimals. We will represent these calculations using a variety of visuals such as Dienes blocks and place value tables.

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## 14. Multiplying and Dividing by 100 (Part 1)

- In this lesson, we will learn to multiply and divide by 100 including with decimals. We will represent these calculations using a variety of visuals such as Dienes blocks and place value tables.

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## 15. Multiplying and Dividing by 100 (Part 2)

- In this lesson, we will learn to multiply and divide by 100 including with decimals. We will represent these calculations using a variety of visuals such as Dienes blocks and place value tables.
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Lesson number	Lesson question	Pupils will learn
1.	Measure and calculate the perimeter of rectangles in centimetres and millimetres	<ul style="list-style-type: none"><li>In this lesson, we will learn about the concept of a 'perimeter', and look at examples of how to calculate the perimeter of rectangular shapes using different units of measurement.</li></ul>
2.	Draw shapes of a given perimeter	<ul style="list-style-type: none"><li>In this lesson, we will learn how to construct a variety of rectangles using a given perimeter and dotted paper.</li></ul>
3.	Calculate the perimeter of rectangles in centimetres and metres	<ul style="list-style-type: none"><li>In this lesson, we will learn to convert between metres and centimetres and then use this knowledge to calculate perimeter.</li></ul>
4.	Calculate the perimeter of simple compound shapes	<ul style="list-style-type: none"><li>In this lesson, we will learn how to calculate the perimeter of compound shapes.</li></ul>
5.	Calculate the perimeter of composite shapes	<ul style="list-style-type: none"><li>In this lesson, we will learn how to calculate the perimeter of composite shapes.</li></ul>



<b>6.</b>	<b>Understand that area is a measure of surface and is measured in square units (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at the difference between perimeter and area and we will investigate a strategy for calculating area.</li></ul>
<b>7.</b>	<b>Understand that area is a measure of surface and is measured in square units (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at the difference between perimeter and area and learn a multiplication strategy for calculating area.</li></ul>
<b>8.</b>	<b>Calculate and compare the area of rectangles using square centimetres (cm<sup>2</sup>)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will estimate area and then apply a formula to calculate area.</li></ul>
<b>9.</b>	<b>Calculate and compare the area of rectangles using square metres (m<sup>2</sup>)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will calculate the area of rectangles in square metres and find missing lengths given the area.</li></ul>
<b>10.</b>	<b>Investigate the relationship between area and perimeter and use this knowledge to solve problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate the relationship between area and perimeter and use this knowledge to solve area and perimeter problems. We will identify key similarities and differences between the two ideas.</li></ul>



## Unit 24 Solving measure and money problems

15 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Units of Measure	<ul style="list-style-type: none"><li>In this lesson, we will explore common units and tools to use when estimating measurements. We will look at when it is appropriate and not appropriate to use litres, millilitres, centimetres, metres and more.</li></ul>
2.	Converting Lengths (Part 1)	<ul style="list-style-type: none"><li>In this lesson, we will investigate the relationship between centimetres and millimetres. We will convert between both types of measurement and learn about fractional representations of centimetres as millimetres.</li></ul>
3.	Converting Lengths (Part 2)	<ul style="list-style-type: none"><li>In this lesson, we will investigate the relationship between centimetres and metres. We will convert between both types of measurement and learn about fractional representations of metres as centremetres.</li></ul>
4.	Converting Measurements	<ul style="list-style-type: none"><li>In this lesson, we will investigate the relationship between different scales of measurement. We will learn about conversion strategies for measurements of length, capacity, and mass (specifically, cm, mm, m, km, l, ml, g, kg).</li></ul>

## 5. Ordering Measurements

- In this lesson, we will use our knowledge about conversions between units of measure to help us arrange different measurements in ascending order of size, and compare using 'greater than' and 'less than' statements.



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## 6. Marathon Training

- In this lesson, we will investigate a problem around incremental increases of time. We will look at the effect of adding 8 minutes on to each period in a sequence of training sessions for an athlete.

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## 7. Stamps

- In this lesson, we will investigate a money problem involving calculating the number of combinations of different types of coin we could have that add to the same total.

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## 8. Ribbons

- In this lesson, we will investigate a problem of measurement which involves a given total length of ribbon that is made up of two different colour strips of different lengths and quantities. Here we model how one could calculate how many of each colour strip have been used.
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## 9. Money Bags 1

- In this lesson, we will investigate a money problem involving coins of unknown value being placed into 3 bags. Using truth statements as clues, we will model how to determine what the value of the coins are, and how many are in each bag.



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## 10. Money Bags (Part 2)

- In this lesson, we will explore how to make sums of money using different coins, and investigate how many ways we can make a set amount of money using different coins.

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## 11. Two point seven

- In this lesson, we will develop our skills in planning how to solve problems involving mass. We will investigate and compare measurements using grams and kilograms.

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## 12. Fruit

- In this lesson, we will develop our skills in planning how to solve, and then solving, a money problem using an educated guess and check strategy.

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## 13. Souvenirs

- In this lesson, we will develop our skills in planning how to solve, and then solving, a money problem using a trial and improvement strategy.
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**14.**

## **Flag Pole 1**

- In this lesson, we will develop our skills in planning how to solve, and then solving, a fractional measurement problem. The problem involves determining what lengths of wood could be used in various combinations to achieve a given length.



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**15.**

## **Flag Pole (Part 2)**

- In this lesson, we will continue to develop our skills in planning how to solve, and then solving, a fractional measurement problem. The problem is a continuation of determining what lengths of wood could be used in various combinations to achieve a given length.
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Lesson number	Lesson question	Pupils will learn
1.	<b>Shape and symmetry: To compare and order angles</b>	<ul style="list-style-type: none"><li>In this lesson, we will revise the names of different types of angles. We will look at what angles have in common with each other and what makes them different. We will estimate angles and learn the properties of various types of angles.</li></ul>
2.	<b>Shape and symmetry: To identify right angles</b>	<ul style="list-style-type: none"><li>In this lesson, we will recap the names of different types of angles. We will look specifically at right angles today and explore where they can be found. We will learn what makes an angle a right angle. We will make right angle checkers to help us investigate.</li></ul>
3.	<b>Shape and symmetry: To identify acute and obtuse angles</b>	<ul style="list-style-type: none"><li>In this lesson, we will recap the names of different types of angles. We will look specifically at acute and obtuse angles and explore where they can be found. We will learn what makes an angle acute or obtuse and how they are different.</li></ul>



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|-----------|--|---|
| <b>4.</b> | <b>Shape and symmetry: To investigate angles within shapes</b> | <ul style="list-style-type: none"><li>• In this lesson, we will recap the names of different types of angles. We will look specifically at angles within different shapes. We will draw and investigate different shapes containing a variety of angles.</li></ul>  |
| <b>5.</b> | <b>Shape and symmetry: Identify angles within shapes</b>       | <ul style="list-style-type: none"><li>• In this lesson, we will revisit the different types of angle names (acute, obtuse, right angled). We will practise labelling and identifying angles of each type.</li></ul>   |
| <b>6.</b> | <b>To compare and classify 2D shapes</b>                       | <ul style="list-style-type: none"><li>• In this lesson, we will revise the names of 2D shapes. We will look at what these shapes have in common with each other and what makes them different. We will learn the difference between regular and irregular shapes and use correct mathematical language to discuss their features.</li></ul> |
| <b>7.</b> | <b>To compare and classify quadrilaterals</b>                  | <ul style="list-style-type: none"><li>• In this lesson, we will revise the names of different types of quadrilateral shapes. We will look at what they have in common with each other and what makes them different. We will learn the properties of various types of quadrilateral shapes.</li></ul>                                       |



## **8. To identify and classify right angled and equilateral triangles**

- In this lesson, we will revise the names of different types of triangles. We will look at what they have in common with each other and what makes them different. We will learn the properties of various types of triangles and use correct mathematical vocabulary to describe the features and properties of each. We will focus on right angled and equilateral triangles.
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## **9. To Compare and Classify Isosceles and Scalene Triangles**

- In this lesson, we will revise the names of different types of triangles. We will look at what they have in common with each other and what makes them different. We will learn the properties of various types of triangles and use correct mathematical vocabulary to describe the features and properties of each. We will focus on scalene and isosceles triangles.
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## **10. Quadrilateral Problems**

- In this lesson, we will recap the knowledge we have developed on quadrilaterals. We will investigate different types of quadrilateral shapes and solve problems based on their properties. We will draw, investigate and justify our ideas about different shapes.
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<b>11.</b>	<b>To identify lines of symmetry in 2-D shapes</b>	<ul style="list-style-type: none"><li>In this lesson, we will revise the names of different types of 2D shapes. We will explore what symmetry is and how to recognise lines of symmetry in 2D shapes. We will develop strong mathematical language about shape and we will investigate lines of symmetry in a variety of quadrilaterals and triangles.</li></ul>
<b>12.</b>	<b>To identify lines of symmetry in a pattern</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to recognise patterns and how they repeat. We will continue to explore what symmetry is and how to recognise lines of symmetry in 2D shapes and patterns containing these shapes. We will continue to develop strong mathematical language about shape, symmetry and pattern.</li></ul>
<b>13.</b>	<b>To complete a simple symmetrical figure</b>	<ul style="list-style-type: none"><li>In this lesson, we will deepen our understanding of symmetry by creating our own symmetrical figures and completing others that have been started. We will learn how to check our work to ensure that lines of symmetry are accurate and we will use the correct vocabulary to explain our figures.</li></ul>
<b>14.</b>	<b>To investigate a problem using symmetry (Part 1)</b>	<ul style="list-style-type: none"><li>In this lesson, we will recap the knowledge we have developed on symmetry. We will investigate different types of shapes and patterns and use our new knowledge to solve problems based on their lines of symmetry. We will draw, investigate and justify our ideas.</li></ul>



**15.**

**To investigate a problem using symmetry (Part 2)**

- In this lesson, we will further develop the knowledge we have gained on symmetry. We will investigate different types of shapes and patterns and use our new knowledge to solve problems based on their lines of symmetry. We will draw, investigate and justify our ideas.
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Lesson number	Lesson question	Pupils will learn
1.	To describe positions on a 2D Grid as coordinates	<ul style="list-style-type: none"><li>In this lesson, we will revise the names of different types of 2D shape. We will begin to explore how shapes can be referred to on a grid using coordinates. We will learn about the x and y axis and how to read coordinates to locate points on a grid. We will use the correct mathematical language for shape and coordinates for a variety of quadrilaterals.</li></ul>
2.	To investigate a problem, describing position on a 2-D grid as coordinates	<ul style="list-style-type: none"><li>In this lesson, we will revise prior learning about coordinates. We will continue to explore how points plotted on a grid can be referred to using coordinates. We will learn about the x and y axis and how to read coordinates to locate points on a grid. We will remember that one must read the x axis first followed by the y axis. We will investigate using our new knowledge.</li></ul>
3.	To Plot Specified Points and Draw Sides to Complete a Given Triangle	<ul style="list-style-type: none"><li>In this lesson, we will deepen our understanding of coordinates by plotting various types of triangle onto a grid. We will use our knowledge of triangles to name the type and follow instructions to meet a range of criteria.</li></ul>

**4.**

**To Describe Movement Between Positions as Translations of a Given Unit Left/Right or Up/Down 1**

- In this lesson, we will begin to learn how to move a shape from one position to another on a grid. We will look at the translation of shapes a given number of units up, down, left or right. We will develop strategies to reposition these shapes and check that we are working accurately.



**5.**

**To Describe Movement Between Positions as Translations of a Given Unit Left/Right or Up/Down 2**

- In this lesson, we will continue to move a variety of shapes from one position to another on a grid. We will look at the translation of shapes a given number of units up, down, left or right. We will further develop strategies to reposition these shapes and check that we are working accurately.



