

# Year 3

Mastery Overview  
Spring

## SOL Overview

As well as providing term by term overviews for the new National Curriculum, as a Maths Hub we are aiming to support primary schools by providing more detailed Schemes of Learning, which help teachers plan lessons on a day to day basis.

The following schemes provide exemplification for each of the objectives in our new term by term overviews, which are linked to the new National Curriculum. The schemes are broken down into fluency, reasoning and problem solving, which are the key aims of the curriculum. Each objective has with it examples of key questions, activities and resources that you can use in your classroom. These can be used in tandem with the mastery assessment materials that the NCETM have recently produced.

We hope you find them useful. If you have any comments about this document or have any suggestions please do get in touch.

Thank you for your continued support with all the work we are doing.

***The White Rose Maths Hub Team***

## Assessment

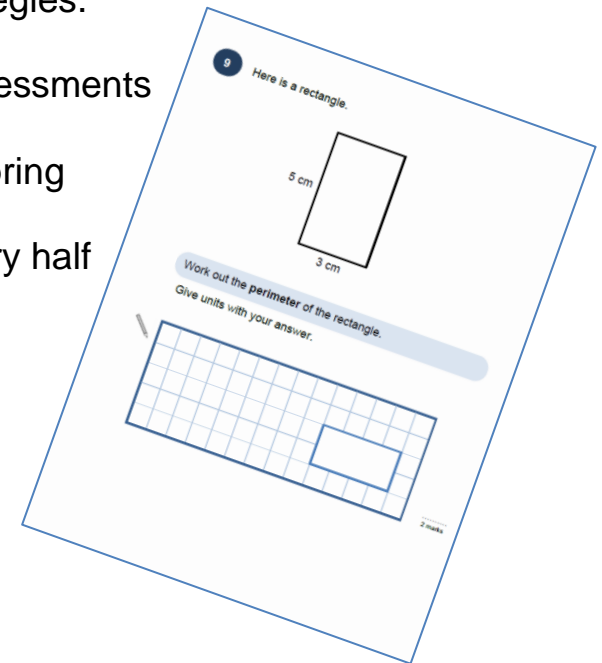
Alongside these curriculum overviews, our aim is also to provide an assessment for each term's plan. Each assessment will be made up of two parts:

**Part 1:** Fluency based arithmetic practice

**Part 2:** Reasoning based questions

You can use these assessments to determine gaps in your students' knowledge and use them to plan support and intervention strategies.

The autumn term assessments are now available. we aim to have the spring term assessments completed by February half term.



## Teaching for Mastery

These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum.

The overviews:

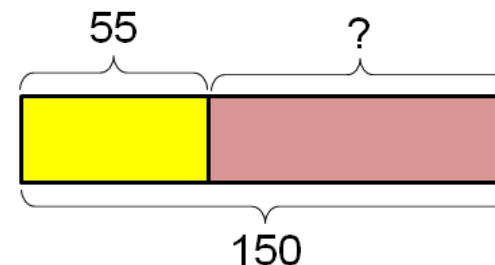
- have number at their heart. A large proportion of time is spent reinforcing number to build competency.
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole group.
- provide plenty of time to build reasoning and problem solving elements into the curriculum.

## Concrete – Pictorial – Abstract

As a hub we believe that all students, when introduced to a key new concept, should have the opportunity to build competency in this topic by taking this approach.

**Concrete** – students should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

**Pictorial** – students should then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.



An example of a bar modelling diagram used to solve problems.

**Abstract** – with the foundations firmly laid, students should be able to move to an abstract approach using numbers and key concepts with confidence.

## Frequently Asked Questions

***We have bought one of the new Singapore textbooks. Can we use these curriculum plans?***

Many schools are starting to make use of a mastery textbook used in Singapore and China, the schemes have been designed to work alongside these textbooks. There are some variations in sequencing, but this should not cause a large number of issues.

***If we spend so much time on number work, how can we cover the rest of the curriculum?***

Students who have an excellent grasp of number make better mathematicians. Spending longer on mastering key topics will build a student's confidence and help secure understanding. This should mean that less time will need to be spent on other topics.

In addition schools that have been using these schemes already have used other subjects and topic time to teach and consolidate other areas of the mathematics curriculum.

***My students have completed the assessment but they have not done well.***

This is your call as a school, however our recommendation is that you would spend some time with the whole group focussing on the areas of the curriculum that they do not appear to have grasped. If a couple of students have done well then these could be given rich tasks and deeper problems to build an even deeper understanding.

***Can we really move straight to this curriculum plan if our students already have so many gaps in knowledge?***

The simple answer is yes. You might have to pick the correct starting point for your groups. This might not be in the relevant year group and you may have to do some consolidation work before.

These schemes work incredibly well if they are introduced from Year 1 and continued into Year 2, then into Year 3 and so on.

## NCETM Mastery Booklets

In addition to the schemes attached the NCETM have developed a fantastic series of problems, tasks and activities that can be used to support 'Teaching for Mastery'. They have been written by experts in mathematics.

It will also give you a detailed idea of what it means to take a mastery approach across your school.

Information can be found on the link below.

