

Year 5

Mastery Overview
Autumn

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.

In addition to this we have also created our own network area where teachers from across the country can share their lesson plans and resources that are linked to our schemes.

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

The White Rose Maths Hub Team

Assessment

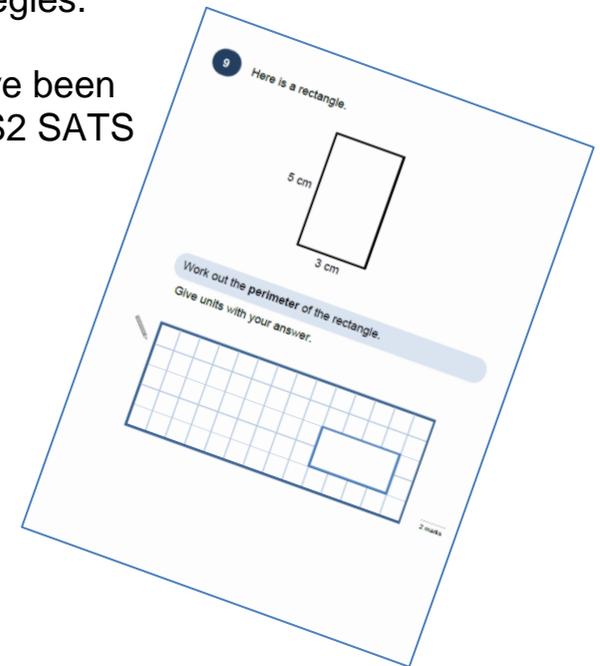
Alongside these curriculum overviews, our aim is also to provide a free assessment for each term's plan. Each assessment will be made up of two parts:

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 assessments have been designed with new KS2 SATS in mind. All of the assessments will be ready by 30 November 2015.



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;

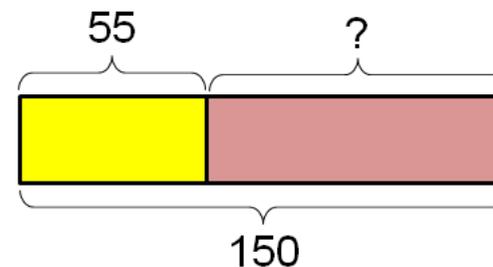
- have number at their heart. A large proportion of time is spent reinforcing number to build competency
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole 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 don't 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 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 don't believe that there are individuals who can do maths and those that can't. 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

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 the other Maths Hubs across the country.

Year 5 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				Statistics	
Spring	Number: Fractions					Number: Decimals			Number: Percentages			
Summer	Geometry: Angles	Geometry: Shapes		Geometry: Position and Direction	Measurement- Converting Units		Number: Prime Numbers	Perimeter and Area	Measures volume			

Year Group	Y5	Term	Autumn
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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 – place value</u> Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.</p> <p>Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000</p> <p>Solve number problems and practical problems that involve all of the above.</p> <p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>			<p><u>Number- addition and subtraction</u> Add and subtract numbers mentally with increasingly large numbers.</p> <p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> <p>Solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why.</p>			<p><u>Number – multiplication and division</u> Multiply and divide numbers mentally drawing upon known facts.</p> <p>Multiply and divide whole numbers by 10, 100 and 1000.</p> <p>Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.</p> <p>Divide numbers up to 4 digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context.</p> <p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>Recognise and use square numbers and cube numbers and the notation for squared (²) and cubed (³)</p> <p>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.</p> <p>Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.</p>			<p><u>Statistics</u> Solve comparison, sum and difference problems using information presented in a line graph.</p> <p>Complete, read and interpret information in tables including timetables.</p>		

