

# 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

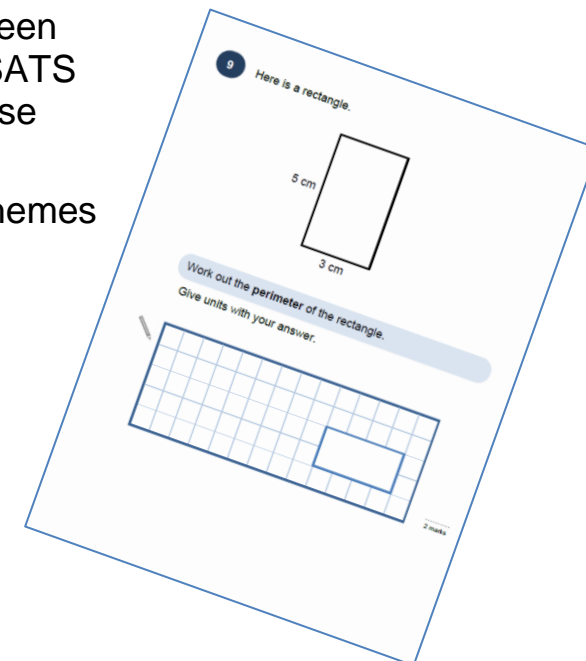
Alongside these curriculum overviews, we also provide a free assessment for each term's plan. Each assessment will be made up of two parts:

**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. The questions use strategies and methods promoted through the schemes of learning.



## 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;

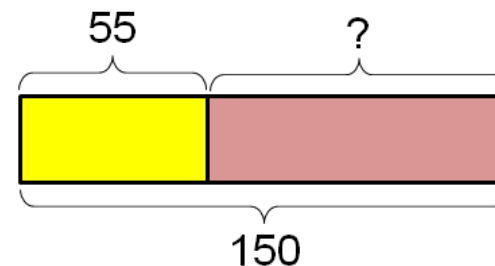
- have number at their heart. A large proportion of time is spent reinforcing number to build competency
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole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



## 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](mailto:mathshub@trinityacademyhalifax.org)

We are offering courses on:

- Bar modelling
- Teaching for Mastery
- 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.

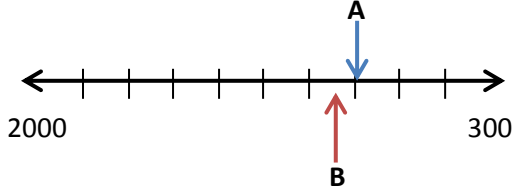
## Year 5 Overview



	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					
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 (<sup>2</sup>) and cubed (<sup>3</sup>)</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>		


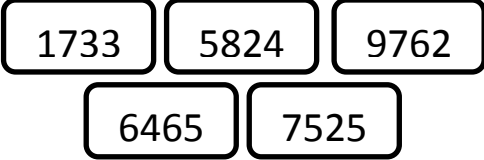
	National Curriculum Statement	All students															
		Fluency	Reasoning	Problem Solving													
Place Value	<p>Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.</p>	<ul style="list-style-type: none"> <li>Complete the missing values. It has __ hundred thousands. It has __ ten thousands. It has __ hundreds. It is made of 580000 and ____ together.</li> <li>Say 358923 aloud. Can you write this number in words?</li> <li>Give the value of 3 and 6 in each number. One has been done for you.</li> </ul>	<ul style="list-style-type: none"> <li>Hannah says  <div style="border: 2px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;">                     Using the digits 0-9 I can make any number up to 1,000,000                 </div>                     Is she correct? Convince me.</li> <li>Year 5 are writing numbers as words and vice versa. Can you explain the mistakes that have been made and correct them?  6,500 - Sixty five thousand 3,303 – Three thousand, three hundred and thirty 5,800,400- Fifty eight thousand, four hundred</li> <li>Simon says he can order the following numbers by only looking at the first three digits.  125161, 128324, 126743, 125382, 127942  Is he correct? Explain your answer.</li> </ul>	<ul style="list-style-type: none"> <li>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?</li> <li>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"> <li>aabdc</li> <li>acdbc</li> <li>dcaba</li> <li>cdadc</li> <li>bdaab</li> </ol> </li> <li>How many different ways can you write the number 27,730? For example: 27 thousands and 730 ones</li> </ul>													
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Number</th> <th style="width: 33%;">Place value of 3</th> <th style="width: 33%;">Place Value of 6</th> </tr> </thead> <tbody> <tr> <td>3,462</td> <td>3000 or three thousands</td> <td>60 or 6 tens</td> </tr> <tr> <td>43,726</td> <td></td> <td></td> </tr> <tr> <td>69, 314</td> <td></td> <td></td> </tr> <tr> <td>306,222</td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Order the following numbers in ascending order:  362354, 362000, 362453, 359999, 363010</li> </ul>	Number	Place value of 3	Place Value of 6	3,462	3000 or three thousands	60 or 6 tens	43,726			69, 314			306,222		
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	National Curriculum Statement	All students										
		Fluency	Reasoning	Problem Solving								
Place Value	Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.	<ul style="list-style-type: none"> <li>Finish the sequence: 1000, 2000, 3000, ____, ____ 350, 340, ____, ____, ____ 11800, 11900, ____, ____</li> </ul>	<ul style="list-style-type: none"> <li>Can you spot the mistake in the sequence? 18,700 18,800 18,900 19,100 Correct the mistake and explain your working.</li> </ul>	<ul style="list-style-type: none"> <li>Here is a number line.  2000 3000 What is the value of A? B is 10 less than A. What is the value of B?</li> </ul>								
		<ul style="list-style-type: none"> <li>Jack has made a number on a place value grid.</li> </ul> <table border="1" data-bbox="577 686 1064 829"> <thead> <tr> <th>TTh</th> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>●●</td> <td>●●●●</td> <td>●</td> <td>●●</td> <td>●●●</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Jack adds 5 thousands to his number. What number has he got now?</li> </ul>	TTh	Th	H	T	O	●●	●●●●	●	●●	●●●
TTh	Th	H	T	O								
●●	●●●●	●	●●	●●●								
		<ul style="list-style-type: none"> <li>Spot the error: 289636, 299636, 300636, 301636, 302636</li> </ul>	<ul style="list-style-type: none"> <li>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?</li> </ul>									