<https://www.ncetm.org.uk/resources/46689>



## WRMH Primary Network

Over the past 12 months we have been working with a company called MyFlo to develop a free online platform where teachers from across our region (and wider) can share their own resources and lesson plans based on this new curriculum. All our overviews, schemes and assessment materials will be made available on the MyFlo network.

## Everyone Can Succeed

As a Maths Hub we believe that all students can succeed in mathematics. We do not believe that there are individuals who can do maths and those that cannot. A positive teacher mindset and strong subject knowledge are key to student success in mathematics.

## More Information

If you would like more information on 'Teaching for Mastery' you can contact the White Rose Maths Hub at [mathshub@trinityacademyhalifax.org](mailto:mathshub@trinityacademyhalifax.org)

We are offering courses on:

- Bar Modelling
- Teaching for Mastery
- Year group subject specialism intensive courses – become a Maths expert.

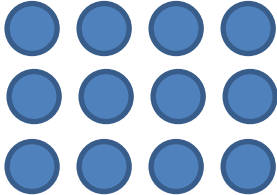








Our monthly newsletter also contains the latest initiatives we are involved with. We are looking to improve maths across our area and on a wider scale by working with other Maths Hubs across the country.

## Year 3 Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Addition and Subtraction				Number: Multiplication and Division				Measurement	
Spring	Number: Multiplication and Division			Measurement			Number: Fractions				Consolidation	
Summer	Number: Fractions				Geometry: Property of Shapes		Measurement				Statistics	Consolidation

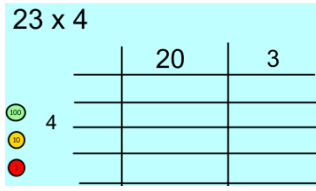
Year Group	Y3	Term	Spring
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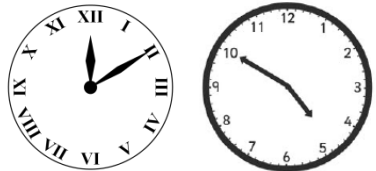





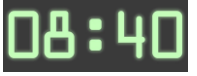


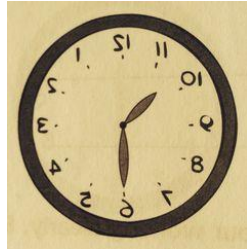
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
<p><u>Number: Multiplication and Division</u> Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</p> <p>Solve problems including missing number problems involving multiplication and division, positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objectives.</p> <p>Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental methods and progressing to formal written methods.</p>			<p><u>Measurement</u> Tell and write the time from an analogue clock, including using Roman numerals, 12-hour and 24-hour clocks.</p> <p>Estimate and read time with increasing accuracy to the nearest minute.</p> <p>Record and compare time in terms of seconds, minutes and hours.</p> <p>Use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>Compare durations of events [for example calculate the time taken by particular events or tasks].</p>			<p><u>Number: Fractions</u> Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</p> <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</p> <p>Count up and down in tenths.</p> <p>Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</p>				<p><b>Time at the beginning or end of the term for consolidation, gap filling, seasonal activities, assessments, etc.</b></p>	

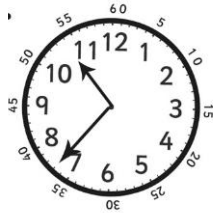
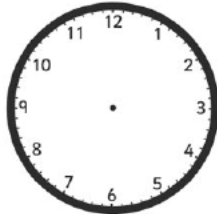

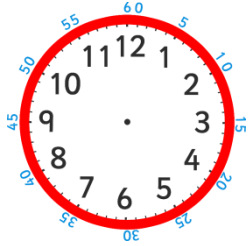
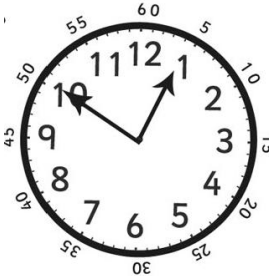
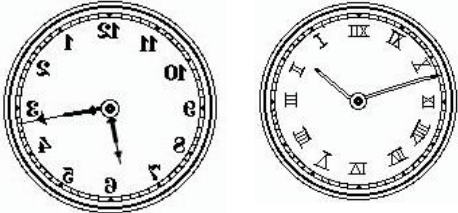


	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
<b>Multiplication and Division</b>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</p>	<ul style="list-style-type: none"> <li>Solve:            <math>3 \times 4 =</math>  <math>4 \times 3 =</math>  <math>12 \div 3 =</math>  <math>24 \div 8 =</math> </li> <li>Fill in the boxes:            <math>3 \times \square = 21</math>  <math>\square \times 8 = 32</math>  <math>40 \div \square = 8</math> </li> <li>Shakira buys 8 boxes of cupcakes. There are 4 cupcakes in each box. How many cupcakes does she buy altogether?</li> </ul>	<ul style="list-style-type: none"> <li>Use the array to complete the number sentences below:              <math>3 \times \square = \square</math>  <math>\square \times 3 = \square</math>  <math>\square \div 3 = \square</math>  <math>\square \div \square = 3</math> </li> <li>What is wrong with this division sentence?            <math>4 \div 10 = 40</math>  Can you correct it?         </li> </ul>	<ul style="list-style-type: none"> <li>Fill in the boxes below using 8 <b>different</b> whole numbers.             <math>\times</math>  <math>= 24</math>   <math>\times</math>  <math>= 24</math>   <math>\times</math>  <math>= 24</math>   <math>\times</math>  <math>= 24</math> </li> <li>Mia has 17 pounds. She wants to buy some cakes and chocolates. Cakes cost £3 and chocolates cost £4. How many different combinations of cakes and chocolates could she buy?</li> </ul>