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Place Value	Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.	<ul style="list-style-type: none"> How can we describe 580500? It has ___ hundred thousands. It has ___ ten thousands. It has ___ hundreds. It is made of 580000 and ____ together. Say 358923 aloud, can you write this number in words? Order the following numbers in ascending order: 362354, 362000, 362453, 359999, 363010 	<ul style="list-style-type: none"> Hannah says, 'Using the digits 0-9 I can make any number up to 1000000' Is she correct? Convince me. Oscar says the number 345050 is three hundred and forty five thousand and five. Can you explain why he is wrong? Simon says he can order the following numbers by only looking at the first three digits. Is he correct? Explain your answer. 125161, 128324, 126743, 125382, 127942 	<ul style="list-style-type: none"> Using the digits 0-9 make the largest number possible and the smallest possible. How do you know these are the largest and smallest numbers? Harriet has made five numbers, using the digits 1, 2, 3 and 4. She has changed each number into a letter and has written three clues to help people work out her numbers. <i>'Number 1 is the largest. Number 4's digits add up to 12. Number 3 is the smallest number.'</i> <ol style="list-style-type: none"> aabdc acdbc dcaba cdadc bdaab

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Place Value	<p>Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.</p>	<ul style="list-style-type: none"> Finish the sequence: 1000, 2000, 3000, _____, _____ , 350, 340, _____, _____, _____ , 11800, 11900, _____, _____ Fill in the missing numbers: 	<ul style="list-style-type: none"> Can you spot the mistake? 18700, 18800, 18900, 19100 Correct the mistake and explain your working. True or False? When I count in 10's I will say the number 12300. What are the next three number sentences in the sequence? 345000-1000= 344000 344000-1000=343000 343000-1000=342000 Could you use the same numbers to write different number sentences? 	<ul style="list-style-type: none"> Temperature falls by about 1°C for every 100 metres height gain. Abigail is standing on top of a mountain at 900 metres above sea level. The temperature is – 3°C. Abigail walks down the mountain to sea level. What should she expect the temperature to be? Can you count back in 30's to find the trail through the grid? 																																																																														
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		Fluency	Reasoning	Problem Solving													
Place Value	<p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.</p>	<ul style="list-style-type: none"> Find the missing numbers in the sequences: 5, 4, 3, 2, 1, 0, <u> </u>, -2, <u> </u> 8, 6, 4, 2, 0, <u> </u>, -4, <u> </u> Charlie recorded the temperature at 7am each morning in a table. Which was the warmest/ coldest day? What was the difference between the warmest and coldest day? Order the temperatures from coldest to warmest. 	<ul style="list-style-type: none"> Anna is counting down from 11 in fives. Does she say -11? Explain your reasoning. Harris is finding the missing numbers in this sequence. <u> </u>, <u> </u>, 5, <u> </u>, <u> </u>, -5 He writes down: 15, 10, 5, 0, -0, -5 Explain the mistake Harris has made. Sam counted down in 3's until he reached -18. He started at 21. What was the tenth number he said? 	<ul style="list-style-type: none"> Fred is a police officer. He is chasing a suspect on Floor 5 of an office block. The suspect jumps into the lift and presses -1. Fred has to run down the stairs, how many flights must he run down? Use the picture below to answer the following questions. Can they make up their own questions? What number should be where the light shines from the lighthouse? How far is it down from the (head of the) seagull to the (mouth of the) yellow fish? There's a little brown sea-horse to the right of the lighthouse support. How far from the surface is it? 													
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Place Value	Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000	<ul style="list-style-type: none"> Round the following numbers to the nearest a) 10 b)100 c) 1000 4821, 69243, 2781 In 2013, there were 778803 births in the UK. What is this to the nearest 1000? Nearest 10000? Nearest 100000? In July 2015, the population of the UK was estimated to be 64881609. What is this rounded to the nearest million? 	<ul style="list-style-type: none"> A number rounded to the nearest 1000 is 54000. What is the largest possible number this could be? Round the number 259996 to the nearest 1000. Round it to the nearest 10000. What do you notice about the answers? Can you think of 3 more numbers where the same thing would happen? True or False? All numbers with a five in the tens column will round up when rounded to the nearest 100 and 1000. 	<ul style="list-style-type: none"> Nathan thinks of a number. He says 'My number rounded to the nearest 10 is 1150, rounded to the nearest 100 is 1200 and rounded to the nearest 1000 is 1000.' What could Nathan's number be? Roll five dice; make as many 5 digit numbers as you can from them. Round each number to the nearest 10, 100, 1000 and 10,000. From your numbers, how many round to the same 10, 100, 1000 or 10,000? In pairs, take it in turns to roll (if rounding to 10) two 0-9 dice. Create a number from it and choose where it rounds to. Record on a sheet like below. When the circle is filled, whoever filled it, gets a point. <div style="text-align: center;"> <table style="margin: auto;"> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">20</td> <td style="text-align: center;">30</td> </tr> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </table> </div>	10	20	30			
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	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Place Value	Solve number problems and practical problems that involve all of the above.	Covered above	Covered above	Covered above