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Place Value	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.	<ul style="list-style-type: none"> <li>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></li> <li>Charlie recorded the temperature at 7am each morning in a table.                             <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Day</th> <th>Temp</th> </tr> </thead> <tbody> <tr><td>Mon</td><td>-1</td></tr> <tr><td>Tues</td><td>2</td></tr> <tr><td>Wed</td><td>0</td></tr> <tr><td>Thurs</td><td>-3</td></tr> <tr><td>Fri</td><td>-4</td></tr> <tr><td>Sat</td><td>-2</td></tr> <tr><td>Sun</td><td>1</td></tr> </tbody> </table> <p>Which was the warmest/coldest day? What was the difference between the warmest and coldest day? Order the temperatures from coldest to warmest.</p> </li> <li>Katie says                             <div style="border: 2px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <p>Three hours ago it was <math>-2^{\circ}\text{C}</math> It is now <math>5^{\circ}\text{C}</math> warmer.</p> </div> <p>What was the temperature earlier in the day?</p> </li> </ul>	Day	Temp	Mon	-1	Tues	2	Wed	0	Thurs	-3	Fri	-4	Sat	-2	Sun	1	<ul style="list-style-type: none"> <li>Anna is counting down from 11 in fives. Does she say -11? Explain your reasoning.</li> <li>Harris is finding the missing numbers in this sequence.  <u>  </u>, <u>  </u>, 5, <u>  </u>, -5  He writes down:  15, 10, 5, 0, -0, -5  Explain the mistake Harris has made.</li> <li>Sam counted down in 3s until he reached -18. He started at 21. What was the tenth number he said?</li> </ul>	<ul style="list-style-type: none"> <li>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?                              </li> <li>Use the picture below to answer the following 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?                              </li> </ul>
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Place Value	<p>Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000</p>	<ul style="list-style-type: none"> <li>Round the following numbers to the nearest                             <ul style="list-style-type: none"> <li>a) 10   b) 100   c) 1,000</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 5px;">4,821</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 5px;">2,781</div> </div> <div style="display: flex; justify-content: center; align-items: center; margin: 10px 0;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px;">69,243</div> </div> </li> <li>In 2015, there were 697,852 births in England and Wales. What is this rounded to the nearest 1,000? Nearest 10,000? Nearest 100,000?</li> <li>Write five numbers that can be rounded to the following numbers when rounded to the nearest 100.                             <div style="display: flex; flex-direction: column; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 5px;">300</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 5px;">7,000</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin: 5px;">55,600</div> </div> </li> </ul>	<ul style="list-style-type: none"> <li>A number rounded to the nearest 1,000 is 54,000. What is the largest possible number this could be?</li> <li>Round the number 259,996 to the nearest 1,000. Round it to the nearest 10,000. What do you notice about the answers? Can you think of 3 more numbers where the same thing would happen?</li> <li>True or False? All numbers with a five in the tens column will round up when rounded to the nearest 100 and 1,000.</li> </ul>	<ul style="list-style-type: none"> <li>Nathan thinks of a number. He says                             <div style="border: 2px solid black; border-radius: 20px; padding: 10px; margin: 10px 0; text-align: center;"> <p>My number rounded to the nearest 10 is 1,150, rounded to the nearest 100 is 1,200 and rounded to the nearest 1,000 is 1,000</p> </div> <p>What could Nathan's number be?</p> </li> <li>Roll five dice; make as many 5 digit numbers as you can from them. Round each number to the nearest 10, 100, 1,000 and 10,000. From your numbers, how many round to the same 10, 100, 1000 or 10,000?</li> </ul>