	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
<b>Multiplication and Division</b>	<p>Solve problems including missing number problems involving multiplication and division, positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objectives.</p>	<ul style="list-style-type: none"> <li>Fill in the boxes:               <math display="block">5 \times \square = 15</math> <math display="block">\square \times 4 = 32</math> <math display="block">48 \div \square = 8</math> </li> <li>Jemima has a toy car measuring 8cm. Aisha has a toy train that is 8 times as long as the car. How long is the train?</li> <li>Kainat is making buns. For every 40g of flour she needs 1 egg.               <p>If she uses 5 eggs, how many grams of flour does she use? If she uses 400g of flour, how many eggs does she need?</p> </li> </ul>	<ul style="list-style-type: none"> <li>12 buns are shared between 3 boys. 16 buns are shared between 4 girls. Who gets more buns, boys or girls? Explain your answer.</li> <li>For every 3 boys in class there are 2 girls. Which of the combinations of boys and girls could be correct?               <p>18 boys and 12 girls 15 boys and 10 girls 21 boys and 9 girls 12 boys and 8 girls</p> <p>Show your thinking using a picture.</p> </li> <li>How many different combinations of numbers can you find that would fit in the empty boxes?               <math display="block">5 \times \square = 10 \times \square</math> </li> </ul>	<ul style="list-style-type: none"> <li>Use the numbers 1 - 8 to fill the circles below:               <math display="block">\text{?} \div \text{?} = \text{?}</math> <math display="block">\text{?} - \text{?} \quad \text{?} \times \text{?}</math> <math display="block">\text{?} + \text{?} = \text{?}</math> </li> <li>Lottie is counting the number of legs in her house. People and cats live in Lottie's house. People have 2 legs, cats have 4 legs. If there are 26 legs altogether, how many cats and people might there be?</li> <li>William has 3 t-shirts and 4 pairs of trousers, how many different outfits can he make?</li> </ul>

