Year 3

Mastery Overview
Autumn

MathsHUBS
White Rose

Year 3

SOL Overview

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

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

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

The White Rose Maths Hub Team

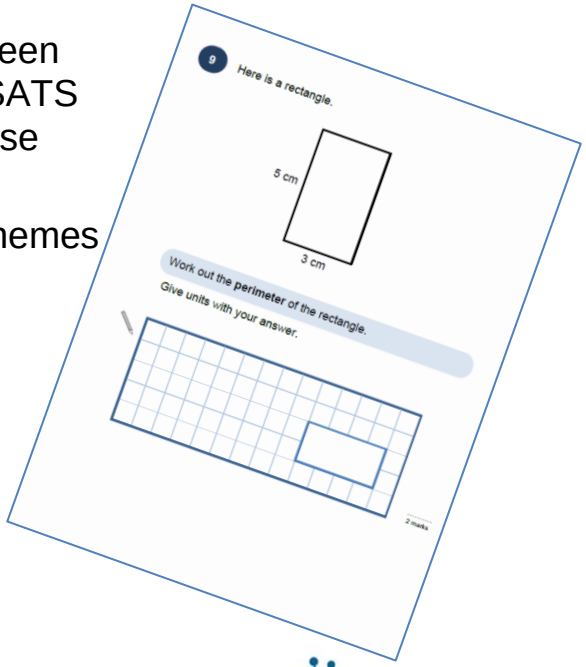
Assessment

Alongside these curriculum overviews, we also provide a free assessment for each term's plan. Each assessment is 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.



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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;

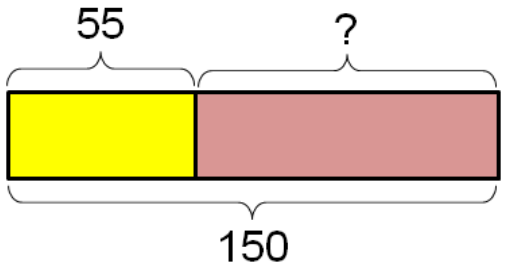
- have number at their heart. A large proportion of time is spent reinforcing number to build competency
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole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

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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.

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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

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.

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Year 3 Overview

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

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Term by Term Objectives

Year 3

Year Group	Y3	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
<u>Number – place value</u> Identify, represent and estimate numbers using different representations. Find 10 or 100 more or less than a given number; recognise the place value of each digit in a three digit number (hundreds, tens, ones). Compare and order numbers up to 1000 Read and write numbers up to 1000 in numerals and in words. Solve number problems and practical problems involving these ideas. Count from 0 in multiples of 50 and 100		<u>Number – addition and subtraction</u> Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. Estimate the answer to a calculation and use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Add and subtract amounts of money to give change, using both £ and p in practical contexts.				<u>Number – multiplication and division</u> Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.				<u>Measurement</u> Measure, compare, add and subtract: lengths (m/cm/mm). Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Measure the perimeter of simple 2D shapes. Continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed and simple equivalents of mixed units.	

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Term by Term Objectives

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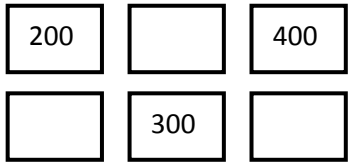
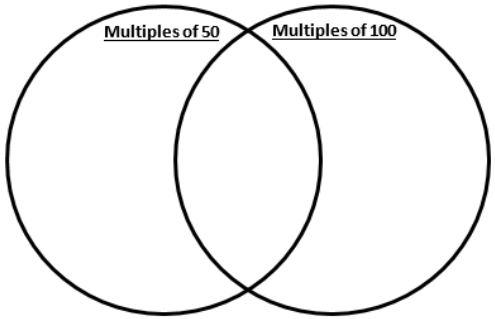
	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Count from 0 in multiples of 50 and 100	• Continue the pattern: 50, ___, 150, 200, ___ 100, 200, ___, ___, 500 • Fill in the missing words: ____, ____, one hundred, one hundred and fifty • Count in 10s from 0. Whenever you get to a multiple of 50 say Fizz, when you get to multiples of 100 say Buzz. If it is a multiple of both say Fizzbuzz. • Using equipment, show me the fifth multiple of 50	• **Circle the odd one out.** 100, 150, 200, 215, 300 Explain how you know. • **True or False.** If I count in 100s from 0, all the numbers will be even. Convince me. • **Always, sometimes, never** All multiples of 50 are multiples of 100 therefore all multiples of 100 are multiples of 50.	• Use the number cards to make a sequence. Can you make more than one sequence?  • Create calculations for your friends to sort into the diagram e.g. Double 25, Half of 200  What do you notice? • Al's money is arranged in stacks. Each stack contains 50p. He has 8 stacks. How much money does Al have?