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Place Value	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	<ul style="list-style-type: none"> • Translate these Roman Numerals: <ol style="list-style-type: none"> 1. MD 2. MCD 3. CXVI 4. DCLX • Write the numbers in Roman Numerals: <ol style="list-style-type: none"> 1. 35 2. 100 3. 99 4. 283 5. 570 • Complete these calculations: <ol style="list-style-type: none"> 1. $CD + DC =$ 2. $VI + IV =$ 3. $CX + XC =$ 	<ul style="list-style-type: none"> • Count in hundreds and fill in the pattern: C, CC, __, __, D, __, __, __, __, __ • Explain what each letter means and write the translation below each letter. • Arrange the numbers in size order: XXXV, XL, XXX, LX, LV, L, XLV, LXV • Explain how you ordered the numbers. • Complete the calculations. Show how you translated the roman numerals and added them. <ol style="list-style-type: none"> 1. $XI + IX =$ 2. $XL + LX =$ 3. $CM + MC =$ 	<ul style="list-style-type: none"> • What is the longest number between 1 and 1000 when depicted in Roman Numerals? • Find 2 words that are also numbers in Roman Numerals (one is very short). • Work out the year of your birth in Roman Numerals. Work out the current year in Roman Numerals. Can you find the difference?

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Addition and Subtraction	Add and subtract numbers mentally with increasingly large numbers.	<ul style="list-style-type: none"> Work out this missing numbers: $\underline{\quad} - 92 = 145$ $740 + \underline{\quad} = 1039$ $\underline{\quad} = 580 - 401$ Peter bought boxes of crisps when they were on offer. After 12 weeks, his family had eaten 513 packets and there were 714 left. How many did he buy? Children follow a series of instructions to find a mystery number. Eg Start with 100. Add 5000. Take away 400. Add 20. Subtract 750. What number have you got? 	<ul style="list-style-type: none"> Rachel has £10. She spends £6.49 at the shop. Would you use columnar subtraction to work out the answer? Explain why. True or False? Are these number sentences true or false? $8.7 + 0.4 = 8.11$ $6.1 - 0.9 = 5.2$ Give your reasons. Which of the following questions are easy and which ones are hard? $213323 - 10 =$ $512893 + 300 =$ $819354 - 200 =$ $319954 + 100 =$ Explain why you think the hard questions are hard. 	<ul style="list-style-type: none"> If 2541 is the answer, what's the question? - Can you create three addition calculations? - Can you create three subtraction calculations? - Did you use a strategy? Using 0-9 dice roll 3 at the same time to create a number. Your partner needs to do the same. - Who can add them together correctly first? - Who can subtract the smallest from the largest correctly first? Use a calculator to check. Kangchenjunga is the third highest mountain in the world at 28,169 feet above sea level. Lhotse is the fourth highest at 27,960 feet above sea level. Find the difference in heights mentally.

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Addition and Subtraction	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	<ul style="list-style-type: none"> Calculate: $1638 + 2517$ $4023 - 2918$ Julie has 1578 stamps, Heidi has 2456 stamps. How many stamps do they have altogether? Show how you can check your answer using the inverse. Adam earns £37,566 pounds a year. His wife, Sarah, earns £22,819 a year. How much do they earn altogether? They have to pay £7887 income tax per year, how much are they left with after this is taken off? 	<ul style="list-style-type: none"> There are mistakes in the following calculations. Explain the mistake and then make a correction to find the correct answer. $\begin{array}{r} 2451 \\ +562 \\ \hline 8071 \end{array}$ $\begin{array}{r} 782 \\ -435 \\ \hline 353 \end{array}$ $\square + 3475 = 6\square24$ What numbers go in the boxes? What different answers are there? Convince me. A five digit number and a four digit number have a difference of 4365. Give me three possible pairs of numbers. 	<ul style="list-style-type: none"> Find the missing numbers in these calculations. $\begin{array}{r} 34\square1\square \\ - \square482 \\ \hline 292\square4 \end{array}$ $\begin{array}{r} 6\square02\square \\ + 5\square51 \\ \hline \square9180 \end{array}$ My answer is 5398, what's the question? - Create 3 addition calculations. - Create 3 subtraction questions. - Did you use a strategy? Explain it.