	National Curriculum Statement	All Students																																
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<h2>Multiplication and Division</h2>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</p>	<ul style="list-style-type: none"> <li>Use place value counters to multiply a two digit number and one digit number together.</li> </ul>  <p style="text-align: center;"><math>23 \times 4 =</math></p> <p>Set up a grid with 4 rows as we are finding 4 lots of 23. Make 23 in each row using the place value counters. Add up each column, starting with the ones to find out your answer.</p>	<ul style="list-style-type: none"> <li><b>Always, sometimes, never</b> A two digit number multiplied by a one digit number makes a two digit answer.</li> <li>Fill in the missing boxes.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="background-color: black; color: black;"> </td> <td style="text-align: center;">10</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;"> </td> <td style="text-align: center;">40</td> </tr> </table> <p>Explain your answer.</p>		10		5		40	<ul style="list-style-type: none"> <li>Using the digit cards in the multiplication below how close can you get to 100?</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; background-color: #00A0C9; color: white; border-radius: 10px;">2</div> <div style="border: 1px solid black; padding: 5px; background-color: #6A329F; color: white; border-radius: 10px;">3</div> <div style="border: 1px solid black; padding: 5px; background-color: #FF8C00; color: white; border-radius: 10px;">4</div> </div> <div style="display: flex; justify-content: center; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; width: 30px; height: 30px; background-color: #C00000; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; background-color: #C00000; margin-right: 5px;"></div> <div style="font-size: 24px; margin: 0 10px;">×</div> <div style="border: 1px solid black; width: 30px; height: 30px; background-color: #C00000; margin-right: 5px;"></div> <div style="font-size: 24px; margin: 0 10px;">=</div> </div> <ul style="list-style-type: none"> <li>Fill in the missing digits in the multiplication below:</li> </ul> <div style="text-align: center; margin-top: 20px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="border: 1px solid black; padding: 5px; background-color: #0056B3; color: white; border-radius: 10px;">2</td> <td style="border: 1px solid black; padding: 5px; background-color: #0056B3; color: white; border-radius: 10px;">3</td> <td></td> </tr> <tr> <td></td> <td></td> <td style="border: 1px solid black; padding: 5px; width: 30px; height: 30px;"></td> </tr> <tr> <td style="font-size: 24px; vertical-align: middle;">×</td> <td></td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black; height: 5px;"></td> </tr> <tr> <td></td> <td style="border: 1px solid black; padding: 5px; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; padding: 5px; background-color: #0056B3; color: white; border-radius: 10px;">4</td> </tr> <tr> <td style="font-size: 24px; vertical-align: middle;">+</td> <td style="border: 1px solid black; padding: 5px; background-color: #0056B3; color: white; border-radius: 10px;">1</td> <td style="border: 1px solid black; padding: 5px; background-color: #0056B3; color: white; border-radius: 10px;">0</td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black; height: 5px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; padding: 5px; width: 30px; height: 30px;"></td> <td style="border: 1px solid black; padding: 5px; width: 30px; height: 30px;"></td> </tr> </table> </div>	2	3					×								4	+	1	0						
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	<ul style="list-style-type: none"> <li><math>3 \times 5 =</math> Complete this statement and use this to solve the multiplication below: <math>3 \times 50 =</math> <math>30 \times 5 =</math> <math>5 \times 3 =</math></li> <li>Solve:</li> </ul> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <table style="border-collapse: collapse;"> <tr><td style="text-align: right; padding-right: 5px;">20</td><td style="padding-right: 20px;"></td><td style="text-align: right; padding-right: 5px;">38</td></tr> <tr><td style="text-align: right; padding-right: 5px;">x 8</td><td></td><td style="text-align: right; padding-right: 5px;">x 4</td></tr> <tr><td colspan="3" style="border-top: 1px solid black; height: 10px;"></td></tr> </table> <table style="border-collapse: collapse;"> <tr><td style="text-align: right; padding-right: 5px;"> </td><td style="padding-right: 20px;"></td><td style="text-align: right; padding-right: 5px;"> </td></tr> <tr><td style="text-align: right; padding-right: 5px;"> </td><td></td><td style="text-align: right; padding-right: 5px;"> </td></tr> <tr><td colspan="3" style="border-top: 1px solid black; height: 10px;"></td></tr> </table> </div>	20		38	x 8		x 4																											
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	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
<h2 style="writing-mode: vertical-rl; transform: rotate(180deg);">Measurement - Time</h2>	<p>Tell and write the time from an analogue clock, including using Roman numerals and 12-hour and 24-hour clocks.</p>	<ul style="list-style-type: none"> <li>What time is shown on the analogue clocks below?</li> </ul>  <ul style="list-style-type: none"> <li>Draw the times on the blank analogue clocks.</li> </ul> <p>a) Five past four b) Twenty five to ten c) Half past seven</p>  <ul style="list-style-type: none"> <li>Match the times on the digital clocks to the analogue clocks.</li> </ul>      	<ul style="list-style-type: none"> <li>The clock only has one hand. What time could the clock show? Explain your choice carefully.</li> </ul>  <ul style="list-style-type: none"> <li>Kim is explaining how to tell the time on a 24 - hour clock.</li> </ul> <div style="background-color: #4a86e8; color: white; padding: 5px; border-radius: 10px; text-align: center;"> <p>'Look at the hour number and minus 12'</p> </div> <p>Do you agree with Kim? Prove your answer by showing examples.</p> <ul style="list-style-type: none"> <li>Leila is telling the time from an analogue clock.</li> </ul> <div style="background-color: #6a3d9a; color: white; padding: 10px; border-radius: 15px; text-align: center;"> <p>'The hour hand is pointing to XI the minute hand is pointing to XII'</p> </div> <p>What time is it?</p>	<ul style="list-style-type: none"> <li>What is different about the clock below? Can you still use it to tell the time?</li> </ul>  <ul style="list-style-type: none"> <li>On a digital clock, there are certain times when the numbers are in consecutive order, in counting order, either forwards or backwards eg 1:23 or 5:43 How many times during a day does this happen?</li> <li>Fill in the gaps in the story with the digital time. Lucy gets up at quarter past eight in the morning _____. She has her breakfast at twenty to nine _____. Lucy goes shopping at quarter to eleven _____ and returns home at twenty past one in the afternoon _____.</li> </ul> <p>Can you write your own story about your day?</p>

Measurement - Time	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
	<p>Estimate and read time with increasing accuracy to the nearest minute.</p>	<ul style="list-style-type: none"> <li>Write the time on the clocks to the nearest minute.                              </li> <li>Draw the hands on the clock to show the time below.                              <p style="text-align: center;"><b>23 minutes to 9</b></p> </li> <li>Fill in the gap.                              <p style="text-align: center;">_____ minutes past 4</p> </li> </ul>	<ul style="list-style-type: none"> <li>Look at the clock face below. Can you explain why there are two sets of numbers on it? What do they mean?                              </li> <li>Farah is telling the time. She says this clock says it is ten past one. Is Farah correct? Prove it.                              </li> </ul>	<ul style="list-style-type: none"> <li>These clocks have been reflected in a mirror. Can you work out what time they show?                              </li> <li>Simon gets up at half past nine. Can you order the times he sees on the clocks during the day until he goes to bed at 22:45?                              </li> <li>At twelve o'clock both the minute hand and hour hand are pointing in exactly the same direction. At what other times during the day does this happen? Can you write down all the times and draw them on an analogue clock?                              </li> </ul>