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Place Value	Solve number problems and practical problems that involve all of the above.	<ul style="list-style-type: none"> <li>There are three different numbers. They are all four-digit odd numbers. The digits of each number add up to 14. None of the numbers can be divided by 5. These numbers read the same forwards and backwards. Can you guess the numbers using these clues?</li> <li>Jim is thinking of a number. It is less than 150. The digits add up to 9. The first two digits added together are half of the third digit. What could Jim's number be?</li> </ul>	<ul style="list-style-type: none"> <li>Write two 6-digit numbers. Add the numbers together and round the answer to the nearest 100,000. Now round the original numbers and add them together. Do you get the same answer? Try it again with different numbers. What do you find?</li> <li>Here are two number cards.                     <div style="text-align: center; margin: 10px 0;">  </div>                     When rounded to the nearest 100, A rounds to become B. A's digit total is one tenth of B. What could A and B be?                 </li> </ul>	<ul style="list-style-type: none"> <li>Five cars are in a race. Their number plates are:                     <div style="text-align: center; margin: 10px 0;">  </div>                     The car with the highest number finished last. When the digits in the number plates of the cars that came first and second are added, they give the same total. The cars that came in third and fourth both have an odd number as the last digit. The cars that came in second and third both bear numbers that are multiples of five. Use these clues to work out how the racing cars placed in the race.                 </li> </ul>



	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"> <li>Translate these Roman Numerals:                             <ol style="list-style-type: none"> <li>MD</li> <li>MCD</li> <li>CXVI</li> <li>DCLX</li> </ol> </li> <li>Write the numbers in Roman Numerals:                             <ol style="list-style-type: none"> <li>35</li> <li>100</li> <li>99</li> <li>283</li> <li>570</li> </ol> </li> <li>Complete these calculations:                             <ol style="list-style-type: none"> <li><math>CD + DC =</math></li> <li><math>VI + IV =</math></li> <li><math>CX + XC =</math></li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Count in hundreds and fill in the pattern: C, CC, __, __, D, __, __, __, __  Explain what each letter means and write the translation below each letter.</li> <li>Arrange the numbers in size order: XXXV, XL, XXX, LX, LV, L, XLV, LXV  Explain how you ordered the numbers.</li> <li>Complete the calculations. Show how you translated the roman numerals and added them.                             <ol style="list-style-type: none"> <li><math>XI + IX =</math></li> <li><math>XL + LX =</math></li> <li><math>CM + MC =</math></li> </ol> </li> <li>Explain why the Romans wrote CM for the number 900.</li> </ul>	<ul style="list-style-type: none"> <li>Write the year of your birth in Roman Numerals. Write the current year in Roman Numerals. Find the difference between the years. Write the difference in Roman Numerals.</li> <li>Draw a time line and place these dates on it. Can you find an important event that happened in each of these years?</li> </ul> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">MLXVI</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">MCMLXIX</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">MDCLXVI</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">MCMIII</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">MDCV</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">MMXIV</div> </div>

	National Curriculum Statement	All students		
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Addition and Subtraction	Add and subtract numbers mentally with increasingly large numbers.	<ul style="list-style-type: none"> <li>Work out this missing numbers:  <math>\square - 92 = 145</math>  <math>740 + \square = 1,039</math>  <math>\square = 580 - 401</math></li> <li>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?</li> <li>Children follow a series of instructions to find a mystery number.  Eg Start with 100 Add 5,000 Take away 400 Add 20 Subtract 750 What number have you got?</li> </ul>	<ul style="list-style-type: none"> <li>Rachel has £10 She spends £6.49 at the shop. Would you use columnar subtraction to work out the answer? Explain why.</li> <li>True or False? Are these number sentences true or false?  <math>8.7 + 0.4 = 8.11</math>  <math>6.1 - 0.9 = 5.2</math>  Give your reasons.</li> <li>Which of the following questions are easy and which ones are hard?  <math>213,323 - 10 =</math>  <math>512,893 + 300 =</math>  <math>819,354 - 200 =</math>  <math>319,954 + 100 =</math>  Explain why you think the hard questions are hard.</li> </ul>	<ul style="list-style-type: none"> <li>If 2,541 is the answer, what's the question?                      - Can you create three addition calculations?                      - Can you create three subtraction calculations?                      - Did you use a strategy?</li> <li>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.</li> <li>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.</li> </ul>