Lesson number	Lesson question	Pupils will learn
1.	To Investigate the Place Value of Different Number Systems	<ul style="list-style-type: none"><li>In this lesson, we will look at identifying numbers and how they are recorded in different number systems. We will look for patterns and familiarities with number systems we already know and use this information to help write a variety of numbers in the new scripts.</li></ul>
2.	To investigate Roman Numerals up to one hundred	<ul style="list-style-type: none"><li>In this lesson, we will look at identifying Roman numerals and link them to the number system we recognise today.</li></ul>
3.	Number sequences (Part 1)	<ul style="list-style-type: none"><li>In this lesson, we will learn to identify sequences - whether they are increasing or decreasing. We will also learn the rule to get from one term to the next, and continue the sequence. We will then look at sequences with missing terms, for example with the first term missing, and consider how they can be completed by using the inverse.</li></ul>



## **4. Number sequences (Part 2)**

- In this lesson, we will learn about number sequences which have division and multiplication rules. We will then move on to creating our own number sequences using two rules to get to the next term.
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## **5. Identifying patterns**

- In this lesson, we will further develop our understanding of patterns in number and the rules to follow to get from one term to the next. We will also describe the patterns with reference to what calculations need to be done to find the missing terms.
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## **6. To develop strategies to plan and solve problems (Part 1)**

- In this lesson, we will explore a series of shapes which grow in size. We will spot the patterns and explore them so that we can make a general statement about the rules of this pattern. We will also learn how to investigate the patterns logically.
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## **7. To develop strategies to plan and solve problems (Part 2)**

- In this lesson, we will explore a series of shapes which grow in size. We will spot the patterns and explore them so that we can make a general statement about the rules of this pattern. Using the general rules we have discovered, we will be able to find out the number of shapes needed for any term in the sequence. We will also learn how to investigate the patterns logically.
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## 8. To develop strategies to plan and solve problems (Part 3)

- In this lesson, we will explore a series of shapes which grow in size. We will spot the patterns and explore them so that we can make a general statement about the rules of this pattern. We will also learn how to investigate the patterns logically.
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## 9. To develop strategies to plan and solve problems (Part 4)

- In this lesson, we will explore a series of shapes which grow in size. We will spot the patterns and explore them so that we can make a general statement about the rules of this pattern. Using the general rules we have discovered, we will be able to find out the number of shapes needed for any term in the sequence. We will also learn how to investigate the patterns logically.
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## 10. To develop strategies to plan and solve problems (Part 5)

- In this lesson, we will explore a series of shapes which grow in size. We will spot the patterns and explore them so that we can make a general statement about the rules of this pattern. Using the general rules we have discovered, we will be able to find out the number of shapes needed for any term in the sequence. We will also learn how to investigate the patterns logically.
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Lesson number	Lesson question	Pupils will learn
1.	Using and applying knowledge of the properties of 3D shapes	<ul style="list-style-type: none"><li>In this lesson, we will identify the names and properties of a range of 3D shapes. We will apply this understanding to real world 3D based problem solving.</li></ul>
2.	Identifying the properties of 3D shapes	<ul style="list-style-type: none"><li>In this lesson, we will be introduced to new 3D shapes (cones, cylinders, and cuboids). We will discuss the properties of these shapes using mathematical vocabulary, and determine how they are similar and different.</li></ul>
3.	Identifying the properties of constructed 3-D shapes	<ul style="list-style-type: none"><li>In this lesson, we will recap the key mathematical vocabulary used to describe 3D shapes and use that vocabulary to identify the properties of constructed 3D shapes. We will use the terms face, edge, vertex and apex.</li></ul>

**4.**

#### **Problem solving using 2-D representations of 3-D shapes**

- In this lesson, we will recap the key vocabulary used to describe 3D shapes before we apply our understanding of 3D shapes to solve a problem which involves a 3D shape made up of cubes that needs painting, with associated costs.



**5.**

#### **Consolidating 3D shape learning**

- In this lesson, we will consolidate our learning of 3D shapes by recapping out previous learning: key vocabulary, properties of 3D shapes and categorising of 3D shapes.





Lesson number	Lesson question	Pupils will learn
1.	<b>Divide and describe the same whole when divided into differing numbers of equal parts</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn how to divide a shape into equal parts in different ways. We will also discuss the vocabulary and sentences we can make when describing the shape and its parts.</li></ul>
2.	<b>Understand fraction notation to represent a relationship between part and whole</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to understand fraction notation to help represent the relationship between the part and the whole. This can be demonstrated through usage of division bars.</li></ul>
3.	<b>Begin to use and understand the terms 'Numerator' and 'Denominator'</b>	<ul style="list-style-type: none"><li>In this lesson we will begin to use and understand the terms 'numerator' and 'denominator' alongside the language learnt in previous lessons.</li></ul>
4.	<b>Name unit fractions and match them with the fraction notation and a representation</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to name unit fractions and match them with the fraction notation and a picture representation using the same language learnt in previous lessons.</li></ul>



<b>5.</b>	<b>Embed previous fraction work using a linear model</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate fractions using strips of paper and lines. We will use mathematical sentences to describe how many equal parts a whole strip of paper has been folded into, and what fraction each folded segment represents.</li></ul>
<b>6.</b>	<b>Assign unit fraction names and notation to 3D representations</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate how to determine the size of fractions in a 3D space. For example, we will determine what fraction of a stack of cubes is yellow.</li></ul>
<b>7.</b>	<b>Assign unit fraction names and notation to equal parts of quantities</b>	<ul style="list-style-type: none"><li>• In this lesson, we will continue to learn to assign fraction names and notation to equal parts of quantities. We will build on part-whole relationships by identifying fractions of sets.</li></ul>
<b>8.</b>	<b>Recognise and reason about unit fractions in a variety of contexts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will recognise and reason about unit fractions in a variety of contexts. We will study a number of visual representations of different unit fractions.</li></ul>
<b>9.</b>	<b>Understand that Equal Parts Can Look Different - Area</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at whether equal parts of the whole always need to look the same. We will compare different representations of fractions using the same original whole.</li></ul>



<b>10.</b>	<b>Understand that Equal Parts Can Look Different - Volume and Area Contexts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will understand that the same fraction can look different in the context of shading shapes with different volume or area. We will also investigate how a shaded fraction can look different but be the same proportion in the same shape if we make it in different ways.</li></ul>
<b>11.</b>	<b>Compare unit fractions using a fraction wall</b>	<ul style="list-style-type: none"><li>• In this lesson, we will compare unit fractions using a fraction wall. We will investigate the relative sizes of different unit fractions by comparing them side by side on a fraction wall.</li></ul>
<b>12.</b>	<b>Reason about comparing unit fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will further investigate how the denominator tells us how many different equal parts there are and also tell us the size of the equal parts compared to the whole.</li></ul>
<b>13.</b>	<b>Compare unit fractions in a measure's context</b>	<ul style="list-style-type: none"><li>• In this lesson, we will compare unit fractions using capacity and measurement to help us. We will use quantities of liquid in containers to help us compare the relative size of each unit fraction.</li></ul>



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|------------|---|--|
| <b>14.</b> | <b>Can we compare unit fractions of different wholes?</b>   | <ul style="list-style-type: none"><li>• In this lesson, we will compare unit fractions of different wholes. We will investigate how a half is proportional to the size of the original whole, and that in turn, half of one object can look bigger or smaller than half of a different object.</li></ul> |
| <b>15.</b> | <b>Construct a whole from a part and identify the fraction it represents</b>                            | <ul style="list-style-type: none"><li>• In this lesson, we will take unit fractions of shapes and build the original whole from them. We will use mathematical sentences to describe how many of each fraction makes up the whole.</li></ul>   |
| <b>16.</b> | <b>Build and compare different wholes from the same unit fractions that represent the same length</b>   | <ul style="list-style-type: none"><li>• In this lesson, we will build and compare different wholes from unit fractions that represent the same length. We will use our knowledge of unit fractions to determine which whole line will be longest.</li></ul>  |
| <b>17.</b> | <b>Build and compare different wholes from the same unit fractions that represent different lengths</b> | <ul style="list-style-type: none"><li>• In this lesson, we will build and compare different wholes from the same unit fractions that represent different lengths. We will learn how finding out the length of one part can help you to find the length of the whole.</li></ul>                           |

**18. Build and compare different wholes from different unit fractions that represent the same quantity**

- In this lesson, we will learn how finding out the amount of one part can help you to find the amount of the whole and how we can compare different wholes using the same amount but different fractions.



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**19. Build and compare different wholes from different unit fractions that represent different quantities**

- In this lesson, we will learn to build and compare different wholes from different unit fractions that represent different quantities. We can compare different wholes using the same fraction

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**20. Build and compare wholes when different unit fractions represent different amounts**

- In this lesson, we will build and compare different wholes when different unit fractions represent different amounts.
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Lesson number	Lesson question	Pupils will learn
1.	Building wholes	<ul style="list-style-type: none"><li>In this lesson, we will build and compare different wholes from different unit fractions that have the same length. We will use mathematical vocabulary to make statements of comparison.</li></ul>
2.	Building and comparing wholes	<ul style="list-style-type: none"><li>In this lesson, we build and compare different wholes from the same unit fractions that represent different lengths.</li></ul>
3.	Building and comparing wholes from different unit fractions	<ul style="list-style-type: none"><li>In this lesson, we will build and compare different wholes from different unit fractions that represent the same quantity.</li></ul>
4.	More building and comparing wholes from different unit fractions	<ul style="list-style-type: none"><li>In this lesson, we will build and compare different wholes from different unit fractions that represent different quantities.</li></ul>



<b>5.</b>	<b>Representing non-unit fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will represent non-unit fractions in given wholes. We will shade shapes to represent different non-unit fractions, and create mathematical statements about each shape.</li></ul>
<b>6.</b>	<b>More representing non-unit fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will represent different non-unit fractions in the same given whole. We will compare the relative size of each non-unit fraction.</li></ul>
<b>7.</b>	<b>Non-unit fractions in different contexts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will reason about non-fraction units in different contexts. We will determine whether statements about how much of a shape or set is shaded are true.</li></ul>
<b>8.</b>	<b>Fractions equivalent to one whole</b>	<ul style="list-style-type: none"><li>• In this lesson, we will generalise about fractions equivalent to one whole. We will make statements that compare the numerator and denominator of fractions equivalent to one whole.</li></ul>
<b>9.</b>	<b>Visualising non-unit fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will visualise and estimate non-unit fractions using a variety of visual representations.</li></ul>

**10.**

## **Fractions on a numberline**

- In this lesson, we will represent fractions as numbers on a numberline. We determine where on a number line a unit fraction might sit, and compare fractional representations in different formats.



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**11.**

## **More fractions on a numberline**

- In this lesson, we will represent fractions as numbers on a numberline. We look at fractions with a numerator greater than 1, and where they would sit on a suitable numberline. We also look at how to construct a suitable segmented numberline based upon the fraction we are looking at.

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**12.**

## **Counting fractions**

- In this lesson, we will build fluency of counting fractions using a range of representations. We will practise determining how many equal segments a shape is divided into, and how many are shaded.

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**13.**

## **Repeated addition of unit fractions**

- In this lesson, we will begin to write repeated addition equations to represent non-unit fractions. We will use addition to determine how many equal segments of a shape are shaded.
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<b>14.</b>	<b>More repeated addition of unit fractions</b>	<ul style="list-style-type: none"> <li>In this lesson, we will practise writing repeated addition equations of unit fractions. We will use fraction strips and bar model diagrams to help us determine the size of fractions.</li> </ul>
<b>15.</b>	<b>Fractions equal to one whole</b>	<ul style="list-style-type: none"> <li>In this lesson, we will investigate which non-unit fractions have the same unit value as 1 whole. We will generalise a pattern around how we can tell whether a non-unit fraction is equal to a whole.</li> </ul>
<b>16.</b>	<b>Beginning to compare non-unit fractions</b>	<ul style="list-style-type: none"> <li>In this lesson, we will compare non-unit fractions which have the same numerator or the same denominator.</li> </ul>
<b>17.</b>	<b>Using Equivalence to 1 to Compare Non-Unit Fractions</b>	<ul style="list-style-type: none"> <li>In this lesson, we will compare two fractions using knowledge of equivalence to 1 whole.</li> </ul>
<b>18.</b>	<b>Use Several Methods to Compare Two Fractions with the Same Denominator</b>	<ul style="list-style-type: none"> <li>In this lesson, we will use a variety of methods to compare two fractions with the same denominator. We will use mathematical vocabulary such as greater than and less than.</li> </ul>





<b>19.</b>	<b>Can We Easily Compare Two Fractions With the Same Denominator?</b>	<ul style="list-style-type: none"><li>In this lesson, we will investigate how we can compare the relative sizes of two fractions with the same denominator using visual representations such as bar models.</li></ul>
<b>20.</b>	<b>Order Several Non-Unit Fractions with the Same Denominator and Apply this Understanding</b>	<ul style="list-style-type: none"><li>In this lesson, we will order several non-unit fractions with the same denominator and apply this understanding to worded fraction problems.</li></ul>
<b>21.</b>	<b>What do you notice when comparing two unit fractions using an area model?</b>	<ul style="list-style-type: none"><li>In this lesson, we will compare two unit fractions using an area model. We will make generalisations around the denominators of unit fractions.</li></ul>
<b>22.</b>	<b>What do you notice when comparing two unit fractions on a numberline?</b>	<ul style="list-style-type: none"><li>In this lesson, we will compare several unit fractions by placing them all together on a number line. We will make generalisations around the denominators of unit fractions.</li></ul>
<b>23.</b>	<b>Use What You Know to Compare Two Non-Unit Fractions With the Same Numerator</b>	<ul style="list-style-type: none"><li>In this lesson, we will use a variety of strategies such as using number lines and area models to help organise a set of unit fractions in ascending order of size.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Identifying the place value of digits in 5-digit numbers	<ul style="list-style-type: none"><li>In this lesson, we will be representing 5-digit numbers pictorially and identifying the value of each digit within these numbers.</li></ul>
2.	Comparing 5-digit numbers	<ul style="list-style-type: none"><li>In this lesson, we will be learning how to compare and order 5-digit numbers using number lines and place value charts.</li></ul>
3.	Ordering and comparing 5-digit numbers using a number line	<ul style="list-style-type: none"><li>In this lesson, we will be identifying the intervals on incomplete number lines and placing 5-digit numbers on number lines with different scales.</li></ul>
4.	Rounding 5-digit numbers to the nearest 10 000 and 1000	<ul style="list-style-type: none"><li>In this lesson, we will be using number lines to round 5-digit numbers to the nearest multiple of 10 000 and the nearest multiple of 1000.</li></ul>