	National Curriculum Statement	All Students																		
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Measurement	Record and compare time in terms of seconds, minutes and hours.	<ul style="list-style-type: none"> <li>Use a stopwatch to record the following events:                             <ol style="list-style-type: none"> <li>Time taken to run all the way around the playground.</li> <li>Time taken to complete 10 mental maths questions.</li> <li>Time taken to do 20 star jumps.</li> </ol> </li> </ul> <p>How long did each event take? Which took the longest? Would you record your time in seconds or minutes?</p>	<ul style="list-style-type: none"> <li>Dan takes 153 seconds to skip around the playground. Tilly takes 2 minutes 23 seconds. Who is the quickest? Explain how you know.</li> <li>Cut up the cards below and turn them over. Try to find a matching pair of an activity and the length of time you think it takes. Does everyone agree with the time it takes? How can you prove it?</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Time taken to count from 1 to 10</td> <td>10 seconds</td> </tr> <tr> <td>Time taken to brush your teeth</td> <td>90 minutes</td> </tr> <tr> <td>Time taken to run 100m</td> <td>3 minutes</td> </tr> <tr> <td>Time taken to travel to Spain.</td> <td>5 seconds</td> </tr> <tr> <td>Time taken to watch a football match.</td> <td>2 hours</td> </tr> </table>	Time taken to count from 1 to 10	10 seconds	Time taken to brush your teeth	90 minutes	Time taken to run 100m	3 minutes	Time taken to travel to Spain.	5 seconds	Time taken to watch a football match.	2 hours	<ul style="list-style-type: none"> <li>Saira goes to three different activities a week. They all start at 6 o'clock but are different distances away. Can you match the day and time she leaves with the activity she is going to?</li> </ul> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="background-color: #4a7ebb; color: white; padding: 5px; border-radius: 10px;">Tuesday 17:35</td> <td style="background-color: #4db6ac; padding: 5px; border-radius: 10px;">Ballet 42 minutes away</td> </tr> <tr> <td style="background-color: #7b4397; color: white; padding: 5px; border-radius: 10px;">Wednesday 17:18</td> <td style="background-color: #4db6ac; padding: 5px; border-radius: 10px;">Football 35 minutes away</td> </tr> <tr> <td style="background-color: #8bc34a; color: white; padding: 5px; border-radius: 10px;">Thursday 5:25pm</td> <td style="background-color: #4db6ac; padding: 5px; border-radius: 10px;">Swimming 25 minutes away</td> </tr> </table> <p>One day, Saira is 13 minutes late for swimming. What time did she leave her house that day?</p> <p>Saira changes to a later ballet class that starts at 6:40. What time will she have to leave her house now?</p>	Tuesday 17:35	Ballet 42 minutes away	Wednesday 17:18	Football 35 minutes away	Thursday 5:25pm	Swimming 25 minutes away
		Time taken to count from 1 to 10	10 seconds																	
Time taken to brush your teeth	90 minutes																			
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Tuesday 17:35	Ballet 42 minutes away																			
Wednesday 17:18	Football 35 minutes away																			
Thursday 5:25pm	Swimming 25 minutes away																			

	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
Measurement	<p>Use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight.</p>	<ul style="list-style-type: none"> <li>Sort the times below into am and pm. 5 o'clock in the morning. 3 o'clock in the afternoon. 08:45 16:43</li> </ul> <p>Can you write one more time to join each group?</p> <ul style="list-style-type: none"> <li>Use the vocabulary cards below to fill in the gaps about Sita's day.</li> </ul> <p>Sita's alarm went off at seven _____ in the _____. She set off to school at eight _____. She arrived at 8:35 _____. After her _____ lessons, she had lunch at _____. In the _____ she learnt about the Victorians. School finished at 3:25 _____. Sita went to bed at seven _____ but woke up five hours later at _____ when it was very dark.</p>	<ul style="list-style-type: none"> <li>Caroline says: "Any time that it is dark is pm and any time that it is light is am."</li> </ul> <p>Do you agree? Explain your thinking.</p> <ul style="list-style-type: none"> <li>Can you complete the sentence below in 2 different ways? 12 o'clock in the _____ can also be called _____.</li> </ul> <p>Explain the difference in the two sentences.</p>	<ul style="list-style-type: none"> <li>Match the words to their meanings.</li> </ul> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%; text-align: center;">o'clock</div> <div style="width: 50%; text-align: center;">Time between midnight and noon</div> <div style="width: 50%; text-align: center;">morning</div> <div style="width: 50%; text-align: center;">Time from noon to evening</div> <div style="width: 50%; text-align: center;">am</div> <div style="width: 50%; text-align: center;">12 o'clock at night</div> <div style="width: 50%; text-align: center;">afternoon</div> <div style="width: 50%; text-align: center;">Post meridiem-after noon</div> <div style="width: 50%; text-align: center;">pm</div> <div style="width: 50%; text-align: center;">Middle of the day</div> <div style="width: 50%; text-align: center;">midnight</div> <div style="width: 50%; text-align: center;">Ante meridiem-before midday</div> <div style="width: 50%; text-align: center;">noon</div> <div style="width: 50%; text-align: center;">Used to specify the hour</div> </div>
		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">noon</div> <div style="border: 1px solid black; padding: 2px;">a.m.</div> <div style="border: 1px solid black; padding: 2px;">p.m.</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px;">morning</div> <div style="border: 1px solid black; padding: 2px;">afternoon</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px;">o'clock</div> <div style="border: 1px solid black; padding: 2px;">midnight</div> </div>		

## Measurement

### National Curriculum Statement

Know the number of seconds in a minute and the number of days in each month, year and leap year.