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Addition and Subtraction	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p>	<ul style="list-style-type: none"> <li>Calculate <math>1,434 + 2,517</math> using place value counters. The first number has been partitioned for you.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1000</td> <td style="text-align: center;">100 100</td> <td style="text-align: center;">10 10</td> <td style="text-align: center;">1 1</td> </tr> <tr> <td></td> <td style="text-align: center;">100 100</td> <td style="text-align: center;">10</td> <td style="text-align: center;">1 1</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Can you solve <math>4,023 - 2,918</math> using place value counters? Make the bigger number and take the smaller number away.</li> <li>Julie has 1,578 stamps. Heidi has 2,456 stamps. How many stamps do they have altogether? Show how you can check your answer using the inverse.</li> <li>Adam earns £37,566 pounds a year. Sarah earns £22,819 a year. How much do they earn altogether? They have to pay £7,887 income tax per year. How much are they left with after this is taken off?</li> </ul>	Th	H	T	O	1000	100 100	10 10	1 1		100 100	10	1 1	<ul style="list-style-type: none"> <li>There are mistakes in the following calculations.</li> </ul> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right; padding-right: 20px;"><math>2451</math></td> <td style="text-align: right;"><math>782</math></td> </tr> <tr> <td style="text-align: right;"><math>+562</math></td> <td style="text-align: right;"><math>-435</math></td> </tr> <tr> <td style="text-align: right;"><math>8071</math></td> <td style="text-align: right;"><math>353</math></td> </tr> </table> <p>Explain the mistake and then make a correction to find the correct answer.</p> <ul style="list-style-type: none"> <li>Here is an addition sentence with whole numbers and digits missing.</li> </ul> <p style="text-align: center;"><math>\square + 3,475 = 6\square24</math></p> <p>What numbers could go in the boxes? How many different answers are there? Convince me. <li>A five digit number and a four digit number have a difference of 4,365. Give me three possible pairs of numbers.</li> </p>	$2451$	$782$	$+562$	$-435$	$8071$	$353$	<ul style="list-style-type: none"> <li>Find the missing numbers in these calculations.</li> </ul> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right; padding-right: 10px;"><math>3</math></td> <td style="text-align: right; padding-right: 10px;"><math>4</math></td> <td style="text-align: right; padding-right: 10px;"><math>\square</math></td> <td style="text-align: right; padding-right: 10px;"><math>1</math></td> <td style="text-align: right;"><math>\square</math></td> </tr> <tr> <td style="text-align: right;"><math>-</math></td> <td style="text-align: right;"><math>\square</math></td> <td style="text-align: right;"><math>4</math></td> <td style="text-align: right;"><math>8</math></td> <td style="text-align: right;"><math>2</math></td> </tr> <tr> <td colspan="5" style="border-top: 1px solid black; padding-top: 5px;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;"><math>2</math></td> <td style="text-align: right; padding-right: 10px;"><math>9</math></td> <td style="text-align: right; padding-right: 10px;"><math>2</math></td> <td style="text-align: right; padding-right: 10px;"><math>\square</math></td> <td style="text-align: right;"><math>4</math></td> </tr> </table> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right; padding-right: 10px;"><math>6</math></td> <td style="text-align: right; padding-right: 10px;"><math>\square</math></td> <td style="text-align: right; padding-right: 10px;"><math>0</math></td> <td style="text-align: right; padding-right: 10px;"><math>2</math></td> <td style="text-align: right;"><math>\square</math></td> </tr> <tr> <td style="text-align: right;"><math>+</math></td> <td style="text-align: right;"><math>5</math></td> <td style="text-align: right;"><math>\square</math></td> <td style="text-align: right;"><math>5</math></td> <td style="text-align: right;"><math>1</math></td> </tr> <tr> <td colspan="5" style="border-top: 1px solid black; padding-top: 5px;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;"><math>\square</math></td> <td style="text-align: right; padding-right: 10px;"><math>9</math></td> <td style="text-align: right; padding-right: 10px;"><math>1</math></td> <td style="text-align: right; padding-right: 10px;"><math>8</math></td> <td style="text-align: right;"><math>0</math></td> </tr> </table> <ul style="list-style-type: none"> <li>My answer is 5,398. What's the question? Create 3 addition calculations. Create 3 subtraction questions. Did you use a strategy? Explain it.</li> </ul>	$3$	$4$	$\square$	$1$	$\square$	$-$	$\square$	$4$	$8$	$2$						$2$	$9$	$2$	$\square$	$4$	$6$	$\square$	$0$	$2$	$\square$	$+$	$5$	$\square$	$5$	$1$						$\square$	$9$	$1$	$8$	$0$
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	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Addition and Subtraction	<p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	<ul style="list-style-type: none"> <li>A car showroom reduces the price of a car from £18,750 to £14,999. By how much was the price of the car reduced? Circle the most sensible answer</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 2px solid black; padding: 5px; margin: 5px;">£3,249</div> <div style="border: 2px solid black; padding: 5px; margin: 5px;">£4,001</div> </div> <div style="text-align: center; margin: 10px 0;"> <div style="border: 2px solid black; padding: 5px; display: inline-block;">£3,751</div> </div> <ul style="list-style-type: none"> <li>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?</li> <li>A coach holds 78 people. 960 fans are going to a gig on the coaches. How many coaches are needed to transport the fans?</li> </ul>	<ul style="list-style-type: none"> <li>Which of these number sentences have an answer that is between 0.6 and 0.7?   <math>11.48 - 10.86 =</math>   <math>53.3 - 52.75 =</math> </li> <li>Always, sometimes, never When you add up four even numbers, the answer is divisible by four.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>True or false. <math>4,999 - 1,999 = 5,000 - 2,000</math> Explain how you know using a written method.</li> <li>There are 1,231 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.</li> </ul> <div style="text-align: right; margin-top: 20px;">  </div>