<b>5.</b>	<b>Rounding 5-digit numbers to the nearest 100, 1000 and 10 000</b>	<ul style="list-style-type: none"><li>In this lesson, we will be using number lines to round 5-digit numbers to the nearest multiple of 100, 1000 and 10 000. We will also investigate rounding in the context of word problems.</li></ul>
<b>6.</b>	<b>Identifying the place value of the digits in 6-digit numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will be representing 6-digit numbers pictorially using place value counters and Dienes. We will also learn how to partition 6-digit numbers.</li></ul>
<b>7.</b>	<b>Comparing 6-digit numbers using inequalities</b>	<ul style="list-style-type: none"><li>In this lesson, we will use place value charts to identify the value of digits in 6-digit numbers. We will also add inequalities to equations with 6-digit numbers.</li></ul>
<b>8.</b>	<b>Ordering and comparing 6-digit numbers using number lines</b>	<ul style="list-style-type: none"><li>In this lesson, we will be identifying the intervals on incomplete number lines and placing 6-digit numbers on number lines with different scales.</li></ul>
<b>9.</b>	<b>Rounding 6-digit numbers to the nearest 100 000 and 10 000</b>	<ul style="list-style-type: none"><li>In this lesson, we will be using number lines to round 6-digit numbers to the nearest multiple of 100 000 and 10 000.</li></ul>
<b>10.</b>	<b>Rounding 6-digit numbers to the nearest 1000, 10 000 and 100 000</b>	<ul style="list-style-type: none"><li>In this lesson, we will be using number lines to round 6-digit numbers to the nearest multiple of 1000, 10 000 and 100 000.</li></ul>



<b>11.</b>	<b>Solving problems involving rounding</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use knowledge of rounding to the nearest 1000, 10 000 and 100 000 to solve problems involving rounding.</li></ul>
<b>12.</b>	<b>Solving problems involving place value and rounding</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be applying our knowledge of place value and rounding to different problems using these strategies.</li></ul>
<b>13.</b>	<b>Investigating Roman Numerals up to 100</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be identifying the way to write the corresponding Roman numerals for values between 1 and 100.</li></ul>
<b>14.</b>	<b>Investigating Roman Numerals up to 1000</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be identifying the way to write the corresponding Roman numerals for values between 1 and 1000.</li></ul>
<b>15.</b>	<b>Solving problems involving Roman Numerals</b>	<ul style="list-style-type: none"><li>• In this lesson, we will solve problems involving Roman numerals. Our focus will be on, missing values in equations and correcting Roman numeral errors.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Using and explaining addition strategies	<ul style="list-style-type: none"><li>In this lesson, we will be learning how to use different addition strategies (e.g. partitioning, commutativity and rounding and adjusting) in order to solve magic squares.</li></ul>
2.	Using and explaining addition and subtraction strategies	<ul style="list-style-type: none"><li>In this lesson, we will be learning how to use the most efficient addition and subtraction strategies. We will apply this knowledge to solving addition pyramids.</li></ul>
3.	Adding and subtracting using multiples of 10, 100, 1000, 10 000 and 100 000	<ul style="list-style-type: none"><li>In this lesson, we will learn how to use the 'derived facts' and 'make 10' strategies to solve equations involving multiples of 10, 100, 1000, 10 000 and 100 000.</li></ul>
4.	Adding and subtracting using the 'round and adjust' strategy	<ul style="list-style-type: none"><li>In this lesson, we will learn how to use the 'round and adjust' strategy to solve addition and subtraction equations.</li></ul>
5.	Adding and subtracting using partitioning	<ul style="list-style-type: none"><li>In this lesson, we will use partitioning to add and subtract large integers, both where regrouping is required and where it is not needed.</li></ul>



<b>6.</b>	<b>Rounding to estimate</b>	<ul style="list-style-type: none"><li>• In this lesson, we will apply our understanding of rounding to the nearest multiples of 10 000 and 1000 to estimate the answer to addition equations.</li></ul>
<b>7.</b>	<b>Adding using the column method</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to use the column method in order to solve addition equations.</li></ul>
<b>8.</b>	<b>Subtracting using the column method</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to use the column method in order to solve subtraction equations. We will also learn how to represent equations using bar modelling.</li></ul>
<b>9.</b>	<b>Problem solving using the column method</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to apply our understanding of the column method to finding and fixing errors and completing unfinished column method calculations.</li></ul>
<b>10.</b>	<b>Solving multi-step addition and subtraction problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be applying the addition and subtraction strategies that we have learned to word and real life problems.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	Interpreting line graphs	<ul style="list-style-type: none"><li>In this lesson, we will be looking at line graphs; why we use them, what key features they require and what we can interpret from the data shown within them.</li></ul>
2.	Reading and interpreting line graphs	<ul style="list-style-type: none"><li>In this lesson, we will learn to read line graphs accurately in order to make factual statements based on the information displayed.</li></ul>
3.	Reading Scales on a Line Graph	<ul style="list-style-type: none"><li>In this lesson, we will be learning how to accurately read a line graph to obtain the correct information. We will also be looking how a different scale on the y-axis can change appearance of the data line.</li></ul>
4.	Tables and line graphs	<ul style="list-style-type: none"><li>In this lesson, we will compare and interpret different line graphs using the same axes and complete missing data points and values on both line graphs and tables.</li></ul>



## 5. Constructing a line graph

- In this lesson, we will be constructing our very own line graphs and presenting different data. We will then be able to interpret and compare the data presented to answer questions and create a series of factual statements.



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## 6. Conversion graphs

- In this lesson, we will be looking at a different type of line graph: a conversion graph. We will discuss what they are and how they are used. We will then construct our own conversion tasks which will allow us to convert between centimetres and inches.

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## 7. Reading timetables

- In this lesson, we will be introducing timetables, what they can tell us and the skills we require to use them accurately when interpreting the information they possess. We will then be using a timetable to help respond to a series of questions and requests as an example of real life context.

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## 8. Calculating time intervals on timetables

- In this lesson, we will be sharing efficient methods for calculating the time intervals listed on timetables. By using the methods modelled, we will be able to identify missing information on incomplete timetables.
-

9.

## Timetables questions

- In this lesson, we will be exploring bus and train timetables, using our skills to interpret the information to answer a range of questions as well as generating our own questions to match the information provided. We will also be looking once again at the how the strategy of an empty number line can help us calculate time intervals with the assistance of some teacher modelling.



10.

## Consolidation and review

- In this lesson, we will be reviewing the entire unit of line graphs and timetables by completing a series of challenges and problems based on the different concepts taught across all of the lessons throughout the unit. This lesson can be watched in its entirety or specific sections can be visited if pupils wish to focus their learning and consolidation on a specific concept.



Lesson number	Lesson question	Pupils will learn
1.	<b>Multiples and factors</b>	<ul style="list-style-type: none"><li>In this lesson, we will refamiliarise ourselves with the concepts of multiples and factors. We will use the language of factors and multiples by giving examples, describing rectangular arrays and defining the terms. We will then model how to solve missing number puzzles requiring understanding of the language before letting you have a go independently.</li></ul>
2.	<b>Factor pairs</b>	<ul style="list-style-type: none"><li>In this lesson, we will be learning how to work systematically to identify the correct number of factors and factor pairs for given numbers, using the notion of factor bugs to help us. We will then develop our learning further by proving that square numbers have an odd number of factors.</li></ul>
3.	<b>Prime numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore numbers with only two factors and define these as prime numbers. We will then play a game that involves making arrays and identifying prime numbers up to 20. Our independent task to conclude the lesson will require all prime numbers up to 100 to be identified by using a range of clues based on multiples and factors.</li></ul>

**4.**

## **Factor and multiple chains**

- In this lesson, we will use our prior knowledge of multiples and factors to create chains, playing a game whilst investigating number patterns. We will then adapt the rules of the game to create alternative chains, being challenged to try and identify ever increasing lengths of chains.



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**5.**

## **Multiplying and dividing by 10, 100, 1000**

- In this lesson, we will be required to explain and demonstrate the process of multiplication and division by 10, 100 and 1000 using different visual representations. This understanding will then enable us to derive facts from known multiplication facts which we can represent and explain. The expectation is that by the end of this lesson we will be confidently able to explain and demonstrate how to multiply and divide by 10, 100 and 1000.

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**6.**

## **Doubling and halving strategies**

- In this lesson, we will explain and model mental strategies for doubling and halving by using our understanding of multiplication and division. We will also use our doubling and halving strategies to multiply and divide by four and eight. By the end of this lesson, we would hope that everyone will be confident in explaining how to multiply and divide by four and eight by using strategies of doubling and halving.
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## **7. Using derived facts to multiply mentally**

- In this lesson, we will use our knowledge of multiplying and dividing by 10, 100 and 1000 to derive facts from known facts. We will then use the distributive law and derived facts to multiply by choosing the most efficient and effective representations.

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## **8. Calculating flexibly**

- In this lesson, we will learn to estimate using derived facts and then adjust them to calculate the answer. We will then be able to solve a range of problems selecting suitable strategies and giving reasons for our choices.

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## **9. Short multiplication**

- In this lesson, we will use the formal written layout to multiply numbers with up to four digits by a single digit, looking at it with both pictorial, concrete and abstract representation. We will then develop our strategy to understand how to use the same method to multiply by 2-digit multiples of ten.

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## **10. Long multiplication**

- In this lesson, we will explore area models using Dienes blocks to represent multiplication. This is connected to the steps involved in long multiplication and we will then gain experience with the formal algorithm.
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## 11. Using factors to multiply

- In this lesson, we will begin by introducing the context of synchronized swimmers arranged in groups within squads to multiply three numbers in different arrangements. They use different factor pairs to solve the same problem in different ways. We will also look at distributive law can be represented using area models.



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## 12. Using multiples to divide

- In this lesson, we will explore dividing numbers by partitioning into multiples and dividing the parts. We will start with calculations that involve dividing by a single digit making links to the multiplication calculations in the last lesson. We will then find multiples of 2-digit numbers and use these to divide by partitioning into multiples in order to divide each part.

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## 13. Short division

- In this lesson, we will solve division problems using short division and place value counters. We will start by exploring division by sharing and then division by grouping, showing how to record the formal method of short division whilst demonstrating each stage of the process using pictorial and concrete representations.
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**14.**

## **Division with remainders**

- In this lesson, we will explore how to interpret remainders in the context of a problem. We will begin with very simple numbers we can calculate mentally, reasoning whether the answer needs to be rounded to the next whole number or not before moving onto numbers suited to a short division strategy.