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Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Find 10 or 100 more or less than a given number.	• Find 10 more and less than the following numbers: 23, 96, 250, 192 • What is 100 more or less than these numbers? 283, 591, 392, 901, 892 • Fill in the missing numbers: 10 less / Starting number / 10 more / 325 / 674 / / / 892 / / / 1001	• Emily has made the number: 3 0 5 Write down the number that is 10 less than 305. Now write down the number that is 10 less than this new number. Explain what is happening to the number each time. • What is the 10th answer in this pattern? 536-10=526 526-10=516 516-10=506 How do you know? • **True or False** When I add 100 to any number, I only need to change the hundreds digit. Show me an example.	• 10 more than my number is 100 less than 320. What is my number? Can you write your own problem similar to this? • Using number cards 0-9 can you make the answers to the questions below: 10 less than 8 + 7 10 more than 3 x 10 100 less than 336 100 more than 691 10 less than 3 x 6 • I think of a number. I add 10 and then take away 100. My answer is 350. What was my number?

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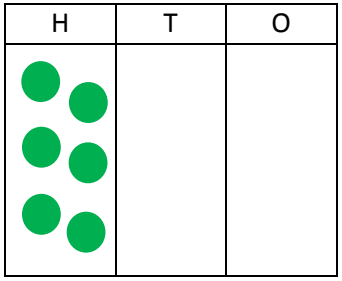
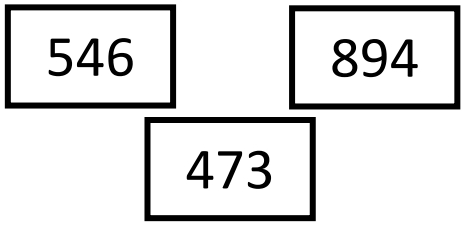
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Recognise the place value of each digit in a three digit number (hundreds, tens, ones).	• Write the value of each underlined digit. 3<u>1</u>8, 9<u>2</u>, <u>9</u>21 • Fill in the place value grid with counters to make 608  • Find the value of ▲ in each of these statements. ▲ = 500 + 70 + 4 628 = ▲ + 20 + 8 703 = 700 + ▲ + 3	• Explain the differences in the values of 4 in the following numbers:  • 543 is made of 5 hundreds, 4 tens and 3 ones. It is also made of 54 tens and 3 ones. It is also made of 543 ones. Can you show 113 in these ways? Can you express 627 in the same way? • What is the same about these numbers and what is different? 375 357	• Henry thought of a number. He thought of a two-digit number less than 50. The sum of its digits was 12. Their difference was 4. What number did Henry think of? • Use the clues to find the missing digits:  The hundreds digit is double the tens digit. The tens digit is 5 less than 2 x 4 The ones digit is 2 less than the hundreds digit. • Claire, Libby and Katie are holding three digit numbers. They are shown below. 345 247 368 Claire and Libby give clues: Claire- My number has the smallest amount of ones. Libby- The tens in my number are 2 less than Claire and Katie's added together. Can you work out which number is which?

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Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Compare and order numbers up to 1000	• Use <, > or = 377 ☐ 397 5_3 ☐ 29_ 700 ☐ 70 tens • Using 3 counters, like shown in the place value grid below, make all the numbers possible. Order from smallest to largest. For example, make 300 by putting all three counters in the hundreds column 100s | 10s | 1s ● | ● | ● • Here are three digit cards. Write all the three digit numbers that you can make and order them from smallest to largest. 4 2 5	• Harry puts the following numbers in order. 345, 278, 301, 287, 368 Which number would be third? He adds 340 to the list and puts it in third place. Is he correct? Explain why. • Put one digit in each box to make the list of numbers in order from smallest to largest. H | T | O 1 | | 3 | 2 | 7 2 | 5 | | 5 | 9 3 | 0 | | 1 | 5 • **True or False** You must look at the highest place value column first when ordering any numbers.	• In pairs, each child has to make a 3 digit number. They pick a 0-9 number card and decide where to write the number. Do this until they have created a 3 digit number. In each game they change the criteria they have to meet to win. E.g. Make the smallest number. Make the largest number. Make a number between 300 and 500. • I am thinking of a number. My number is between 300 and 500 The digits add up to 14 The difference between the largest and the smallest digit is 2 What could my number be? Order all the possible numbers from smallest to largest. • Deena has ordered 5 numbers. The largest number is 845, the smallest number is 800 The other numbers all have digit totals of 12 What could the other numbers be?