	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Addition and Subtraction	<p>Solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why.</p>	<ul style="list-style-type: none"> <li>When Claire opened her book, she saw two numbered pages. The sum of these two pages was 317. What would the next page number be?</li> </ul>  <ul style="list-style-type: none"> <li><math>122 + \square + 57 = 327</math></li> <li>Beth and Mabel share £410 between them. Beth received £100 more than Mabel. How much did Mabel receive?</li> <li>Adam is twice as old as Barry. Charlie is 3 years younger than Barry. The sum of all their ages is 53. How old is Barry?</li> </ul>	<ul style="list-style-type: none"> <li>On Monday Peter got paid £114 for a day's work. On Tuesday Peter got paid £27 more than he did on Monday. On Wednesday Peter got paid £17 less than he did on Monday. How much did Peter get for the three days' work? How many calculations do you need to complete to find the answer? Does it matter what order you complete the calculations in?</li> <li>Write a word problem which could be solved by using this calculation.                     <math display="block">352 + 445 - 179 = 618</math> </li> <li>At the start of the day, a milkman has 250 bottles of milk. He collects another 160 bottles from the dairy and delivers 375 during the day. How many does he have left? Sam calculates the answer.                     <math display="block">375 - 250 = 125</math> <math display="block">125 + 160 = 285</math>                     Explain the mistake that Sam has made.                 </li> </ul>	<ul style="list-style-type: none"> <li>Lucy, Katie, Amy, Laura, Sarah and Maggie are all shooters in different netball teams. Between them one Saturday they scored a total of 33 goals. Each girl scored a different number of goals and each girl scored at least one goal. Lucy was the top scorer and scored three more than Katie. Amy scored one less than Laura but their total was the same as Lucy's and Katie's scores added together. Maggie beat Sarah's scoring level but their scores together equalled the number of goals Laura had scored on her own. Use these clues to work out how many goals each girl scored.</li> </ul> 

	National Curriculum Statement	All students																																																																												
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Multiplication and Division	Multiply and divide numbers mentally drawing upon known facts.	<ul style="list-style-type: none"> <li><math>8 \times 6 = 48</math>. Use this to help you find the answers to the number sentences: <math>48 \div 6 =</math> <math>6 \times 80 =</math></li> <li>Write down five multiplication and division facts that use the number 48.</li> <li>If I know <math>8 \times 36 = 288</math>, I also know <math>8 \times 12 \times 3 = 288</math> and <math>8 \times 6 \times 6 = 288</math>. If you know <math>9 \times 24 = 216</math>, what else do you know?</li> <li>40 cupcakes cost £3.60 How much do 20 cupcakes cost? How much do 80 cupcakes cost? How much do 10 cupcakes cost?</li> </ul>	<ul style="list-style-type: none"> <li>How can you use <math>10 \times 7</math> to help you find the 9<sup>th</sup> multiple of 7?</li> <li>Find the answer: <math>2 \times 11 =</math>    <math>4 \times 11 =</math> <math>2 \times 12 =</math>    <math>4 \times 12 =</math> <math>2 \times 13 =</math>    <math>4 \times 13 =</math></li> </ul> <p>What is the connection between the results for the two times table and the four times table?</p> <p>If <math>2 \times 144 = 288</math>, what is 4 times 144?</p> <ul style="list-style-type: none"> <li>To multiply a number by 25 you multiply by 100 and then divide by 4. Use this strategy to solve. <math>84 \times 25</math> <math>28 \times 25</math> <math>5.6 \times 25</math></li> <li>10 times a number is 4350, what is 9 times the same number? Explain your working.</li> </ul>	<ul style="list-style-type: none"> <li>If <math>8 \times 24 = 192</math>, how many other pairs of numbers can you write that have the product of 192?</li> <li>Here is part of a multiplication grid. <table border="1" style="margin: 10px auto;"> <tr> <td><math>\times</math></td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> </tr> <tr> <td>4</td> <td></td> <td>20</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>Shade in any other squares that have the same answer as the shaded square.</p> </li> <li>Multiply by 2 and 3 using the direction of the arrows to complete the grid. <table border="1" style="margin: 10px auto;"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> </li> </ul>	$\times$	4	5	6	7	8	9	4		20					5	20						6							7							8							9																															
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	National Curriculum Statement	All students						
		Fluency	Reasoning	Problem Solving				
Multiplication and Division	<p>Multiply and divide whole numbers by 10, 100 and 1000.</p>	<ul style="list-style-type: none"> <li>Solve:                      <math>345 \times 10 =</math>  <math>345 \times 100 =</math> </li> <li>Fill the gaps:                      <math>3,790 \times \square = 379,000</math>  <math>3,790 \div \square = 379</math>  <math>\square \times 1,000 = 497,200</math> </li> <li>Harry has £20                      He wants to save 10 times this amount.                      How much more does he need to save?                 </li> </ul>	<ul style="list-style-type: none"> <li>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.                 </li> <li>Apples weigh about 160g each.                      How many apples would you expect to get in a 2kg bag?                      Explain your reasoning.                       </li> <li><math>6 \times 7 = 42</math>  How can you use this fact to solve the following calculations?                      <math>4,200 \div 70 =</math>  <math>0.6 \times 0.7 =</math> </li> </ul>	<ul style="list-style-type: none"> <li>Here are the answers to the questions.                      <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">5,890</td> <td style="padding: 5px;">40</td> </tr> <tr> <td style="padding: 5px;">67,000</td> <td style="padding: 5px;">2,000</td> </tr> </table>  Can you write three different questions that could make these numbers by multiplying and dividing by 10, 100 or 1,000?                 </li> <li>David has £35,700 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.                 </li> <li>Sally multiplies a number by 100                      Her answer has three digits.                      The hundreds and ones digit are the same.                      The sum of the digits is 10                      What number could Sally have started with?                      Are there any others?                 </li> </ul>	5,890	40	67,000	2,000
5,890	40							
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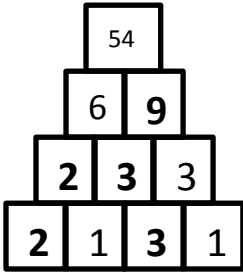
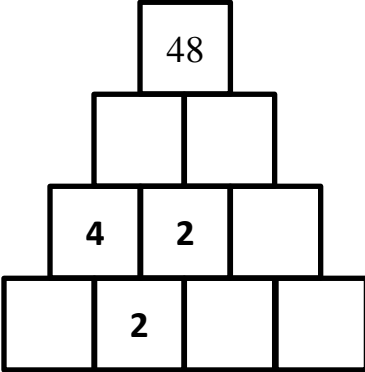