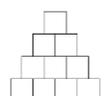
	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Addition and Subtraction	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	<ul style="list-style-type: none"> A car showroom reduces the price of a car from £18750 to £14999. By how much was the price of the car reduced? Circle the most sensible answer: £3249, £4001, £3751 A games console costs £245. Mike pays for this in 5 equal payments. To the nearest ten pounds, how much does he pay per payment? A coach holds 78 people. 960 fans are going to a gig on the coaches. How many coaches are needed to transport the fans? 	<ul style="list-style-type: none"> Which of these number sentences have an answer that is between 0.6 and 0.7? $11.48 - 10.86 =$ $53.3 - 52.75 =$ Always, sometimes, never When you add up four even numbers, the answer is divisible by four. Martin is measuring his room for a new carpet. It has a width of 2.3m and a length of 5.1m. He rounds his measurements to the nearest metre. Will he have the right amount of carpet? Explain your reasoning. 	<ul style="list-style-type: none"> True or false. $4999 - 1999 = 5000 - 2000$ Explain how you know using a written method. There are 1231 people on an aeroplane. 378 people have not ordered an inflight meal. How many people have ordered the inflight meal? Give your answer to the nearest hundred. The inflight meal costs £1.99 per person. The cabin crew have collected £1100 pounds so far. How much more money do they need to collect? Round your answer to the nearest pound.

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		Fluency	Reasoning	Problem Solving
Addition and Subtraction	Solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why.	Covered above	Covered above	Covered above

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Multiply and divide numbers mentally drawing upon known facts.	<ul style="list-style-type: none"> $8 \times 6 = 48$. Use this to help you find the answers to the number sentences: $48 \div 6 =$ $6 \times 80 =$ Write down five multiplication and division facts that use the number 48. If I know $8 \times 36 = 288$, I also know $8 \times 12 \times 3 = 288$ and $8 \times 6 \times 6 = 288$. If you know $9 \times 24 = 216$, what else do you know? 	<ul style="list-style-type: none"> How can you use 10×7 to help you find the 9th multiple of 7? Find the answer: $2 \times 11 =$ $4 \times 11 =$ $2 \times 12 =$ $4 \times 12 =$ $2 \times 13 =$ $4 \times 13 =$ <p>What is the connection between the results for the two times table and the four times table?</p> <p>If $2 \times 144 = 288$, what is 4 times 144?</p> <ul style="list-style-type: none"> To multiply a number by 25 you multiply by 100 and then divide by 4. Use this strategy to solve. 84×25 28×25 5.6×25 	<ul style="list-style-type: none"> 40 cupcakes cost £3.60, how much do 20 cupcakes cost? How much do 80 cupcakes cost? How much do 10 cupcakes cost? If $8 \times 24 = 192$, how many other pairs of numbers can you write that have the product of 192? 10 times a number is 4350, what is 9 times the same number? Explain your working.

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Multiply and divide whole numbers by 10, 100 and 1000.	<ul style="list-style-type: none"> Solve: $345 \times 10 =$ $345 \times 100 =$ Fill the gaps: $3790 \times \square = 379000$ $3790 \div \square = 379$ $\square \times 1000 = 497200$ Harry has £20, he wants to save 10 times this amount. How much more does he need to save? 	<ul style="list-style-type: none"> Claire says 'When you multiply a number by 10 you just add a nought and when you multiply by 100 you add two noughts.' Do you agree? Explain your answer. Apples weigh about 160g each. How many apples would you expect to get in a 2kg bag? Explain your reasoning. $6 \times 7 = 42$ <p>How can you use this fact to solve the following calculations? $4200 \div 70 =$ $0.6 \times 0.7 =$</p>	<ul style="list-style-type: none"> Here are the answers to the questions. Can you write three different questions that could make these numbers by multiplying and dividing by 10, 100 or 1000? 5890, 40, 67000, 2000 David has £35700 in his bank. He divides the amount by 100 and takes that much money out of the bank. Using the money he has taken out he spends £268 on furniture for his new house. How much money does David have left from the money he took out? Show your working.