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**15.**

## **Consolidation and Review**

- In this lesson, we will revisit some of the main learning concepts taught across the unit. We will be reviewing our understanding of multiples and factors; multiplying and dividing by 10, 100, 1000; mental strategies for efficient mental calculation and finishing off the lesson by consolidating our familiarity with formal methods of multiplication and division. At each section, problems and challenges will be presented and then discussed.
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Lesson number	Lesson question	Pupils will learn
1.	Calculate and measure perimeter	<ul style="list-style-type: none"><li>In this lesson, we will learn to calculate in simple and compound shapes.</li></ul>
2.	Calculate the area of rectangles	<ul style="list-style-type: none"><li>In this lesson, we will find the area of rectangles by counting squares and using arrays and multiplication. We will also compare the area of different rectangles, including squares.</li></ul>
3.	Calculate the area of rectilinear shapes	<ul style="list-style-type: none"><li>In this lesson, we will learn to calculate the area of rectilinear shapes by splitting them into two or more rectangles.</li></ul>
4.	Compare the area and perimeter of rectangles	<ul style="list-style-type: none"><li>In this lesson, we will investigate the area and perimeter of rectilinear shapes, making shapes with a given perimeter and then making shapes with a given area.</li></ul>





<b>5.</b>	<b>Calculate the area of non-rectilinear shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will estimate the area of shapes that are not rectangles and are presented on a grid. Then we will use a mixture of calculating the area of rectangles and counting the additional parts to estimate the total area.</li></ul>
<b>6.</b>	<b>Comparing &amp; classifying 2-d shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore the meaning of a 2D shape. What are the properties of a 2D shape and how they can be classified.</li></ul>
<b>7.</b>	<b>Comparing &amp; classifying quadrilaterals</b>	<ul style="list-style-type: none"><li>• In this lesson, we will compare quadrilaterals, looking at sides and angles as well as learning to sort quadrilaterals into a venn diagram.</li></ul>
<b>8.</b>	<b>Comparing &amp; classifying right angled triangles and equilateral triangles</b>	<ul style="list-style-type: none"><li>• In this lesson, we look at a range of triangles and take a closer look comparing a right angled triangle with an equilateral triangle.</li></ul>
<b>9.</b>	<b>Comparing &amp; classifying isosceles and scalene triangles</b>	<ul style="list-style-type: none"><li>• In this lesson, we will compare different triangles and introduce isosceles and scalene triangles.</li></ul>
<b>10.</b>	<b>Identifying lines of symmetry in 2D shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore the meaning of lines of symmetry and addresses common misconceptions.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	What is a fraction?	<ul style="list-style-type: none"><li>In this lesson, we will explore the parts of a fraction and the different ways they can be used.</li></ul>
2.	Representing fractions	<ul style="list-style-type: none"><li>In this lesson, we will represent, identify, name and write fractions.</li></ul>
3.	Equivalent fractions	<ul style="list-style-type: none"><li>In this lesson, we will use different representations to identify equivalent fractions.</li></ul>
4.	Tenths and hundredths	<ul style="list-style-type: none"><li>In this lesson, we will identify, name and write equivalent tenths and hundredths.</li></ul>
5.	Ordering fractions	<ul style="list-style-type: none"><li>In this lesson, we will take fractions with different denominators and organise them in ascending and descending order. We will compare fractions using 'greater than' and 'less than' statements.</li></ul>



<b>6.</b>	<b>Fractions and decimals</b>	<ul style="list-style-type: none"><li>• In this lesson, we will convert between numbers as fractions and as decimals.</li></ul>
<b>7.</b>	<b>Thousandths</b>	<ul style="list-style-type: none"><li>• In this lesson, we will recognise and use thousandths, and investigate the concept in terms of place value.</li></ul>
<b>8.</b>	<b>Comparing fractions and decimals</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to compare both fractions and decimals with each other. We will investigate how to compare each format by placing them on a number line.</li></ul>
<b>9.</b>	<b>Improper fractions (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will recognise and name improper fractions and mixed numbers.</li></ul>
<b>10.</b>	<b>Improper fractions (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will convert between improper fractions and mixed numbers.</li></ul>
<b>11.</b>	<b>Comparing and ordering</b>	<ul style="list-style-type: none"><li>• In this lesson, we will compare and order numbers with up to 3 decimal places.</li></ul>
<b>12.</b>	<b>Rounding Decimals (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will round decimal numbers with 2 decimal places to the nearest whole number.</li></ul>

### 13. Rounding Decimals (Part 2)

- In this lesson, we will round decimal numbers with 2 decimal places to 1 decimal place.



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### 14. Fractions and division (Part 1)

- In this lesson, we will identify the link between fractions and division.

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### 15. Fractions and division (Part 2)

- In this lesson, we will use short division to make links between fractions and division.
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Lesson number	Lesson question	Pupils will learn
1.	Understanding angles	<ul style="list-style-type: none"><li>In this lesson, we will revise what an angle is, how to identify angles in shapes and how to identify the size of an angle.</li></ul>
2.	Recognise right angles	<ul style="list-style-type: none"><li>In this lesson, we will learn how to make a right angle measurer (90), then use this to identify right angles within angles, shapes and daily objects.</li></ul>
3.	Recognise acute and obtuse angles	<ul style="list-style-type: none"><li>In this lesson, we will learn to recognise acute and obtuse angles and shapes, then draw them on paper.</li></ul>
4.	Angles within a shape	<ul style="list-style-type: none"><li>In this lesson, we will learn how to recognise and draw angles within shapes, then understand statements about angles and properties of shapes.</li></ul>
5.	Compare and order acute, obtuse and reflex angles	<ul style="list-style-type: none"><li>In this lesson, we will learn about reflex angles, and then consider how to compare and order acute, obtuse and reflex angles.</li></ul>



<b>6.</b>	<b>Reading angles on a protractor (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to read a protractor and measure accurately to <math>10^\circ</math>, <math>5^\circ</math> and <math>1^\circ</math>.</li></ul>
<b>7.</b>	<b>Reading angles on a protractor (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to use a protractor to measure multiple angles and angles in a shape.</li></ul>
<b>8.</b>	<b>Reading angles on a protractor Part 3</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to use a protractor to calculate and measure a reflex angle and an angle in a shape.</li></ul>
<b>9.</b>	<b>Draw angles with a protractor 1</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to use a protractor to draw acute and obtuse angles as well as identify common mistakes.</li></ul>
<b>10.</b>	<b>Draw angles with a protractor (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to use a protractor to draw reflex angles and angles within a shape.</li></ul>
<b>11.</b>	<b>Calculating angles on a line or around a point</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to calculate angles on a straight line, vertically opposite angles and angles around a point.</li></ul>

## 12. Calculating angles within a shape 1

- In this lesson, we will learn about different types of triangle and how to calculate angles within a triangle.



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## 13. Calculating angles within a shape (Part 2)

- In this lesson, we will learn about different types of quadrilaterals and how to calculate angles within composite shapes.

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## 14. Calculating angles within a shape 3

- In this lesson, we will learn about parallel lines, their angles and how we can use this information within composite shapes.

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## 15. Revision and Angle fluency facts

- In this lesson, we will revise all the topics from this unit and focus how to apply all these skills fluently and efficiently.
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Lesson number	Lesson question	Pupils will learn
1.	<b>Converting between proper and improper fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn about fractions and how to convert between improper fractions and mixed number fractions.</li></ul>
2.	<b>Understanding fractions: Equivalent fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn about equivalent fractions, how to simplify and how to find missing numerators and denominators.</li></ul>
3.	<b>Add and subtract fractions with the same denominator</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn how to add and subtract fractions with the same denominator, learn about fraction fact families and how to cross from a part to a whole.</li></ul>
4.	<b>Add and subtract fractions with a common denominator</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn how to add and subtract fractions with a common denominator using equivalent fractions.</li></ul>





<b>5.</b>	<b>Add and subtract fractions with a common denominator: Improper fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to add and subtract improper fractions and mixed number fractions with a common denominator.</li></ul>
<b>6.</b>	<b>Add and subtract fractions fluency</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to count fluently in fractions and fluently add and subtract a range of fractions.</li></ul>
<b>7.</b>	<b>Multiply a fraction by a whole number</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to multiply fractions by whole numbers.</li></ul>
<b>8.</b>	<b>Multiply a mixed number fraction</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to multiply mixed number fractions.</li></ul>
<b>9.</b>	<b>Fractions of quantities 1</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to find fractions of a quantity and link this to division.</li></ul>
<b>10.</b>	<b>Fractions of quantities (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to find fractions of measurements and in different contexts.</li></ul>
<b>11.</b>	<b>Understanding percentage</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to find simple percent and what percentage means.</li></ul>



## 12. Percentage as a fraction and decimal

- In this lesson, we will learn how to link simple percent to fractions and decimals in context.

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## 13. Understanding Percent in the World

- In this lesson, we will learn how percentages are used in daily life.

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## 14. Finding percent of a quantity

- In this lesson, we will learn how to find percent of a quantity (50%, 25%, 75%, 10%, multiples of 10%).

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## 15. Finding percent of a quantity: Problem solving

- In this lesson, we will learn how to find percent of a quantity and solve problems.
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Lesson number	Lesson question	Pupils will learn
1.	Identifying, describing & representing the position of a shape following a translation	<ul style="list-style-type: none"> <li>In this lesson, we will investigate translations of shapes, describe translations using mathematical vocabulary, and the meaning of the word "congruent".</li> </ul>
2.	Describing positions on a 2D grid as coordinates	<ul style="list-style-type: none"> <li>In this lesson, we will investigate the 1st quadrant in a coordinate system and describe new points when they have been translated.</li> </ul>
3.	Describing the position of a point and translating it across 2 quadrants using coordinates	<ul style="list-style-type: none"> <li>In this lesson, we will extend the x axis so that we can investigate coordinates within the quadrants with positive and negative x values..</li> </ul>
4.	Describing the position of a point and shape across 4 quadrants using coordinates	<ul style="list-style-type: none"> <li>In this lesson, we will investigate an extended y axis to allow for negative y values, and then take a look at coordinates in all 4 quadrants.</li> </ul>
5.	Using coordinates to describe position following a translation	<ul style="list-style-type: none"> <li>In this lesson, we will investigate points and shapes that are translated across 4 quadrants and solve more challenging coordinate problems.</li> </ul>



<b>6.</b>	<b>Identifying, describing &amp; representing the position of a shape following a reflection</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn about a second type of transformation called reflection. We will look at how to reflect shapes across a mirror line on a squared grid.</li></ul>
<b>7.</b>	<b>Using coordinates to describe position after reflection</b>	<ul style="list-style-type: none"><li>• In this lesson, we will reflect shapes within the first 2 quadrants (positive and negative x axis) using coordinates.</li></ul>
<b>8.</b>	<b>Reflecting shapes across the x axis and the y axis</b>	<ul style="list-style-type: none"><li>• In this lesson, we will reflect shapes across all 4 quadrants using coordinates.</li></ul>
<b>9.</b>	<b>Exploring missing lines of symmetry following a reflection</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate a variety of shapes which have already been reflected and find where the missing line of symmetry would be.</li></ul>
<b>10.</b>	<b>Exploring reflections and translations (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate different shape transformations, and determine whether a given shape has been reflected or translated.</li></ul>
<b>11.</b>	<b>Exploring reflections and translations (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will look at more examples of how a shape can be reflected or translated whilst preserving its appearance.</li></ul>

## **12. Exploring reflections and translations using coordinates**

- In this lesson, we will investigate translating and reflecting shapes by comparing the coordinates without a grid.



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## **13. Identifying missing coordinates of shapes**

- In this lesson, we will find the missing coordinates for a vertex of a shape using knowledge of the other vertices.

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## **14. Describing position following a translation with missing coordinates**

- In this lesson, we will find missing coordinates of a shape after it has been translated.

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## **15. Describing position following a reflection with missing coordinates**

- In this lesson, we will find missing coordinates of a shape after it has been reflected.
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## Unit 40 Converting units of measure

15 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Converting between seconds, minutes and hours	<ul style="list-style-type: none"><li>In this lesson, we will learn how to convert between seconds, minutes and hours.</li></ul>
2.	Solving problems involving converting between seconds, minutes and hours	<ul style="list-style-type: none"><li>In this lesson, we will investigate and model word problems about converting between seconds, minutes and hours.</li></ul>
3.	Converting between units of time	<ul style="list-style-type: none"><li>In this lesson, we will learn how to convert between hours, minutes and seconds.</li></ul>
4.	Solving problems involving converting between units of time	<ul style="list-style-type: none"><li>In this lesson, we will solve word problems which compare different units of time.</li></ul>
5.	Converting between units of length	<ul style="list-style-type: none"><li>In this lesson, we will learn how to convert between measures of distance such as mm, cm, m and km.</li></ul>



<b>6.</b>	<b>Converting between metric units of length</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore the difference between metric measures of length and non-metric measures and then convert between metric measures.</li></ul>
<b>7.</b>	<b>Solving problems involving converting between metric units of length</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate and model problems and problem solving activities where we must convert between metric units.</li></ul>
<b>8.</b>	<b>Converting between units of length in the context of perimeter</b>	<ul style="list-style-type: none"><li>• In this lesson, we will model problem solving activities where we must work out the perimeter of shapes with different units and then create designs involving constraints.</li></ul>
<b>9.</b>	<b>Converting between miles and km</b>	<ul style="list-style-type: none"><li>• In this lesson, we will introduce the distance measurements miles and kilometre and learn how to convert between them.</li></ul>
<b>10.</b>	<b>Solving problems involving converting between miles and km</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate and model solutions to a variety of word problems involving conversions between miles and kilometres.</li></ul>
<b>11.</b>	<b>Converting between units of metric mass</b>	<ul style="list-style-type: none"><li>• In this lesson, we will introduce the concept of mass and investigate how to convert between grams and kilograms.</li></ul>

**12. Solving problems involving converting between units of metric mass**

- In this lesson, we will investigate a variety of word problems and problem solving activities to complete involving metric mass.



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**13. Understanding pounds and converting kilograms to pounds**

- In this lesson, we will introduce the weight measurement, 'pound' or 'lb' and we will learn how to convert between kilograms and pounds.

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**14. Solving problems involving the conversion between lb and kg**

- In this lesson, we will investigate and model problems involving conversion between kilograms and pounds.