### Fluency

- Cut up the cards below and play a matching game with a friend. When you get a pair you keep it. The player with the most pairs wins!

1 hour	60 minutes	60 seconds	1 minute
7 days	1 week	1 month	about 4 weeks
12 months	1 year	24 hours	1 day

- Fill in the missing numbers in the rhyme.

\_\_\_ days have September, April, June and November.  
All the rest have \_\_\_\_, except for February alone. Which has \_\_\_ each year and \_\_\_ in a leap year.

- Can you use the picture below to tell me how many days are in each month?



### All Students

### Reasoning

- Rehan says 'When I add the number of days in 2 different months up, it always makes an odd number.' Do you agree? Explain your reasoning.
- Daniel says "The number of days in the last two years add up to make an odd number. I now know that next year is not a leap year." Is Daniel correct? Can he be sure?
- True or False**  
To check if a year is a leap year, I only need to check the number of days in one month.  
  
Explain your answer.

### Problem Solving

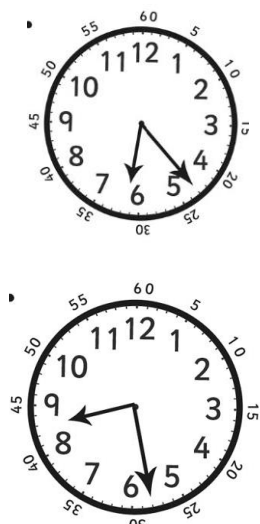
- The months of February to May have fallen out of my calendar. Can you work out which calendar pages below match to which month?

M	T	W	T	F	S	S	M	T	W	T	F	S	S	
			1	2	3	4							1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9	
12	13	14	15	16	17	18	10	11	12	13	14	15	16	
19	20	21	22	23	24	25	17	18	19	20	21	22	23	
26	27	28	29	30	31		24	25	26	27	28	29	30	
							31							

M	T	W	T	F	S	S	M	T	W	T	F	S	S	
			1	2	3	4							1	2
7	8	9	10	11	12	13	3	4	5	6	7	8	9	
14	15	16	17	18	19	20	10	11	12	13	14	15	16	
21	22	23	24	25	26	27	17	18	19	20	21	22	23	
28	29	30					24	25	26	27	28			

- Dan is thinking of a month. He gives two clues to help his friends guess.
  - When I add the number of days in my month and the month before it equals 62 days.
  - When I add the number of days in my month and next month it equals 60.

What month is Dan thinking of?

	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
Measurement	<p>Compare durations of events [for example to calculate the time taken by particular events or tasks].</p>	<ul style="list-style-type: none"> <li>A TV programme starts at 5:20 and finishes at 6:05. How long does the programme last for?</li> <li>Kieran is learning his times tables. On Monday it takes him 1 minute and 12 seconds to complete 10 questions. By Friday he can complete 10 questions in 42 seconds. How much quicker is he by Friday?</li> <li>Look at the two clocks below. How much time has passed between the first and the second clock?</li> </ul> <div style="text-align: center;">  </div>	<ul style="list-style-type: none"> <li>Henry measures the time it takes for three of his friends to do 30 star jumps. He wants to find out who is the quickest. Henry says:                     <div style="border: 1px solid blue; border-radius: 15px; background-color: #4a86e8; color: white; padding: 10px; margin: 10px 0; text-align: center;">                         The person with the highest time is the winner because the highest score always wins!                     </div> </li> </ul> <p>Is Henry correct? Explain your reasoning.</p> <ul style="list-style-type: none"> <li>Order the times below from shortest time to longest time.                     <ul style="list-style-type: none"> <li>83 seconds</li> <li>1 minute 12 seconds</li> <li>56 seconds</li> <li>2 minutes 2 seconds</li> <li>1 minute 87 seconds</li> <li>143 seconds</li> </ul> </li> </ul> <p>Explain your reasoning.</p>	<ul style="list-style-type: none"> <li>Ashrita Furman is famous for holding the most world records at the same time, 131! Below is a list of world records he has broken travelling one mile on different equipment.</li> </ul> <p>Estimate and order the records from the one you think is quickest to the one you think took the longest. (Remove information in brackets until after activity)</p> <ol style="list-style-type: none"> <li><b>Pool Cue balancing on finger (6min 55s)</b></li> <li>On a Space Hopper (13 min)</li> <li>Sack Race (16min 41s)</li> <li>Pogo stick whilst juggling (23min 28s)</li> <li>Hula hooping whilst balancing a milk bottle on head (13min 37s)</li> <li>Pushing an orange with your nose. (22min 41s)</li> <li>Playing tiddlywinks (23min 22s)</li> </ol> <p>How long do you think it would take you? See how long it takes you to complete some of the challenges over 100min.</p>



## Fractions

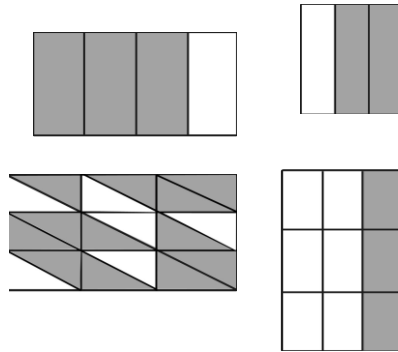
### National Curriculum Statement

Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.