Multiplication and Division

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<p>Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.</p>	<ul style="list-style-type: none"> Solve the calculations: <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td></td><td>3</td><td>4</td><td>6</td></tr> <tr><td>x</td><td></td><td>2</td><td>7</td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td></td><td>4</td><td>9</td><td>2</td><td>3</td></tr> <tr><td>x</td><td></td><td>3</td><td>1</td><td>4</td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Calculate: 5612 x 4 654 x 34 Mo Farah runs 135 miles a week. How far does he run each year? 		3	4	6	x		2	7						4	9	2	3	x		3	1	4						<ul style="list-style-type: none"> Spot the mistake and make a correction. $\begin{array}{r} 527 \\ \times 42 \\ \hline 10540 \\ 218 \\ \hline 12648 \end{array}$ Laura thinks that a 4 should be placed in the empty box. Do you agree? <table border="1" style="margin-left: 40px;"> <tr><td></td><td>4</td><td>7</td><td></td></tr> <tr><td></td><td></td><td>2</td><td>3</td></tr> <tr><td>x</td><td></td><td></td><td></td></tr> <tr><td>1</td><td>0</td><td>9</td><td>0</td><td>2</td></tr> </table> What goes in the missing box? $12 \square 2 \div 6 = 212$ $14 \square 4 \div 7 = 212$ <p>Prove your answer.</p> 		4	7				2	3	x				1	0	9	0	2	<ul style="list-style-type: none"> Using the digits 1, 2, 3 and 4 in any order in the bottom row of the number pyramid, how many different totals can you make? What is the smallest/ largest total?  Find the missing digits: <table border="1" style="margin-left: 40px;"> <tr><td></td><td></td><td>5</td><td>2</td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>7</td></tr> <tr><td>x</td><td></td><td></td><td></td><td></td></tr> <tr><td>1</td><td>5</td><td></td><td>3</td><td>0</td></tr> <tr><td></td><td>3</td><td>6</td><td>4</td><td>7</td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1</td><td></td><td>2</td><td>7</td><td>7</td></tr> </table> Start with 0; choose a path through the maze. Which path has the highest/ lowest total? <table border="1" style="margin-left: 40px;"> <tr><td>S</td><td>+6</td><td>X5</td><td>X2</td><td>-4</td></tr> <tr><td>+7</td><td>X8</td><td>+9</td><td>X7</td><td>X6</td></tr> <tr><td>X5</td><td>+3</td><td>X4</td><td>+9</td><td>E</td></tr> </table> 			5	2						7	x					1	5		3	0		3	6	4	7						1		2	7	7	S	+6	X5	X2	-4	+7	X8	+9	X7	X6	X5	+3	X4	+9	E
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	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	<p>Divide numbers up to 4 digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context.</p>	<ul style="list-style-type: none"> Calculate $68 \div 4 =$ $1248 \div 3 =$ <ul style="list-style-type: none"> Find the missing numbers: $\square \times 5 = 475$ $3 \times \square = 726$ <ul style="list-style-type: none"> 194 pupils are going on a school trip. <p>One adult is needed for every 9 pupils. How many adults are needed?</p>	<ul style="list-style-type: none"> What number goes in the box? $323 \times \square 1 = 13243$ <p>Prove it.</p> <ul style="list-style-type: none"> Correct the errors in the calculation below. Explain the error. $266 \div 5 = 73.1$ $\begin{array}{r} 73r1 \\ 5 \overline{) 2361} \\ \underline{35} \\ 61 \\ \underline{55} \\ 61 \end{array}$ <ul style="list-style-type: none"> Andrew says that the answer to 166 divided by 4 can be written as '46 remainder 2' or as '46.5'. Do you agree? Explain your reasoning. 	<ul style="list-style-type: none"> The answer to the division has no remainders. Find the missing numbers. $\begin{array}{r} 8 \square 2 \\ 7 \overline{) 589\square} \end{array}$ <ul style="list-style-type: none"> I am thinking of a number. When it is divided by 9, the remainder is 3. When it is divided by 2, the remainder is 1. When it is divided by 5, the remainder is 4. What is my number? When 59 is divided by 5, the remainder is 4 When 59 is divided by 4, the remainder is 3 When 59 is divided by 3, the remainder is 2 When 59 is divided by 2, the remainder is 1 <p>Can you find the smallest number with the property that when it is divided by each of the numbers 2 to 10, the remainder is always one less than the number it is has been divided by?</p>