## Multiplication and Division

National Curriculum Statement	All students																													
	Fluency	Reasoning	Problem Solving																											
<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"> <li>Solve the calculation:                     <table border="1" style="margin: 10px 0;"> <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> </li> <li>Calculate: 5612 x 4 654 x 34</li> <li>Mo Farah runs 135 miles a week. How far does he run each year?</li> <li>There are 18 rows of 16 stickers on a sheet. How many stickers on 1 sheet? How many stickers on 10 sheets?</li> </ul> 		3	4	6	x		2	7					<ul style="list-style-type: none"> <li>Spot the mistake and make a correction.                     <math display="block">\begin{array}{r} 527 \\ \times 42 \\ \hline 10540 \\ \underline{2018} \\ 12648 \end{array}</math> </li> <li>Laura thinks that a 4 should be placed in the empty box. Do you agree?                     <math display="block">\begin{array}{r} \boxed{4} \ \boxed{7} \ \boxed{\phantom{0}} \\ \times \phantom{0} \ \boxed{2} \ \boxed{3} \\ \hline \boxed{1} \ \boxed{0} \ \boxed{9} \ \boxed{0} \ \boxed{2} \end{array}</math> </li> <li>What goes in the missing box?  <math>12 \square 2 \div 6 = 212</math>  <math>14 \square 4 \div 7 = 212</math> </li> </ul> <p>Prove your answer.</p>	<ul style="list-style-type: none"> <li>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?                      </li> <li>Find the missing digits:                     <math display="block">\begin{array}{r} \phantom{0} \ \boxed{5} \ \boxed{2} \ \boxed{\phantom{0}} \\ \times \phantom{0} \ \boxed{\phantom{0}} \ \boxed{7} \\ \hline \boxed{1} \ \boxed{5} \ \boxed{\phantom{0}} \ \boxed{3} \ \boxed{0} \\ \phantom{0} \ \boxed{3} \ \boxed{6} \ \boxed{4} \ \boxed{7} \\ \hline \boxed{1} \ \boxed{\phantom{0}} \ \boxed{2} \ \boxed{7} \ \boxed{7} \end{array}</math> </li> <li>Start with 0; choose a path through the maze. Which path has the highest/ lowest total? You can go up, down, left or right.                     <table border="1" style="margin: 10px 0;"> <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> </li> </ul>	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"> <li>Calculate            <math>68 \div 4 =</math>  <math>1248 \div 3 =</math> </li> <li>Find the missing numbers:            <math>\square \times 5 = 475</math>  <math>3 \times \square = 726</math> </li> <li>194 pupils are going on a school trip.             One adult is needed for every 9 pupils.            How many adults are needed?         </li> </ul>	<ul style="list-style-type: none"> <li>What number goes in the box?            <math>323 \times \square 1 = 13243</math>   Prove it.         </li> <li>Correct the errors in the calculation below.            Explain the error.            <math>266 \div 5 = 73.1</math>    <div style="border: 1px solid gray; padding: 5px; width: fit-content; margin: 10px auto;"> <math display="block">\begin{array}{r} 7 \quad 3 \quad r1 \\ 5 \overline{) 2 \quad 36 \quad 16} \end{array}</math> </div> </li> <li>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.         </li> </ul>	<ul style="list-style-type: none"> <li>The answer to the division has no remainders. Find the missing numbers.              <div style="text-align: center;"> <math display="block">\begin{array}{r} 8 \quad \square \quad 2 \\ 7 \overline{) 5 \quad 8 \quad 9 \quad \square} \end{array}</math> </div> </li> <li>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?         </li> <li>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         </li> </ul>