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**15. Solving problems involving various units of measure**

- In this lesson, we will investigate word problems that challenge us to convert between various units of measures previously covered in the unit.
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Lesson number	Lesson question	Pupils will learn
1.	<b>Representing Decimals</b>	<ul style="list-style-type: none"><li>In this lesson, we will review place value and show our understanding using Dienes blocks and place value counters. We will represent decimals in a variety of ways including as the sum of place value parts.</li></ul>
2.	<b>Multiplying and dividing decimals by 10,100,1000</b>	<ul style="list-style-type: none"><li>In this lesson, we will review decimal place value understanding and use Dienes blocks to explain multiplication and division by 10, 100 and 1000.</li></ul>
3.	<b>Deriving decimal addition and subtraction facts</b>	<ul style="list-style-type: none"><li>In this lesson, we will add and subtract decimals using our known facts to help us.</li></ul>
4.	<b>Adding decimals</b>	<ul style="list-style-type: none"><li>In this lesson, we will use the formal written method to add decimal numbers and correct mistakes made with this method.</li></ul>
5.	<b>Subtracting decimals</b>	<ul style="list-style-type: none"><li>In this lesson, we will use the formal written method to subtract decimal numbers and correct mistakes made with this method.</li></ul>



<b>6.</b>	<b>Applying mental calculation strategies to adding and subtracting decimals</b>	<ul style="list-style-type: none"><li>In this lesson, we will use a range of informal mental strategies to add and subtract decimal numbers.</li></ul>
<b>7.</b>	<b>Solving problems with decimals using addition and subtraction</b>	<ul style="list-style-type: none"><li>In this lesson, we will solve addition and subtraction problems with decimals and generate our own word problems to suit equations. We will develop our understanding of decimal problem-solving through bar models and a variety of real life contexts.</li></ul>
<b>8.</b>	<b>Deriving Decimal Multiplication Facts</b>	<ul style="list-style-type: none"><li>In this lesson, we will derive multiplication facts involving decimal numbers, exploring a range of language structures and models. By the end of this lesson we will be able to use a known fact (e.g. <math>2 \times 6 = 12</math>) to derive a decimal calculation (e.g. <math>0.2 \times 6 = 1.2</math>).</li></ul>
<b>9.</b>	<b>Multiplying decimals by a whole number</b>	<ul style="list-style-type: none"><li>In this lesson, we will examine multiplying decimals by a whole number using bar models and area models.</li></ul>
<b>10.</b>	<b>Multiplying decimals using a formal written method (short multiplication)</b>	<ul style="list-style-type: none"><li>In this lesson, we will use the formal written layout (short multiplication) to multiply a decimal number by a single digit.</li></ul>

## **11. Multiplying decimals using mental strategies**

- In this lesson, we will use doubling and round and adjust strategies to multiply decimal numbers. We will use doubling to multiply by two, four and eight and round and adjust in the context of money (e.g. £2.99 x 3).



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## **12. Problem-solving with decimals in context**

- In this lesson, we will solve problems with decimals through bar models in a variety of real life contexts, converting units of measurement where appropriate.

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## **13. Representing 2-digit by 2-digit multiplication**

- In this lesson, we will develop our understanding of pictorial representations when multiplying by a two-digit number and link this to the formal written method of long multiplication.

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## **14. Multiplying a 3-digit number by a 2-digit number**

- In this lesson, we will develop our understanding of formal written multiplication methods (long multiplication) and develop fluency multiplying 2-digits by 3-digits.

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## **15. Problem-solving with multiplication**

- In this lesson, we will review the various methods of multiplication covered throughout this unit: area, formal written method and mentally derived facts. We will discuss which is the most efficient strategy for a variety of problems.
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Lesson number	Lesson question	Pupils will learn
1.	<b>2D and 3D shape: To identify, describe and classify shapes based on the properties (Part 1)</b>	<ul style="list-style-type: none"><li>In this lesson, we will identify, describe and classify 2D and 3D shapes based on their mathematical properties.</li></ul>
2.	<b>2D and 3D shape: To identify, describe and classify shapes based on the properties (Part 2)</b>	<ul style="list-style-type: none"><li>In this lesson, we will continue to think about 2D and 3D shapes, and introduce the terms 'parallel lines' and 'lines of symmetry'.</li></ul>
3.	<b>2D and 3D shape: To identify regular and irregular polygons by reasoning about equal sides and angles</b>	<ul style="list-style-type: none"><li>In this lesson, we will investigate the properties of similarities and differences between regular and irregular polygons and identify the number of sides and angles that make up different shapes.</li></ul>
4.	<b>2D and 3D Shapes: To Classify Triangles</b>	<ul style="list-style-type: none"><li>In this lesson, we will classify different types of triangles based on their mathematical properties.</li></ul>
5.	<b>2D and 3D Shapes: To Identify the Properties of Quadrilaterals</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore the properties and names of different types of quadrilaterals.</li></ul>



<b>6.</b>	<b>2D and 3D shape: To describe the properties of diagonals of quadrilaterals</b>	<ul style="list-style-type: none"><li>• In this lesson we will explore the diagonal properties of different quadrilaterals.</li></ul>
<b>7.</b>	<b>2D and 3D shape: To identify, describe and classify 3D shapes based on the properties</b>	<ul style="list-style-type: none"><li>• In this lesson, we will consolidate previous learning and revise the names and properties of 3D shapes.</li></ul>
<b>8.</b>	<b>2D and 3D shape: Classifying shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will identify, compare and classify 2D and 3D shapes based on their properties.</li></ul>
<b>9.</b>	<b>2D and 3D shapes: To Build Simple 3-D Shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will identify and recognise nets of simple 3D shapes.</li></ul>
<b>10.</b>	<b>2D and 3D shapes: To Illustrate and Name Parts of a Circle</b>	<ul style="list-style-type: none"><li>• In this lesson we will investigate the circle, and the vocabulary and properties associated with it.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Volume: To read scales when measuring volume</b>	<ul style="list-style-type: none"><li>In this lesson, we will revise what you may already know about volume and investigate reading scales. By the end of this lesson we will be more confident how to read different scales and intervals.</li></ul>
2.	<b>To investigate and explain cubed numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will be exploring cubed units. We will investigate what we mean by cube numbers and relate this to our work on volume. By the end of this lesson we will be able explain, draw and find cube numbers.</li></ul>
3.	<b>To estimate the volume of objects</b>	<ul style="list-style-type: none"><li>In this lesson, we will be combining our new knowledge of cubic units and our work from lesson one on volume. We will work on understanding what cubic centimetre looks like in real life and have a go at estimating the volume of objects we see every day.</li></ul>

**4.**

#### **To describe volume in cubic units**

- In this lesson, we will use our knowledge from the previous lesson to find the volume of different shapes. We will start by looking at the three different dimensions of real life objects and then use measurements to help us find volume. By the end of this lesson, you will begin to be able to find the volume of different 3D shapes.



**5.**

#### **To convert units of volume**

- In this lesson, we will explore volume in relation to liquids. We will look at the relationships between cubic centimetres and millilitres.

## Unit 44 Problem solving with whole numbers and decimals

10 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Calculating intervals across zero	<ul style="list-style-type: none"><li>In this lesson, we will investigate and model problems involving negative numbers.</li></ul>
2.	Solving problems involving division with remainders (Part 1)	<ul style="list-style-type: none"><li>In this lesson, we will investigate and model division problems, and we will interpret remainders.</li></ul>
3.	Solving problems involving division with remainders (Part 2)	<ul style="list-style-type: none"><li>In this lesson, we will investigate and model division problems to allow opportunities to practise interpreting remainders.</li></ul>
4.	Calculating and interpreting the mean as an average	<ul style="list-style-type: none"><li>In this lesson, we will investigate problems involving calculating the mean average of a set of numbers.</li></ul>
5.	Developing strategies to plan and solve problems	<ul style="list-style-type: none"><li>In this lesson, we will investigate and model multiple-step worded problems involving money.</li></ul>





<b>6.</b>	<b>Adding 2 or more numbers mentally</b>	<ul style="list-style-type: none"><li>• In this lesson we will introduce the term 'consecutive numbers'. We will identify patterns when adding 2 or more consecutive numbers.</li></ul>
<b>7.</b>	<b>Calculating across zero</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be adding and taking away consecutive numbers and spotting patterns in answers.</li></ul>
<b>8.</b>	<b>Investigating properties of number</b>	<ul style="list-style-type: none"><li>• In this lesson, we will investigate the terms 'palindromic numbers' and 'iterations'.</li></ul>
<b>9.</b>	<b>Exploring properties of palindromic numbers</b>	<ul style="list-style-type: none"><li>• In this lesson we explore conjectures involving palindromic numbers and multiples of 11.</li></ul>
<b>10.</b>	<b>Exploring properties of number</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore multiples of 9. We will also look at divisibility checks for numbers that may be multiples of 9.</li></ul>

## Unit 45 Equivalent fractions

20 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Representing equivalent fractions	<ul style="list-style-type: none"><li>In this lesson, we develop understanding of equivalent fractions through quantity, area and numberline models.</li></ul>
2.	Equivalent fractions in context	<ul style="list-style-type: none"><li>In this lesson, we will develop understanding of equivalent fractions through the contexts of measuring and pouring.</li></ul>
3.	The relationship between the numerator and the denominator	<ul style="list-style-type: none"><li>In this lesson, we will identify and use the relationship between the numerator and denominator to identify equivalent fractions.</li></ul>
4.	Using a scale factor	<ul style="list-style-type: none"><li>In this lesson, we will scale the numerator and denominator by the same factor to produce equivalent equations.</li></ul>
5.	Vertical and horizontal relationships	<ul style="list-style-type: none"><li>In this lesson, we will practise seeing both vertical and horizontal relationships in the context of equivalent fractions.</li></ul>



<b>6.</b>	<b>Non-unit fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will introduce equivalent fractions for non-unit fractions.</li></ul>
<b>7.</b>	<b>Numerators and denominators in non-unit fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore the relationship between numerators and denominators including non-unit fractions.</li></ul>
<b>8.</b>	<b>Missing numbers</b>	<ul style="list-style-type: none"><li>In this lesson, we will practise using both vertical and horizontal relationships in fractions to find missing numbers.</li></ul>
<b>9.</b>	<b>Further practice with equivalent fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will practise solving fraction problems where we are required to identify a numerator or denominator in a given fraction equation.</li></ul>
<b>10.</b>	<b>Factors and multiples</b>	<ul style="list-style-type: none"><li>In this lesson, we will revise the language of 'factor', 'multiple' and 'common factor. '</li></ul>
<b>11.</b>	<b>Simplifying fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we introduce simplifying fractions, using fractions that can be simplified into unit fractions.</li></ul>



<b>12.</b>	<b>Simplifying fractions using highest common factor</b>	<ul style="list-style-type: none"><li>• In this lesson, we will express fractions in their simplest forms using the terms 'common factor' and 'highest common factor'.</li></ul>
<b>13.</b>	<b>Finding the Highest Common Factor to Simplify</b>	<ul style="list-style-type: none"><li>• In this lesson, we will simplify a fraction when the numerator is not the highest common factor.</li></ul>
<b>14.</b>	<b>Checking whether a fraction is in its simplest form</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn how to check whether a fraction is in its simplest form.</li></ul>
<b>15.</b>	<b>Why do we simplify fractions?</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore the purpose and advantages off simplifying fractions.</li></ul>
<b>16.</b>	<b>Simplifying improper fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will simplify fractions that are greater than 1. We will introduce the term 'improper fraction'.</li></ul>
<b>17.</b>	<b>Another method for simplifying improper fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use a second method to simplify fractions that are greater than 1.</li></ul>
<b>18.</b>	<b>Simplifying after multiplying</b>	<ul style="list-style-type: none"><li>• In this lesson, we will simplify fractions after multiplying a fraction by a whole number.</li></ul>

**19.**

### **Further practice and application**

- In this lesson, we will gain further practise and application of simplifying fractions.



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**20.**

### **Unit Summary**

- In this lesson, we will revisit and consolidate the key concepts in this unit around fractions, simplifying and identifying equivalence.
-



Lesson number	Lesson question	Pupils will learn
1.	Understanding other powers of ten within one-million	<ul style="list-style-type: none"><li>In this lesson, pupils will begin to understand the magnitude of one million.</li></ul>
2.	Reading and writing 7-digit numbers	<ul style="list-style-type: none"><li>In this lesson pupils establish a relational understanding of the relative magnitude of one million. They will learn to read 7-digit numbers and practice writing them in words and numerals before applying their learning in a matching task.</li></ul>
3.	Understanding how the digits in a number indicate its structure	<ul style="list-style-type: none"><li>In this lesson, we will look closely at the digits in 7-digit numbers. We will gain an understanding of how they are composed and how they can be decomposed.</li></ul>
4.	Compare and order numbers to ten million	<ul style="list-style-type: none"><li>In this lesson, we will build on our understanding of numbers to 10 million through comparing and ordering lists of numbers. Depth of understanding is demonstrated by moving fluently between different representations and by using them to justify comparison statements.</li></ul>



<b>5.</b>	<b>Rounding to a required degree of accuracy</b>	<ul style="list-style-type: none"><li>• In this lesson, we will consider why estimates and rounding might be useful. We will explore rounding 7-digit numbers to the nearest multiple of 100,000 with varying degrees of accuracy.</li></ul>
<b>6.</b>	<b>Estimating and rounding contexts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will develop number sense as well as applying the skills of rounding and estimating linked to everyday situations.</li></ul>
<b>7.</b>	<b>Strategies for addition</b>	<ul style="list-style-type: none"><li>• In this lesson, we will review a range of strategies to solve addition problems.</li></ul>
<b>8.</b>	<b>Strategies for subtraction</b>	<ul style="list-style-type: none"><li>• In this lesson, we will review a range of strategies to solve subtraction problems.</li></ul>
<b>9.</b>	<b>Applying addition and subtraction</b>	<ul style="list-style-type: none"><li>• In this lesson, we will practice representing decimal numbers and apply previous learning to solve addition and subtraction problems. We will use bar models and other representations to help them make sense of the word problems, before applying calculation strategies to find the solution.</li></ul>

10.