### All Students

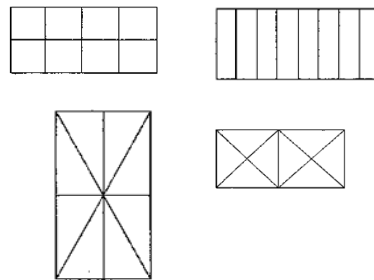
#### Fluency

- Write the fractions shaded in the shapes below.



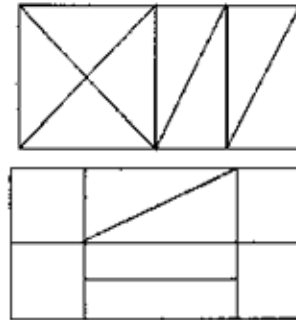
- Find  $\frac{1}{2}$  of 16.
- Find  $\frac{1}{4}$  of 16.
- Find  $\frac{1}{8}$  of 16.

- Shade in  $\frac{3}{8}$  of each of the diagrams below.



#### Reasoning

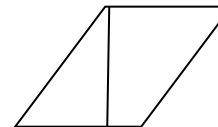
- These shapes are divided into eight equal parts. Do you agree? Explain your thinking.



- Susie ate  $\frac{1}{4}$  of a cake, Dinah ate  $\frac{1}{2}$  of what was left. Amarah ate the rest of the cake. Draw a diagram to show how much each of the girls ate.

- True or False**

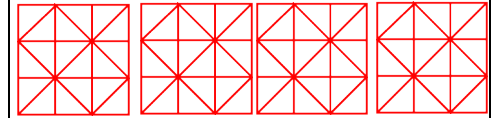
This shape is split into two equal halves



Explain your reasoning.

#### Problem Solving

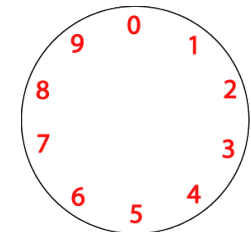
- Can you shade this diagram in different ways to show  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{6}$  and  $\frac{1}{9}$



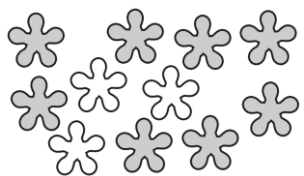
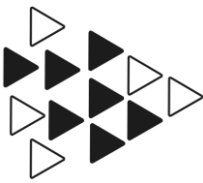




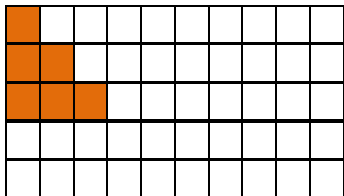
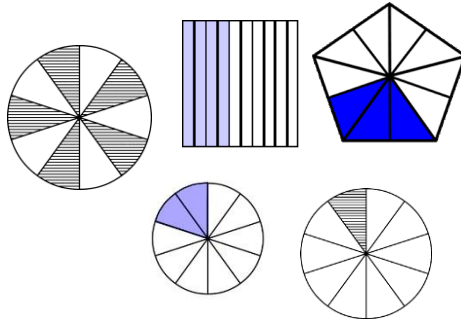
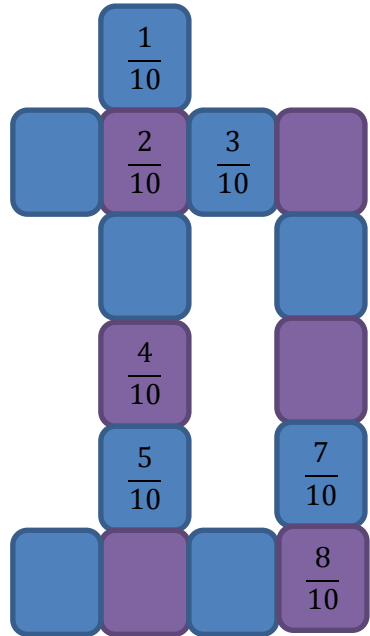
- How can you cut a doughnut into eight equal pieces with only three cuts of a knife?
- On Sam's ninth birthday he gets a cake that has the numbers 0 - 9 round the edge instead of candles.

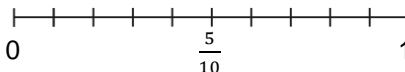
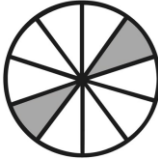
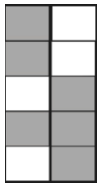

Starting from the centre, Sam cuts the cake with three cuts into three pieces so that the numbers on each piece add up to the same total.