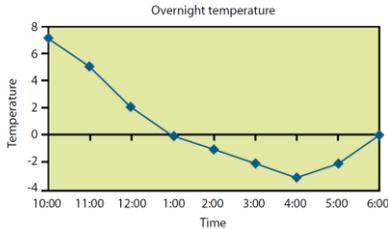
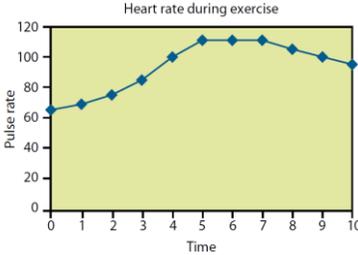
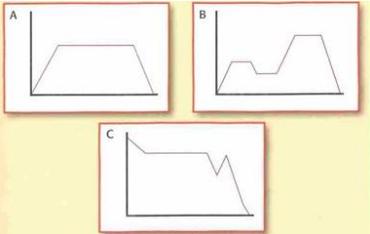
	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	<p>Write down:</p> <ul style="list-style-type: none"> The first 5 multiples of 8. All the factors of 20. Find a common factor of 36 and 12. 	<ul style="list-style-type: none"> Rob and James are talking about multiples and factors. Rob says '<i>0 is a multiple of every whole number.</i>' James says '<i>0 is a factor of every whole number.</i>' Who is correct? Explain why 6 is a common factor of 18 and 24. Tom says '<i>Factors come in pairs, so all numbers have an even number of factors.</i>' Do you agree? Explain your reasoning. 	<ul style="list-style-type: none"> Polly is planting potatoes in her garden. She has 24 potatoes to plant and she will arrange them in a rectangular array. List all the different ways that Polly can plant her potatoes. Sally is thinking of a number. She says 'My number is a multiple of 3. It is also 3 less than a multiple of 4.' Find three different numbers that could be Sally's number. Clare's age is a multiple of 7 and 3 less than a multiple of 8. How old is Clare?

	National Curriculum Statement	All students																										
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Multiplication and Division	<p>Recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3)</p>	<ul style="list-style-type: none"> Work out: $6^2 =$ $3^3 =$ 4 squared = 8 cubed = Fill in the missing answers from the grid below: <table border="1" style="margin-left: 20px;"> <tbody> <tr> <td>4^2</td> <td>$4 \times 4 \times 4$</td> <td>64</td> </tr> <tr> <td>7^2</td> <td>7×7</td> <td></td> </tr> <tr> <td>2^7</td> <td>$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$</td> <td></td> </tr> <tr> <td>5^3</td> <td></td> <td></td> </tr> <tr> <td>3^6</td> <td></td> <td></td> </tr> <tr> <td></td> <td>$4 \times 4 \times 4 \times 4$</td> <td></td> </tr> <tr> <td></td> <td></td> <td>8</td> </tr> <tr> <td>6^3</td> <td></td> <td></td> </tr> </tbody> </table>	4^2	$4 \times 4 \times 4$	64	7^2	7×7		2^7	$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$		5^3			3^6				$4 \times 4 \times 4 \times 4$				8	6^3			<ul style="list-style-type: none"> Julian thinks that 4^2 is 16. Do you agree? Convince me. Always, Sometimes, Never. A square number has an even number of factors. Always, Sometimes, Never Square and Cubed numbers are always positive. 	<ul style="list-style-type: none"> Last year my age was a square number. Next year it will be a cube number. How old am I? How long must I wait until my age is both a square number and a cube? The answer to a cubed number is 216. What's the root number?
4^2	$4 \times 4 \times 4$	64																										
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Multiplication and Division	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.	Covered above	Covered above	<p>Covered above</p> <ul style="list-style-type: none"> Luke and Nigel have £57.40 between them. Luke has £4.80 more than Nigel. How much do they each have?