## Addition and subtraction problems

- In this lesson, we will build on prior learning to develop a range of strategies to efficiently add and subtract within one problem.
- 







Lesson number	Lesson question	Pupils will learn
1.	<b>Represent decimal numbers in a variety of ways</b>	<ul style="list-style-type: none"><li>In this lesson, we will represent decimal numbers pictorially.</li></ul>
2.	<b>Place Value to 3 Decimal Places</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore a variety of ways of representing numbers up to three decimal places.</li></ul>
3.	<b>Multiply and divide by 10, 100 and 1000 involving decimals</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn the procedure for multiplying and dividing numbers by 10, 100 and 1000.</li></ul>
4.	<b>Multiply and divide by 10, 100 and 1000 with in context</b>	<ul style="list-style-type: none"><li>In this lesson, we will apply our understanding of multiplying and dividing numbers by 10, 100 and 1000 to the context of measure.</li></ul>
5.	<b>Understand the terms 'common factor' and 'common multiple' as properties of a number</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore factors and multiples of numbers, including identifying common factors and multiples.</li></ul>



<b>6.</b>	<b>Identify properties of numbers</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to identify prime and composite numbers.</li></ul>
<b>7.</b>	<b>Multiply a decimal number by a whole number</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore a number of strategies for multiplying a decimal number by a whole number.</li></ul>
<b>8.</b>	<b>Solve multiplication problems using known and derived facts</b>	<ul style="list-style-type: none"><li>• In this lesson, we will solve multiplication problems in the context of currency.</li></ul>
<b>9.</b>	<b>Use efficient strategies to multiply numbers, including decimals</b>	<ul style="list-style-type: none"><li>• In this lesson, we will evaluate what strategies are most efficient for various multiplication problems.</li></ul>
<b>10.</b>	<b>Practise multiplication and division skills</b>	<ul style="list-style-type: none"><li>• In this lesson, we will revise multiplication and division skills and apply them to problems.</li></ul>
<b>11.</b>	<b>Use formal written methods for short multiplication including multiplying decimals</b>	<ul style="list-style-type: none"><li>• In this lesson, we will apply short and long multiplication skills to calculations involving decimals.</li></ul>
<b>12.</b>	<b>Multiply by a two-digit number using long multiplication</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to multiply by 2-digit numbers, including decimals.</li></ul>



<b>13.</b>	<b>Use formal written methods, including long multiplication, to solve a range of problems</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our written multiplication skills to solve problems.</li></ul>
<b>14.</b>	<b>Explore efficient mental strategies for division</b>	<ul style="list-style-type: none"><li>• In this lesson, we will recall efficient strategies for mental division.</li></ul>
<b>15.</b>	<b>Use the formal written method for short division</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use short division to complete equations.</li></ul>
<b>16.</b>	<b>Use the formal written method of long division to solve appropriate calculations</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use long division to complete equations.</li></ul>
<b>17.</b>	<b>Solve problems involving division with remainders (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will solve division equations that involve remainders.</li></ul>
<b>18.</b>	<b>Solve problems involving division with remainders (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to represent remainders in different ways.</li></ul>
<b>19.</b>	<b>Represent remainders in different ways depending on the context of the problem (Part 1)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to interpret the remainder using the context of the problem being solved.</li></ul>

**20.**

**Represent remainders in different ways depending on the context of the problem (Part 2)**

- In this lesson, we will continue to learn to interpret the remainder using the context of the problem being solved.





Lesson number	Lesson question	Pupils will learn
1.	Understanding which operations have equal priority	<ul style="list-style-type: none"><li>In this lesson, we will be looking at addition and subtraction problems and multiplication and division problems and exploring whether changing the order of operations affects the outcome.</li></ul>
2.	Order of operations	<ul style="list-style-type: none"><li>In this lesson, we will be learning about the order of operations in an equation without brackets.</li></ul>
3.	Consolidating order of operations	<ul style="list-style-type: none"><li>In this lesson, we will be applying our understanding of order of operations to a range of problems.</li></ul>
4.	Linear number sequences	<ul style="list-style-type: none"><li>In this lesson, we will be identifying the term to term rule in linear number sequences in order to find what terms will come next and what terms would come previous to given terms.</li></ul>
5.	Expressing missing numbers algebraically	<ul style="list-style-type: none"><li>In this lesson, we will be finding the unknown values in algebraic expressions.</li></ul>



<b>6.</b>	<b>Expressing missing number problems algebraically</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be exploring various problems and representing them using algebra.</li></ul>
<b>7.</b>	<b>Finding solutions to problems with two variables</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be discussing how to work systematically to find all possibilities for problems with two variables.</li></ul>
<b>8.</b>	<b>Consolidating linear sequences and representing problems with algebra</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore two different types of problems: one that consolidates learning around linear number sequences and one that explores expressing a maths story using algebraic notation.</li></ul>
<b>9.</b>	<b>Reasoning and problem solving</b>	<ul style="list-style-type: none"><li>• In this lesson, we will explore two types of problem in depth, thinking carefully about how to represent each problem in order to help us find a solution.</li></ul>
<b>10.</b>	<b>Reasoning and problem solving (Part 2)</b>	<ul style="list-style-type: none"><li>• In this lesson, we will continue to explore two types of problem in depth, thinking carefully about how to represent each problem in order to help us find a solution.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	To Identify, Describe and Represent Fractions	<ul style="list-style-type: none"><li>In this lesson, we will deepen our knowledge of fractions by looking at equivalent fractions and comparing and calculating with fractions. We will also explore different ways of representing fractions.</li></ul>
2.	Understanding Equivalence	<ul style="list-style-type: none"><li>In this lesson, we will be identifying equivalence using pictorial representations of fractions, then numerical representations and finally simplify fractions.</li></ul>
3.	Finding Equivalent Fractions	<ul style="list-style-type: none"><li>In this lesson, we will explore the relationship between the numerator and denominator (between and within fractions), find factors and reason about simplifying fractions.</li></ul>
4.	Compare Fractions Less Than One	<ul style="list-style-type: none"><li>In this lesson, we will be comparing and ordering fractions less than one, using the most efficient strategy.</li></ul>



<b>5.</b>	<b>Compare Fractions Greater Than One</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be exploring improper fractions and mixed numbers, including converting between the two.</li></ul>
<b>6.</b>	<b>Decimal and fraction equivalence</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be learning how to compare equivalent decimals and fractions.</li></ul>
<b>7.</b>	<b>Decimal equivalents of fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be learning how to convert a fraction to a decimal using different strategies.</li></ul>
<b>8.</b>	<b>Add fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be learning how to add fractions with different denominators and find term to term rules in fraction addition sequences.</li></ul>
<b>9.</b>	<b>Subtract fractions</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be learning how to subtract fractions with different denominators and find term to term rules in fraction subtraction sequences.</li></ul>
<b>10.</b>	<b>Fractions problem solving</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be learning how to solve fraction problems relating to shape, including calculating the perimeter and finding missing lengths.</li></ul>



## Unit 50 Missing angles and lengths

5 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Find the value of missing angles	<ul style="list-style-type: none"><li>In this lesson, we will be studying angles. We will use algebra and bar models to represent problems and calculate missing angles.</li></ul>
2.	Compare and classify triangles	<ul style="list-style-type: none"><li>In this lesson, we will compare and classify triangles, looking at how to recognise the different types of triangles and the sum of the angles in a triangle.</li></ul>
3.	Compare and classify quadrilaterals	<ul style="list-style-type: none"><li>In this lesson, we will classify different types of quadrilateral and learn about the sum of their internal angles.</li></ul>
4.	Find unknown angles in triangles	<ul style="list-style-type: none"><li>In this lesson, we will represent the angles in a triangle pictorially and algebraically before learning how to calculate missing angles.</li></ul>
5.	Find the value of missing angles in quadrilaterals	<ul style="list-style-type: none"><li>In this lesson, we will represent the angles in a quadrilateral pictorially and algebraically before learning how to calculate missing angles.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Describing coordinate positions on a grid</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to describe the position of coordinates on a full coordinate grid. We will develop our understanding of coordinates in all four quadrants.</li></ul>
2.	<b>Translating simple shapes</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to describe translation of coordinates and shapes and then translate shapes on a coordinate grid.</li></ul>
3.	<b>Reflecting simple shapes</b>	<ul style="list-style-type: none"><li>In this lesson, we will describe reflections and reflect shapes on a coordinate grid in all four quadrants</li></ul>
4.	<b>Solving practical coordinate problems (Part 1)</b>	<ul style="list-style-type: none"><li>In this lesson, we will look for general rules relating to vertical and horizontal lines and coordinates. We will use this information to help solve problems involving finding missing coordinates.</li></ul>
5.	<b>Solving practical coordinate problems (Part 2)</b>	<ul style="list-style-type: none"><li>In this lesson, we will use rules around x and y coordinates for horizontal and vertical lines to solve more complex problems involving coordinates.</li></ul>



<b>6.</b>	<b>Coordinates and shapes: To recognise 3-D shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will revise the vocabulary used to describe parts of 2-D and 3-D shapes. We will use this information to help use name 3-D shapes and identify 2-D faces of 3D shapes.</li></ul>
<b>7.</b>	<b>Coordinates and shapes: To recognise nets of 3D shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to recognise and build 3-D nets, we will then use this information to solve problems.</li></ul>
<b>8.</b>	<b>Coordinates and shapes: To solve problems involving 3D shapes</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use our knowledge of 3-D shapes and their nets in order to solve problems.</li></ul>
<b>9.</b>	<b>Coordinates and shapes: To illustrate and name parts of a circle</b>	<ul style="list-style-type: none"><li>• In this lesson, we will identify the properties of a circle, name the parts and find out about the relationships between the parts.</li></ul>
<b>10.</b>	<b>Coordinates and shapes: To solve practical problems involving circles</b>	<ul style="list-style-type: none"><li>• In this lesson, we will identify relationships between circle parts and then solve problems involving circles.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Fractions: Represent multiplication with proper fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will represent multiplication of a fraction and integer, reason about multiplication and seek patterns.</li></ul>
2.	<b>Fractions: Multiply pairs of proper fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn the procedure for multiplying fractions and express the products in their simplest form or as a mixed number.</li></ul>
3.	<b>Fractions: Divide a proper fraction by an integer</b>	<ul style="list-style-type: none"><li>In this lesson, we will investigate the connection between fractions and division before learning the procedure for dividing a fraction by an integer.</li></ul>
4.	<b>Fractions: Multiply and divide with improper fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn strategies for multiplying and dividing with mixed numbers and improper fractions.</li></ul>
5.	<b>Fractions: Solve fraction problems with the four operations</b>	<ul style="list-style-type: none"><li>In this lesson, we will revise calculating with fractions using the four operations and then apply this to word problems.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Decimals and measures: To generate and describe linear number</b>	<ul style="list-style-type: none"><li>In this lesson, we will represent decimals using dienes blocks, find the term to term rule in a sequence and then represent sequences on a number line.</li></ul>
2.	<b>Decimals and measures: Standard Units</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to select and estimate the correct unit of measure and read scales measuring length, mass and volume.</li></ul>
3.	<b>Decimals and measures: Convert standard lengths</b>	<ul style="list-style-type: none"><li>In this lesson, we will convert between standard units of length - millimetres, centimetres, metres and kilometres.</li></ul>
4.	<b>Decimals and measures: Solving problems with length</b>	<ul style="list-style-type: none"><li>In this lesson, we will solve problems involving calculating the area and perimeter of rectilinear shapes, including compound rectilinear shapes, where the conversion of measure is needed.</li></ul>
5.	<b>Decimals and measures: Calculating the area of parallelograms and triangles</b>	<ul style="list-style-type: none"><li>In this lesson, we will use and investigate formulae to calculate the area of a triangle and parallelogram.</li></ul>



<b>6.</b>	<b>Decimals and measures: calculation and conversion of units of area</b>	<ul style="list-style-type: none"><li>• In this lesson, we will be investigating the relationship between square millimetres, centimetres and metres, then apply this understanding to calculating area.</li></ul>
<b>7.</b>	<b>Decimals and measures: The volume of cubes and cuboids</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to calculate the volume of cubes and cuboids and then apply this to volume problems.</li></ul>
<b>8.</b>	<b>Decimals and measures: Convert between standard measures</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to convert between grams and kilograms and use this to solve problems involving mass.</li></ul>
<b>9.</b>	<b>Decimals and measures: Solving problems including the conversion of standard units of measure</b>	<ul style="list-style-type: none"><li>• In this lesson, we will convert between pounds and pence, and then work on multi-step problems involving calculation of measure.</li></ul>
<b>10.</b>	<b>Decimals and measures: Convert between units of time</b>	<ul style="list-style-type: none"><li>• In this lesson, we will learn to convert between units of time, look at equivalent times and then solve problems involving time.</li></ul>



Lesson number	Lesson question	Pupils will learn
1.	<b>Understand what a percentage is and its connection to fractions</b>	<ul style="list-style-type: none"><li>In this lesson, we will revisit percentages including calculating percentages of amounts and comparison of percentages, including percentage decrease. We will also develop understanding of statistics, and investigate the concept of averages.</li></ul>
2.	<b>Recall and use equivalences between fractions, decimals and percentages</b>	<ul style="list-style-type: none"><li>In this lesson, we will investigate equivalent fractions, decimals and percentages and then put them in increasing or decreasing order.</li></ul>
3.	<b>Solve problems involving the calculation of percentages of amounts</b>	<ul style="list-style-type: none"><li>In this lesson, we will be learning to find a percentage of an amount, including using efficient strategies and looking at the link between percentages and fractions.</li></ul>
4.	<b>Solve problems involving the use of percentages for comparison</b>	<ul style="list-style-type: none"><li>In this lesson, we will be solving problems involving the use of percentages for comparison.</li></ul>



## **5. Interpret Mean as an Average**

- In this lesson, we will explore averages before creating a formula for calculating the mean. We will then move on to find missing values using the mean.