What total does each piece make?  
What fraction of the whole cake is each piece?



	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
Fractions	<p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</p>	<ul style="list-style-type: none"> <li>Complete the fractions to describe the set of objects.                         </li> <li>Write the fraction of each set of objects that is shaded.                         </li> </ul>	<ul style="list-style-type: none"> <li>Find the fraction of each colour of skittles.                        Sahil says:                      <div style="border: 1px solid orange; border-radius: 15px; background-color: #e67e22; color: white; padding: 10px; display: inline-block; margin: 10px 0;">                         "If I take away 5 yellow skittles, I will have to change all my fractions."                     </div>  Do you agree? Explain your thinking.                 </li> <li>This is <math>\frac{2}{5}</math> of a set of marbles. How many would be in the whole set?                       </li> </ul>	<ul style="list-style-type: none"> <li>Kayleigh has 12 chocolates.                      On Friday, she ate <math>\frac{1}{4}</math> of her chocolates and gave one to her mum.                      On Saturday, she ate <math>\frac{1}{2}</math> her chocolates, and gave one to her brother.                      On Sunday, she ate <math>\frac{1}{3}</math> of her chocolates.                      How many did she have left? What fraction of her starting number is this?                 </li> <li>I cut my pizza into 4 equal parts and I eat two of them. My friend cuts each of the remaining slices in half and eats two of them. How much of the original pizza is left?</li> </ul>

	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
Fractions	Count up and down in tenths.	<ul style="list-style-type: none"> <li>Shade the diagram to continue the pattern.</li> </ul> 	<ul style="list-style-type: none"> <li>Circle and explain the mistakes in the sequences below.</li> </ul> $\frac{1}{10}, \frac{2}{10}, \frac{4}{10}, \frac{5}{10}, \frac{6}{10}$ $\frac{9}{10}, \frac{8}{10}, \frac{8}{10}, \frac{7}{10}, \frac{6}{10}$	<ul style="list-style-type: none"> <li>Order the diagrams and describe how you have ordered them.</li> </ul> 
		<ul style="list-style-type: none"> <li>Finish the sequences:</li> </ul> $\frac{1}{10}, \frac{2}{10}, \frac{3}{10}, \underline{\quad}, \underline{\quad}, \underline{\quad}$ $\frac{10}{10}, \frac{9}{10}, \frac{8}{10}, \underline{\quad}, \underline{\quad}, \underline{\quad}$	<ul style="list-style-type: none"> <li>Jack is counting in tenths aloud.</li> </ul> <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; background-color: #4a86e8; color: white; text-align: center; margin: 10px auto; width: fit-content;">                     Five tens, six tens, seven tens, eight tens.                 </div> <p>Jasmine tells Harry that he's made a mistake but she can't explain what he's done wrong.</p> <p>Can you finish Jasmine's sentence to help her explain to Jack what he has done wrong and why?</p> <p>'You have made a mistake because.....'</p>	<ul style="list-style-type: none"> <li>Fill in the missing fractions</li> </ul> 

	National Curriculum Statement	All Students		
		Fluency	Reasoning	Problem Solving
Fractions	<p>Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.</p>	<ul style="list-style-type: none"> <li>Here is a number line from 0 - 1. Can you fill in the missing fractions on the number line?</li> </ul>  <ul style="list-style-type: none"> <li>Write the fraction of the shape that is shaded.</li> </ul>    <ul style="list-style-type: none"> <li>Draw and shade shapes to show the following fractions.</li> </ul> <p><math>\frac{1}{10}</math>   <math>\frac{6}{10}</math>   <math>\frac{8}{10}</math></p>	<ul style="list-style-type: none"> <li>What do you notice in the number sentences below?</li> </ul> <p><math>\frac{1}{10}</math> of 10 = 1</p> <p><math>\frac{2}{10}</math> of 10 = 2</p> <p><math>\frac{3}{10}</math> of 10 = 3</p> <p>Can you continue the pattern up to <math>\frac{10}{10}</math>?</p> <ul style="list-style-type: none"> <li>What do you notice in the number sentences below?</li> </ul> <p><math>\frac{1}{10}</math> of 20 = 2</p> <p><math>\frac{2}{10}</math> of 20 = 4</p> <p><math>\frac{3}{10}</math> of 20 = 6</p> <p>Can you continue the pattern up to <math>\frac{10}{10}</math>?</p> <ul style="list-style-type: none"> <li>Three pizzas are shared equally between ten children. If each pizza is cut into 10 pieces, how many pieces will each child get? Prove it using a picture or diagram.</li> </ul>	<ul style="list-style-type: none"> <li>Lara has 30 cherries.</li> </ul> <p>On Monday she gives <math>\frac{1}{10}</math> of the cherries to her mum and then eats 7.</p> <p>On Tuesday she eats <math>\frac{2}{10}</math> of the cherries and gives 6 to her mum.</p> <p>On Wednesday she eats <math>\frac{5}{10}</math> of the cherries.</p> <p>How many cherries does she have left?</p> <ul style="list-style-type: none"> <li>What do all the diagrams below have in common?</li> </ul> 