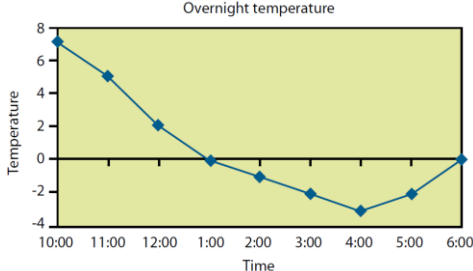
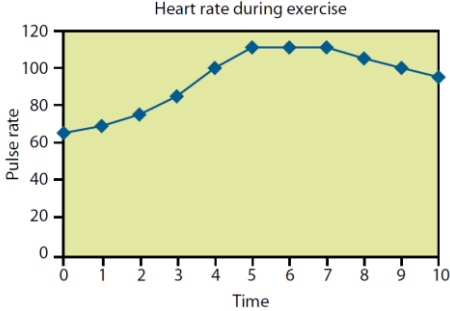

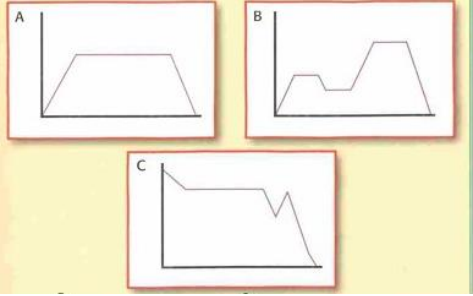
	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p>	<ul style="list-style-type: none"> <li>Calculate the first 5 multiples of the following numbers.  <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">4</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">8</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">3</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">7</div> </div> </li> <li>Find all the factors of 20.</li> <li>Find a common factor of 36 and 12.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Rob and James are talking about multiples and factors. Rob says '0 is a multiple of every whole number.' James says '0 is a factor of every whole number.' Who is correct?</li> <li>Tom says;           <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px 0; text-align: center;">             Factors come in pairs, so all numbers have an even number of factors.           </div> <p>Do you agree? Explain your reasoning.</p> </li> <li>True or False  The bigger the number, the more factors it has.</li> </ul>	<ul style="list-style-type: none"> <li>Sally is thinking of a number. She says  <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px 0; text-align: center;">             My number is a multiple of 3. It is also 3 less than a multiple of 4.           </div> <p>Find three different numbers that could be Sally's number.</p> </li> <li>Clare's age is a multiple of 7 and 3 less than a multiple of 8. How old is Clare?</li> <li>To find the <b>factors</b> of a number, you have to find <b>all</b> the pairs of numbers that multiply together to give that number.            Factors of 12 = 1, 2, 3, 4, 6, 12            If we leave the number we started with (12) and add all the other factors together we get 16.            12 is called an abundant number because it is less than the sum of its factors.            How many abundant numbers can you find?</li> </ul>