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## **6. Interpret Line Graphs**

- In this lesson, we will explore discrete and cumulative data and interpret different types of line graphs.

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## **7. Construct line graphs**

- In this lesson, we will learn to construct line graphs using discrete and cumulative data.

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## **8. Interpret Pie Charts**

- In this lesson, we will learn to interpret pie charts. We will look at how percentages are calculated and represented in pie charts.

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## **9. Comparing pie charts**

- In this lesson, we will answer questions by interpreting and comparing data sets represented by pie charts.

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## **10. Collecting and representing data**

- In this lesson, we will work to collect data of our own and present it using a line graph or pie chart.
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## Unit 55 Proportion problems

8 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Construct line graphs	<ul style="list-style-type: none"><li>In this lesson, we will learn to construct line graphs using discrete and cumulative data.</li></ul>
2.	Interpret pie charts	<ul style="list-style-type: none"><li>In this lesson, we will learn how to interpret pie charts, and investigate how to calculate data in pie charts.</li></ul>
3.	Use fractions to express proportions	<ul style="list-style-type: none"><li>In this lesson, we will use fractions to express proportions. We will create mathematical statements to explain proportion in different patterns using fractions.</li></ul>
4.	Use ratio to express relationships	<ul style="list-style-type: none"><li>In this lesson, we will use ratio to express relationships. We will create mathematical statements to explain proportion in different patterns using ratios.</li></ul>
5.	Solve problems involving scale factor in shapes	<ul style="list-style-type: none"><li>In this lesson, we will solve problems involving scale factor. We will introduce the vocabulary 'similar' and 'scale factor'. We will determine the scale factor of enlargement for various transformations.</li></ul>

**6. Solve problems involving the relative size of two quantities (Part 1)**

- In this lesson, we will solve problems involving the relative size of two quantities.

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**7. Solve problems involving the relative size of two quantities (Part 2)**

- In this lesson, we will solve problems involving the relative size of two quantities, where multi-step scaling is necessary.

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**8. Ratio problems**

- In this lesson, we will be solving problems using knowledge of ratio.
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## Unit 56 Extending calculation strategies and additive reasoning

30 Lessons



Lesson number	Lesson question	Pupils will learn
1.	Adjusting addends	<ul style="list-style-type: none"><li>In this lesson, we will be adjusting addends to make a calculation easier, keeping the sum the same.</li></ul>
2.	'Same sum' with larger numbers	<ul style="list-style-type: none"><li>In this lesson, we will be extending the 'same sum' strategy to the addition of larger numbers.</li></ul>
3.	'Same sum' with decimals	<ul style="list-style-type: none"><li>In this lesson, we will be extending the 'same sum' strategy to calculations with decimal fractions.</li></ul>
4.	Balancing equations using the 'same sum' strategy	<ul style="list-style-type: none"><li>In this lesson, we will be extending the 'same sum' rule to balance equations.</li></ul>
5.	Balancing equations using compensation	<ul style="list-style-type: none"><li>In this lesson, we will be balancing equations using the compensation property of addition and subtraction.</li></ul>
6.	Balancing equations: Does the order of addends matter?	<ul style="list-style-type: none"><li>In this lesson, we will be balancing equations and noticing that the order of the addends is not important.</li></ul>



<b>7.</b>	<b>Increasing an addend</b>	<ul style="list-style-type: none"><li>In this lesson, we will notice that, if an addend is increased and the other is kept the same, the sum increases by the same amount.</li></ul>
<b>8.</b>	<b>Decreasing an addend</b>	<ul style="list-style-type: none"><li>In this lesson, we will notice that, if one addend is decreased and the other is kept the same, the sum decreases by the same amount</li></ul>
<b>9.</b>	<b>Solve calculations mentally by relating them to known facts</b>	<ul style="list-style-type: none"><li>In this lesson will be solving calculations mentally by relating them to known facts.</li></ul>
<b>10.</b>	<b>Find an unknown addend</b>	<ul style="list-style-type: none"><li>In this lesson, we will be finding an unknown addend when the sum is changed.</li></ul>
<b>11.</b>	<b>Introduction to same difference</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn about the 'same difference' strategy.</li></ul>
<b>12.</b>	<b>Same difference in context</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn about contexts which focus on where the difference is kept the same.</li></ul>



<b>13.</b>	<b>Use the Language of Minuend, Subtrahend, and Difference</b>	<ul style="list-style-type: none"><li>• In this lesson, we will use the some of the language of subtraction used in previous lessons- minuend, subtrahend and difference.</li></ul>
<b>14.</b>	<b>Transform calculations using the same difference</b>	<ul style="list-style-type: none"><li>• In this lesson, we will transform subtraction calculations by using the "same difference" method. This method involves shifting numbers whilst preserving the answer, but making the calculation easier.</li></ul>
<b>15.</b>	<b>Practice: Transforming Calculations to Make Them Easier to Solve Mentally</b>	<ul style="list-style-type: none"><li>• In this lesson, we will practise transforming calculations to make them easier to solve mentally</li></ul>
<b>16.</b>	<b>Transform a subtraction calculation to make the written algorithm easier to apply</b>	<ul style="list-style-type: none"><li>• In this lesson, we will transform a subtraction calculation between two five digit numbers to make the written algorithm easier to apply.</li></ul>
<b>17.</b>	<b>Practice: 'Same Difference' in Different Contexts</b>	<ul style="list-style-type: none"><li>• In tthis lesson, we will practise the 'same difference' in different contexts. We will learn that transforming written calculations makes it easier to solve them using a written method.</li></ul>



<b>18.</b>	<b>Balancing equations to find unknown values</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to balance equations to find unknown values. We will learn how the image of a see-saw helps us think about equivalent calculations, if they are level, they are equal (equivalent) to each other.</li></ul>
<b>19.</b>	<b>Explore how the difference changes when only the Minuend is changed</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore how the difference changes when only the minuend is changed.</li></ul>
<b>20.</b>	<b>Apply the generalisation about how the minuend and difference change to solve problems</b>	<ul style="list-style-type: none"><li>In this lesson, we will apply the generalisation about how the minuend and difference change to solve problems.</li></ul>
<b>21.</b>	<b>Explore how the generalisation can be used as a mental calculation strategy using Known facts</b>	<ul style="list-style-type: none"><li>In this lesson, we will explore how the generalisation can be used efficiently as a mental calculation strategy using known facts.</li></ul>
<b>22.</b>	<b>Thinking flexibly</b>	<ul style="list-style-type: none"><li>In this lesson, we will learn to think flexibly, looking for the most efficient strategies we can find for subtraction.</li></ul>
<b>23.</b>	<b>Comparing Strategies</b>	<ul style="list-style-type: none"><li>In today's lesson, we will learn to compare strategies around subtraction. We will discuss how efficient some strategies are, such as shifting to preserve the 'same difference' and make calculations easier.</li></ul>



**24.**

**The more we subtract, the less we are left with. The less we subtract...**

- In this lesson, we will learn that the more we subtract, the less we are left with. The less we subtract, the more we are left with. This will be shown through the context of reduction.

**25.**

**Contexts where the Minuend is Kept the Same, and the Subtrahend Increases**

- In this lesson, we will apply what was learnt in the previous lesson to contexts where the minuend is kept the same, and the subtrahend increases. Different methods demonstrated will include number lines, bar models and jottings.

**26.**

**Contexts where the minuend is kept the same, and the Subtrahend decreases**

- In this lesson, we will learn about contexts where the minuend is kept the same, and the subtrahend decreases. Different methods demonstrated within the lesson will include number lines, bar models and jottings.

**27.**

**Further practice to reason about how the change in the subtrahend changes the difference**

- In this lesson, we will further practice to reason about how the change in the subtrahend changes the difference demonstrated through sequences.

**28.**

**Explore problems in which the new difference must be found**

- In this lesson, we will explore problems in which the new difference must be found.

**29.**

**Balance Equations Where the Compensation Property of Same Sum Cannot Efficiently be Applied**

- In this lesson, we will balance equations where the compensation property of same sum cannot efficiently be applied.



**30.**

**Balance Equations Where the Compensation Property of Same Difference Cannot Efficiently be Applied**

- In this lesson, we will look at similar activities from last lesson but with subtraction in mind, specifically the following symbols: = (equals),  $\approx$  (approximately equal to), > (greater than), < (less than).



# 4. Learn More



## Contents

### Section number

### Section content

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| 5. | Inclusive and ambitious        |
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| 7. | Motivation through learning    |
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## 1. Key stage 2 maths introduction

As mathematics teachers we want our pupils to reach fluency in what we are teaching them. In mathematics, fluency requires a deep understanding of concepts and the ability to apply them flexibly and with automaticity. The mathematics curriculum



uses multiple representations to help make connections across concepts to help build a deep conceptual understanding. By making consistent use of the same core representations we will scaffold pupils' thinking to help them understand abstract mathematical concepts. The curriculum will also include intelligent practice that is designed to help pupils develop automaticity in their mathematics.

We also aim for our pupils to be able to use the precise language of mathematics, that is distinct from everyday language. The curriculum will do this by explicitly teaching mathematical vocabulary and introducing core sentence structures with which to communicate, express, connect, reason with and apply mathematical structures and ideas. Finally, we also aim for our pupils to be able to think mathematically. The tasks and activities used in the curriculum teach pupils the components of mathematical thinking: to sort and classify, compare and contrast, specialise and generalise, to make conjectures and to prove them.

Below are the set of principles we have used to build this curriculum, with these ambitions for our pupils in mind:

## **2. Coherence and flexibility**

We strive to support schools by offering a maths curriculum that can fit alongside a range of existing structures. However, complete flexibility over unit ordering is impossible due to the cumulative nature of mathematics and the importance of prior knowledge.

We have grouped lessons into units: coherent sequences of 5 or more lessons. Although each lesson can be accessed individually, explicit connections are made to earlier lessons and later lessons in the same unit. This is because the connections between mathematical concepts are so vital to deepening understanding.

## **3. Knowledge organisation**

The units in the maths curriculum are grouped as appropriate for each key stage, with a suggested route organised within year groups.

## **4. Knowledge selection**

Our mathematics lessons cover the full scope of the National Curriculum. We have given more time (both in number of lessons and number of units) to those concepts within the National Curriculum that the evidence tells us are foundational to success in maths.



## **5. Inclusive and ambitious**

We know the difference it makes when children believe they “can do” maths. We are guided by the principles of the National Curriculum to ensure that every pupil, regardless of starting point, develops their fluency, reasoning and problem solving. Our activities are scaffolded so all children can succeed. Children are offered frequent opportunities to be and feel successful as pupils of maths.

We develop conceptual understanding by always building new understanding on what pupils already know, by representing concepts in different ways, and by making connections between concepts. The mathematics curriculum makes consistent use of the same core representations across year groups to help pupils connect prior learning to new learning. These representations are selected to make key mathematical structures and ideas accessible to all pupils, no matter what their starting points.

To support every child to communicate mathematically, pupils are introduced to core sentence structures with which to express, connect, reason with and apply mathematical structures and ideas.