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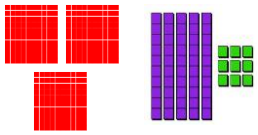
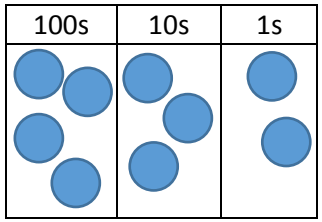
Term by Term Objectives

Year 3

Place Value

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Read and write numbers up to 1000 in numerals and in words.	• Fill in the blanks **Numbers in words** / **Numerals** Four hundred and two / / 560 • What number is represented by the Base 10? Write it in numerals and words.  • 352 children were on time for school this morning. Write this number in words. Five hundred and seventy people went to the school fair. Write this number in numerals.	• What number is represented in the place value grid?  Using the same number of counters, how many different numbers can you make? Convince me you have found them all. • Tim was asked to write the number four hundred and forty. He wrote 400 40. Do you agree with Tim? Explain why. • Hannah has written the number five hundred and thirteen as 530. Explain the mistake that Hannah has made.	• Match the number in words to the number in numerals. Fill in the missing numbers. Four hundred and sixty two Four hundred and twenty six Six hundred and forty two Two hundred and sixty four 4 / / / 4 / / / 4 / / 6 • Here are 3 digit cards. Find every 3 digit number that could be made from the cards. Write out the largest, smallest and middle number in words. **3** **6** **8** • Work out the missing word: **A number between 450 and 460.** Four hundred and _____ six. Repeat this with different clues and numbers.

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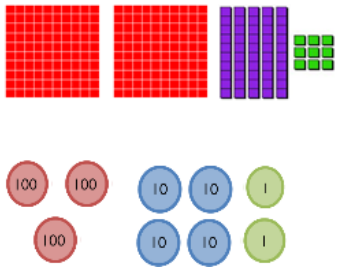
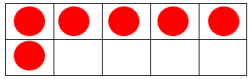
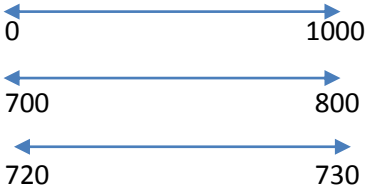
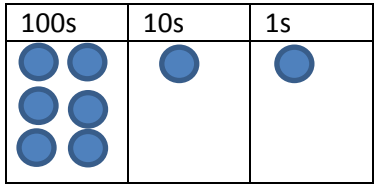
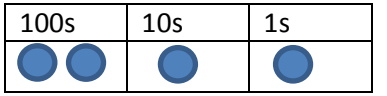
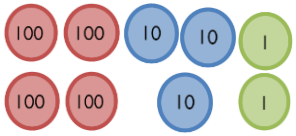
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Identify, represent and estimate numbers up to 1000 using different representations.	• What number is represented in each set?  • This ten frame would represent one thousand if filled. What number is represented?  • Show 450 on the number line.  	• Place 725 on each of the number lines below.  Do they look similar? Why? • Alice says 'The number in the place value grid is the largest number you can make with 8 counters.' Do you agree? Prove your answer.  • Henry has one counter and a place value grid. He says he can make a one, two, three and four digit number. Is he correct? What is the difference between the numbers?	• Using four counters and the place value grid below, how many different numbers can you make? E.g. 211  • Simon was making a three digit number using place value counters. He has dropped three of his counters on the floor. These are his remaining counters. What could his number be?  • If the number on the number line is 780, what could the start and end point of the number line be? 