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.	Covered above	Covered above	Covered above

Statistics

National Curriculum Statement	All students		
	Fluency	Reasoning	Problem Solving
<p>Solve comparison, sum and difference problems using information presented in a line graph.</p>	<p>Use the line graph to answer the following questions:</p>  <ul style="list-style-type: none"> • What was the highest/lowest temperature? What time did they occur? • What is the difference between the highest and lowest temperature? • How long did the temperature stay at freezing point or less? 	<p>Use the line graph to answer the following questions:</p>  <ul style="list-style-type: none"> • How long did it take for the pulse rate to reach the highest level? Explain using the graph to help. • When do you think the person stopped exercising? Convince me. • Estimate what the pulse rate was after 2 and a half minutes. How did you get an accurate estimate? 	<ul style="list-style-type: none"> • Carry out your own exercise experiment and record your heart rate on a graph like the one shown. How does it compare? • Here is a line graph showing a bath time. Can you write a story to explain what is happening in the graph?  <ul style="list-style-type: none"> • Can you write a story for the three graphs below? 

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Statistics	Complete, read and interpret information in tables including timetables.	<p>Use the timetable to the left to answer the following questions:</p> <ul style="list-style-type: none"> On the 06:35 bus, how long does it take to get from Shelf Roundabout to Bradford Interchange? Can you travel to Woodside on the 07:43 bus? Which journey takes the longest time between Shelf Village Hall and Bradford Interchange, the bus that leaves SVH at 06:46 or the bus that leaves SVH at 07:23? 	<p>Use the timetable to the left to answer the following questions:</p> <ul style="list-style-type: none"> If you needed to travel from Halifax Bus Station to Odsal and had to arrive by 08:20, which would be the best bus to catch? Explain your answer. Which journey takes the longest time from Halifax Bus Station to Bradford Interchange? Hannah works a 10 minute walk from Bradford Interchange. She has to start work at 08:00. She is on the 07:10 bus from Halifax which is running 5 minutes late. Will she make it to work on time? Explain your reasoning. 	<ul style="list-style-type: none"> Order the journey times on the timetable from longest to shortest. Can you explain why you think the buses take different lengths of time? Three trains travel from Halifax to Leeds on the same morning. The Express leaves Halifax 10 minutes after the All Stations train, but arrives at Leeds 10 minutes before it. The All Stations takes 50 minutes to reach Leeds and arrives at 10:30. The Goods train leaves 20 minutes before the All Stations and arrives at Leeds 20 minutes after the Express. <p>Work out the timetable. That is; what time does each train leave Halifax and what time does each train arrive at Leeds Station?</p>																																									
	<table border="1"> <thead> <tr> <th colspan="6">Bus Timetable</th> </tr> </thead> <tbody> <tr> <td>Halifax Bus Station</td> <td>06:05</td> <td>06:35</td> <td>07:10</td> <td>07:43</td> <td>08:15</td> </tr> <tr> <td>Shelf Roundabout</td> <td>06:15</td> <td>06:45</td> <td></td> <td>07:59</td> <td>08:31</td> </tr> <tr> <td>Shelf Village Hall</td> <td>06:16</td> <td>06:46</td> <td>07:23</td> <td>08:00</td> <td>08:32</td> </tr> <tr> <td>Woodside</td> <td>06:21</td> <td>06:50</td> <td>07:28</td> <td></td> <td></td> </tr> <tr> <td>Odsal</td> <td>06:26</td> <td>06:55</td> <td>07:33</td> <td>08:15</td> <td>08:45</td> </tr> <tr> <td>Bradford Interchange</td> <td>06:40</td> <td>07:10</td> <td>07:48</td> <td>08:30</td> <td>09:00</td> </tr> </tbody> </table>	Bus Timetable						Halifax Bus Station	06:05	06:35	07:10	07:43	08:15	Shelf Roundabout	06:15	06:45		07:59	08:31	Shelf Village Hall	06:16	06:46	07:23	08:00	08:32	Woodside	06:21	06:50	07:28			Odsal	06:26	06:55	07:33	08:15	08:45	Bradford Interchange	06:40	07:10	07:48	08:30	09:00		
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