## **6. Pupil engagement**

You learn maths by thinking about maths. Our lessons include mathematical tasks which have multiple solutions. Mathematical thinking is woven into the units using scaffolds and prompts such as ‘what is the same and what’s different?’, ‘is it sometimes, always or never true?’ and ‘which could be the odd one out?’. Throughout the curriculum, all pupils have opportunities to sort and classify, compare and contrast, specialise and generalise, to make conjectures and to prove them.

## **7. Motivation through learning**

We believe that mathematics is inherently interesting and that all children are entitled to a genuine experience of mathematics. The tasks and activities that pupils engage with harness innate ways of thinking and develop the habits of mind that are drawn upon when being mathematical. Problem solving is at the heart of every lesson with opportunities to investigate, explore and reason.

## **8. Unit prior knowledge requirements**

To develop deep conceptual understanding requires building on what has been previously understood. Constructing the curriculum with this principle in mind results in careful sequencing within a topic, a year group and across key stages to create

a coherent progression for pupils. The curriculum plans here clearly indicate the prior knowledge required to help ensure this coherence is maintained when units are used in a different sequencing of the curriculum plan. For example, before learning about addition and subtraction within 10 in Year 1, pupils will need to have learned how to say, read and count numbers to 10.



The Department for Education has published a priority curriculum that identifies the most important elements of mathematics and how to build progression in these from Y1 to Y6. These are identified in the curriculum map below so that teachers who are choosing to prioritise the curriculum in order to support recovery from the impact of COVID-19 can identify the priority areas.

## Year 3

### Number

Unit title	DfE ready to progress criteria	prior knowledge required
3.1 Number sense and exploring calculation strategies	3NF-1 3NPV-4	2.1 <ul style="list-style-type: none"><li>• Represent numbers to 100</li></ul>
3.2 Place value	3NPV-4	3.1 <ul style="list-style-type: none"><li>• Represent 2 digit numbers</li></ul>
3.3 Graphs	3NPV-4	3.1 <ul style="list-style-type: none"><li>• Count in steps of 2,5 and 10</li></ul>
3.4 Addition and subtraction	3NF-1 3AS-1 3AS-2 3AS-3	3.2 <ul style="list-style-type: none"><li>• Represent 3-digit numbers</li></ul>
3.5 Length and perimeter	3NPV-4	2.11



		<ul style="list-style-type: none"><li>• Properties of 2-D shapes</li></ul>
		3.4
		<ul style="list-style-type: none"><li>• Addition and subtraction of 2-digit numbers</li><li>• Doubling facts</li></ul>
3.6 Multiplication and division	3NF-2	2.6
		<ul style="list-style-type: none"><li>• Division as sharing and division as grouping</li><li>• Multiplication facts for 2,5 and 10</li></ul>
3.7 Deriving multiplication and division facts	3MD-1	2.6
		<ul style="list-style-type: none"><li>• 'Equal parts' and 'times greater' bar models</li></ul>
		3.2
		<ul style="list-style-type: none"><li>• Partition numbers into tens and ones</li></ul>
3.8 Time	N/A	2.6
		<ul style="list-style-type: none"><li>• Count in 5s up to 60</li></ul>
		2.7
		<ul style="list-style-type: none"><li>• Tell the time to the nearest 5 minutes</li></ul>

3.9 Fractions

3F-1 3F-2 3F-3 3F-4

2.6

- Recall multiplication facts for 2, 5 and 10



3.11 Measures

3NPV-4

3.2

- Represent 3-digit numbers

3.12 Securing multiplication and division

3MD-1 3NF-2

3.6

- Recall multiplication facts for the 3 and 4 times tables
- Use arrays to represent multiplication
- Understand the relationship between multiplication and division

3.13 Exploring calculation strategies and place value

N/A

3.4

- Addition strategies such as partitioning, near doubles, round and adjust

3.6

- Recall multiplication facts for the 2, 3, 4, 5 and 10 times tables

3.12



- Multiplication facts for the 6 and 8 times tables

3.14 Fractions: parts and wholes

3F-1 3F-2 3F-3

N/A

## Ratio and Proportion

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

3.9 Fractions

3F-1 3F-2 3F-3 3F-4

2.6

- Recall multiplication facts for 2, 5 and 10

3.14 Fractions: parts and wholes

3F-1 3F-2 3F-3

N/A

## Measurement

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

3.5 Length and perimeter

3NPV-4

2.11

- Properties of 2-D shapes

3.4

- Addition and subtraction fo 2-digit numbers
- Doubling facts

3.8 Time

N/A

2.6

- Count in 5s up to 60

2.7

- Tell the time to the nearest 5 minutes

3.11 Measures

3NPV-4

3.2

- Represent 3-digit numbers

## Geometry

Unit title

DfE ready to progress criteria

Prior knowledge required

3.10 Angles and shape

3G-1 3G-2

N/A

## Statistics

Unit title

DfE ready to progress criteria

Prior knowledge required

3.3 Graphs

3NPV-4

3.1

- Count in steps of 2, 5 and 10

## Year 4

### Number





Unit title	DfE ready to progress criteria	Prior knowledge required
4.1 Reasoning with 4-digit numbers	4NPV-1 4NPV-2 4NPV-3 4NPV-4	3.2 <ul style="list-style-type: none"> <li>Place value of up to 3-digit numbers</li> </ul>
4.2 Addition and subtraction	N/A	3.4 <ul style="list-style-type: none"> <li>Bar models</li> </ul>
4.3 Multiplication and division	4NF-3 4MD-1 4MD-2 4MD-3	3.6 <ul style="list-style-type: none"> <li>Mental strategies for multiplication and division</li> </ul>
4.5 Securing multiplication facts	4NF-1	3.12 <ul style="list-style-type: none"> <li>2,3,4,5,6,8 times tables</li> </ul>
4.6 Fractions	4F-1 4F-2 4F-3	3.9 <ul style="list-style-type: none"> <li>Use and compare simple fractions</li> <li>Add/subtract fractions</li> </ul>
4.7 Time	N/A	3.8 <ul style="list-style-type: none"> <li>Tell the time using 12 hour clock and am and pm</li> </ul>
4.8 Decimals	N/A	N/A



4.9 Area and perimeter	N/A	4.3	
		<ul style="list-style-type: none"> <li>Arrays</li> </ul>	
4.10 Solving measure and money problems	N/A	3.11	
		<ul style="list-style-type: none"> <li>Metric units of measure</li> </ul>	
4.12 Position and direction	4G-1	N/A	
4.13 Reasoning with patterns and sequences	N/A	N/A	
4.15 Fractions	4F-1 4F-2	N/A	
4.16 Taking fractions further	4F-1 4F-2 4F-3	N/A	

## Ratio and proportion

Unit title	DfE ready to progress criteria	Prior knowledge required
4.6 Fractions	4F-1 4F-2 4F-3	3.9 <ul style="list-style-type: none"> <li>Use and compare simple fractions</li> <li>Add/subtract fractions</li> </ul>
4.8 Decimals	N/A	N/A
4.15 Working with fractions	4F-1 4F-2	N/A

4.16 Taking fractions further

4F-1 4F-2 4F-3

N/A



## Measurement

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

4.7 Time

N/A

3.8

- Tell the time using 12 hour clock and am and pm

4.9 Area and perimeter

N/A

4.3

- Representing integers using arrays

4.10 Solving measure and money problems

N/A

3.11

- Metric units of measure

## Geometry

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

4.11 2-D shape and symmetry

4G-2 4G-3

3.10

- Identifying right angles, acute angles, and obtuse angles

4.12 Position and direction

4G-1

N/A

4.14 3-D Shape

N/A

N/A



## Statistics

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

4.4 Interpreting and presenting data

N/A

3.1

- Scales and keys associated with different ways of presenting data

## Year 5

### Number

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

5.1 Reasoning with large whole numbers

N/A

4.1

- Place value to 1000

5.2 Problem solving with integer addition and subtraction

N/A

4.2

- Mental and written methods for addition and subtraction

5.4 Multiplication and division

5NF-1 5MD-2 5MD-3 5MD-4

4.5

- Multiplication facts up to 12x12
- Language of factors and multiples



5.5 2-D shape, perimeter and area	5G-2	
5.6 Fractions and decimals	5NPV-1 5NPV-2 5NPV-3 5NPV-4	N/A
5.8 Fractions, decimals and percentages	5NPV-1	5.6 <ul style="list-style-type: none"><li>Fraction and decimal equivalences</li></ul>
5.10 Converting units of measure	5NPV-5	4.10 <ul style="list-style-type: none"><li>Units of time, length and mass</li></ul>
5.11 Calculating with whole numbers and decimals	5NPV-1 5NF-2	5.2 <ul style="list-style-type: none"><li>Addition and subtraction calculation strategies</li></ul> 5.4 <ul style="list-style-type: none"><li>Multiplication and division calculation strategies</li></ul> 5.6 <ul style="list-style-type: none"><li>Place value of decimal numbers</li></ul>
5.13 Volume	N/A	4.10 <ul style="list-style-type: none"><li>Measuring capacity and volume in ml and l</li></ul> 5.5



5.14 Problem solving with whole numbers N/A  
and decimals

- Calculating area

5.11

- Calculating with whole numbers and decimals

5.15 Equivalent fractions

5F-2 5F-3

N/A

## Ratio and proportion

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

5.6 Fractions and decimals

5NPV-1 5NPV-2 5NPV-3 5NPV-4

N/A

5.8 Fractions, decimals and percentages

5NPV-1

5.6

- Fraction and decimal equivalences

5.15 Equivalent fractions

5F-2 5F-3

N/A

## Measurement

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

5.10 Converting units of measure

5NPV-5

4.10

- Units of time, length and mass

5.13 Volume

N/A

4.10

- Measuring capacity and volume in ml and l



5.5

- Calculating area

## Geometry

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

5.5 2-D shape, perimeter and area

5G-2

4.9

- Finding the perimeter and area of rectangles

5.7 Angles

N/A

4.11

- Identifying acute, obtuse and right angles

5.9 Transformations

N/A

4.12

- Reading, writing and plotting coordinates

5.12 2-D and 3-D shape

N/A

4.11

- Sorting and classifying 2-D shapes

## Statistics



### Unit title

### DfE ready to progress criteria

### Prior knowledge required

5.3 Line graphs and timetables

N/A

N/A

## Year 6

### Number

### Unit title

### DfE ready to progress criteria

### Prior knowledge required

6.1 Integers and decimals

6NPV-1 6NPV-2 6NPV-3

5.1

- Secure with place value of up to 5-digit numbers

6.2 Multiplication and division

6NPV-4

6.1

- Fluency with numbers to ten million

5.11

- Secure in a range of multiplication and division strategies

6.3 Calculation problems

6AS/MD-1 6AS/MD-2

6.1

- Fluency with numbers to ten million

6.2





		<ul style="list-style-type: none"><li>• Multiplication and division</li></ul>
6.4 Fractions	6F-1 6F-2 6F-3	5.6 <ul style="list-style-type: none"><li>• Understand equivalent fractions</li></ul>
6.7 Fractions	N/A	5.8 <ul style="list-style-type: none"><li>• Multiply a fraction by an integer and find a fraction of an amount</li></ul>
		6.4 <ul style="list-style-type: none"><li>• Understand equivalent fractions</li></ul>
6.8 Decimals and measures	N/A	6.6 <ul style="list-style-type: none"><li>• Knowledge of 2-D and 3-D shapes</li></ul>
6.11 Extending calculation strategies and additive reasoning	N/A	6.1 <ul style="list-style-type: none"><li>• Fluency with numbers to ten million</li></ul>
		5.11 <ul style="list-style-type: none"><li>• Calculating with whole numbers and decimals</li></ul>

## Ratio and proportion

Unit title

DfE ready to progress criteria

Prior knowledge required

6.4 Fractions

6F-1 6F-2 6F-3

5.6

- Understand equivalent fractions



6.7 Fractions

N/A

5.8

- Multiply a fraction by an integer and find a fraction of an amount

6.4

- Understand equivalent fractions

6.9 Percentages and statistics

N/A

6.6

- Knowledge of circles

6.10 Proportion problems

6AS/MD-3 6AS/MD-4

6.2 and 6.3

- Calculation

6.4, 6.7, 6.8 and 6.9

- Reasoning with fractions, decimals and percentages

## Measurement

**Unit title**

**DfE ready to progress criteria**

**Prior knowledge required**

6.8 Decimals and measures

N/A

6.6

- Knowledge of 2-D and 3-D shape



## Geometry

Unit title	DfE ready to progress criteria	Prior knowledge required
6.5 Missing angles and lengths	6G-1	N/A
6.6 Coordinates and shape	6G-1	6.5 <ul style="list-style-type: none"> <li>• Properties of angles and polygons</li> </ul> 5.9 <ul style="list-style-type: none"> <li>• Coordinates in 4 quadrants, translation and reflection</li> </ul>

## Statistics

Unit title	DfE ready to progress criteria	Prior knowledge required
6.9 Percentages and statistics	N/A	6.6 <ul style="list-style-type: none"> <li>• Knowledge of circles</li> </ul>