	National Curriculum Statement	All students																										
		Fluency	Reasoning	Problem Solving																								
Multiplication and Division	<p>Recognise and use square numbers and cube numbers and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)</p>	<ul style="list-style-type: none"> <li><b>Work out:</b>  <math>6^2 =</math>  <math>3^3 =</math>                      4 squared =                      8 cubed =</li> <li>Fill in the missing answers from the grid below:</li> </ul> <table border="1" style="margin-left: 20px;"> <tbody> <tr> <td><math>4^2</math></td> <td><math>4 \times 4 \times 4</math></td> <td>64</td> </tr> <tr> <td><math>7^2</math></td> <td><math>7 \times 7</math></td> <td></td> </tr> <tr> <td><math>2^7</math></td> <td><math>2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2</math></td> <td></td> </tr> <tr> <td><math>5^3</math></td> <td></td> <td></td> </tr> <tr> <td><math>3^6</math></td> <td></td> <td></td> </tr> <tr> <td></td> <td><math>4 \times 4 \times 4 \times 4</math></td> <td></td> </tr> <tr> <td></td> <td></td> <td>8</td> </tr> <tr> <td><math>6^3</math></td> <td></td> <td></td> </tr> </tbody> </table>	$4^2$	$4 \times 4 \times 4$	64	$7^2$	$7 \times 7$		$2^7$	$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$		$5^3$			$3^6$				$4 \times 4 \times 4 \times 4$				8	$6^3$			<ul style="list-style-type: none"> <li>Julian thinks that <math>4^2</math> is 16. Do you agree? Convince me.</li> <li>Always, Sometimes, Never.  A square number has an even number of factors.</li> <li>True or False  Square and Cubed numbers are always positive.</li> <li>Which is bigger?  <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; text-align: center;"><math>3^2</math></div> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; text-align: center;"><math>2^3</math></div> </div>                     Show your working.                       Jack thinks that the numbers both equal 6. Explain to Jack what he has done wrong.                 </li> </ul>	<ul style="list-style-type: none"> <li>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?</li> <li>How many square numbers can you make by adding prime numbers together?  Here's one to get you started.  <math display="block">2 + 2 = 4</math> </li> <li>Can you arrange the numbers 1 to 17 in a row so that each adjacent pair adds up to a square number?  <math display="block">3 \quad 6 \quad 10</math> <math display="block">3 + 6 = 9</math> <math display="block">6 + 10 = 16</math>                     Use number cards 1 – 17 to help you solve the problem. Can you arrange them in more than one way? If not, can you explain why?                 </li> </ul>
$4^2$	$4 \times 4 \times 4$	64																										
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	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.	<ul style="list-style-type: none"> <li>Order the digits to make a three digit number that is divisible by 3 and when you remove the final digit it is divisible by 2.</li> </ul> <div style="text-align: center;">  </div> <p>Using the digits 1 – 4, order the digits to make a four digit number that is divisible by 4 and when you remove the final digit it is divisible by 3 and if you remove the third digit it is divisible by 2.</p> <p>Do the same with five digits, starting with a five digit number that is divisible by 5. <ul style="list-style-type: none"> <li>Here are three number cards.</li> </ul> <div style="text-align: center;">  </div> <p> <math>A + B + C = \text{square number}</math>  <math>A + B = \text{square number}</math>  <math>B + C = \text{square number}</math>  <math>A + C = 5 \text{ less and } 6 \text{ more than square numbers}</math>                      What are the values of A, B and C?                 </p> </p>	<ul style="list-style-type: none"> <li>Here is a multiplication pyramid. Each number is made by multiplying the two numbers below.</li> </ul> <div style="text-align: center;">  </div> <p>Use this to complete this multiplication pyramid.</p> <div style="text-align: center;">  </div>	<ul style="list-style-type: none"> <li>Six children are taking part in a lottery game at school. They have lotto balls with the numbers 1-50 on them. They have decided to split the balls between them using the rules below.</li> </ul> <p>Child A will have all the factors of 36.                      Child B will have all the prime numbers.                      Child C will have all the multiples of 5.                      Child D will have all the square numbers.                      Child E will have all the factors of 50.                      Child F will have all the multiples of 3.</p> <p>Are there any balls that need to be shared between two or more children?                      Which child gets the most?                      Which child gets the least?                      Are any balls left over?</p> <div style="text-align: right;">  </div>



	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.	<ul style="list-style-type: none"> <li>I have 84 marbles. I keep 19 for myself and share the rest between 5 of my friends. How many marbles will each friend get?</li> <li>There are 7 tubes of tennis balls each with 6 balls in and a box of 31 balls. How many balls are there altogether?</li> <li>I read 25 pages of a book each day for 5 days and 78 pages over the weekend. How many pages do I read over the week?</li> <li>I have 47 trading cards. I buy 7 new cards each week. How many cards will I have in 8 weeks' time?</li> <li>A cinema has 4 screens each with 60 seats. There are 195 people in the cinema. How many empty seats are there?</li> </ul>	<ul style="list-style-type: none"> <li>Complete the number sentences using the same number in both boxes.                             <math display="block">24 + \square = \square \times 4</math> <math display="block">24 \div \square = \square - 2</math> </li> <li>Using the number cards 1 – 9 and the four operations how many ways can you make 100? You must use each of the number cards once but can you use the four operations as many times as you like.</li> <li>Use four operations in the number sentences below to balance each side of the equals sign.                             <math display="block">21\square - 3 = 12\square - 6</math> <math display="block">21\square - 3 = 12\square - 5</math> <math display="block">21\square - 3 = 12\square - 2</math>                             What's the same and what's different about each of the number sentences?                         </li> </ul>	<ul style="list-style-type: none"> <li>Sally bought five tickets to watch a game of football with her friends. The tickets were numbered in order. When the numbers are added together, they total 110. What were the ticket numbers?</li> <li>Can you fill in the missing digits using the clues below?                             <math display="block">\begin{array}{r} \square\square\square\square \\ \times \phantom{\square\square\square\square} \\ \hline \square\square\square\square \end{array}</math>                             The four digits being multiplied by 6 are consecutive numbers but not in the right order. The first and the final digit of the answer are the same number. The 2<sup>nd</sup> and 3<sup>rd</sup> digit of the answer add up to the 1<sup>st</sup> digit of the answer.                         </li> </ul>

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

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
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"> <li>On the 06:35 bus, how long does it take to get from Shelf Roundabout to Bradford Interchange?</li> <li>Can you travel to Woodside on the 07:43 bus?</li> <li>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?</li> </ul>	<p>Use the timetable to the left to answer the following questions:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Which journey takes the longest time from Halifax Bus Station to Bradford Interchange?</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Order the journey times on the timetable from longest to shortest. Can you explain why you think the buses take different lengths of time?</li> <li>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.</li> </ul> <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>

	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