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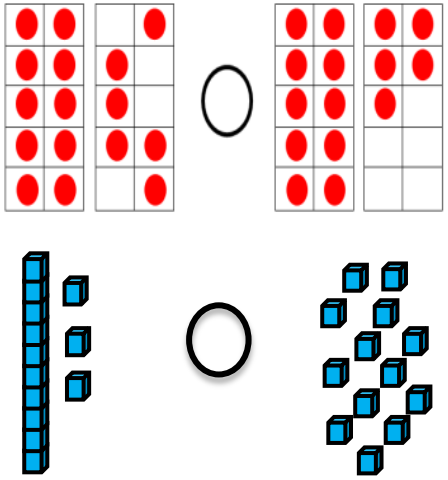
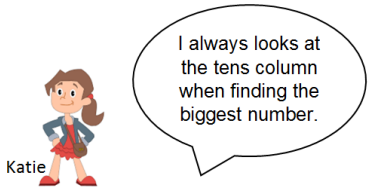
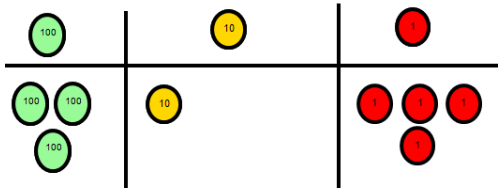
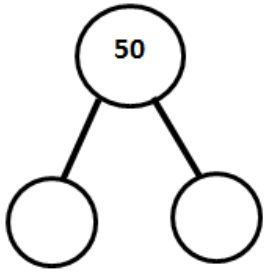
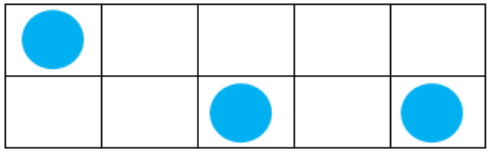
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Solve number problems and practical problems involving these ideas.	• Use art straws to build numbers. 10 art straws are bundled together to make 1 ten. What number do you have? How many ways can you say it? e.g. 48 4 tens and 8 ones 48 ones 40 and 8 • Use <,> or = 	• Katie says,  Do you agree? Explain why. • Adam thinks if I subtract 4 ones, the number in the grid will be 31 Is he correct? Explain why. 	• How many different ways can you complete this part whole model?  Did you use a strategy? What are the most common parts? Why do you think this? • If every finger represents ten, using two hands show me a way to make 40. Show me another way. And another. • In this ten frame, each counter represents 2 I have made 6  How many ways can you make 6?

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Term by Term Objectives

Year 3

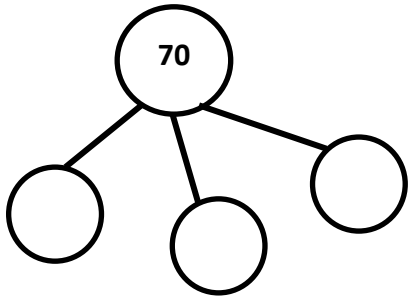
Addition and Subtraction

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds.	• **Calculate:** 153 + 6 = 153 + 60 = 153 + 600 = 856 – 8 = 856 – 80 = 856 – 800 = • **Fill in the missing numbers** • Complete the bar models	• **Are these number sentences true or false?** 396 + 6 = 412 504 – 70 = 444 556 + 150 = 706 Justify your answers. • **Always, Sometimes, Never** When you add 7 to a number ending in 8 your answer ends with 5. Explain your answer. • **Which questions are easy, which are hard?** 453 + 10 = 930 – 100 = 493 + 10 = 910 – 120 = Why are some easy and some hard? Explain your reasons.	• **Always, Sometimes, Never** - 2 odd numbers add up to make an even number. - 3 odd numbers add up to make an even number. - Adding 8 to a number ending in 2 makes a multiple of 10. • How many different ways can you complete this part whole model? • A magician is performing a card trick. He has eight cards with the digits 1-8 on them. He chooses four cards and the numbers on them add up to 20. How many different combinations could he have chosen?

Start	Add 5	Add 50	Add 500
342			
	322		
		246	

150		
50	75	

65	42	35



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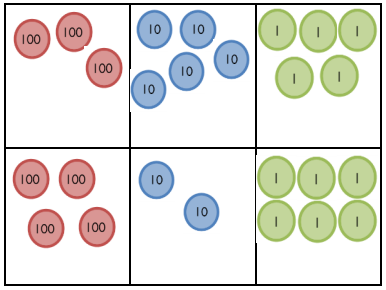
Year 3

Addition and Subtraction

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.	• Use the grid to solve the calculation below. 355 +426  • Harry has 357 stickers, John has 263. How many do they have altogether? If Harry gives John 83 stickers, how many do they have each now? • How many calculations can you make from this bar model? 247 113 134	• Find the missing numbers in the addition. □4 + 2□ 62 • Dan saved £342 in his bank account. He spent £282. Does the subtraction below show how much he has left? Explain your answer. 282 -342 140 • Find the errors in the calculations and correct them to find the right answer. Calculation / Error / Correct solution 256 + 347 = 2907 63 - 38 = 35	• The answer to the addition is 201. All the digits used are either 1 or 9. Fill in the boxes. 201 = □□ + □□ + □□ Can this be done more than one way? Convince me. • Roll a 1-6 die, fill in each of the boxes and try to make the smallest total possible. Repeat and try to find different answers. Could you have placed the digits in a different place to make a lower total? □□□ + □□□ • Molly went swimming every day for 5 days. She swam 80 lengths during the 5 days. Each day she swam 4 less lengths than the day before, how many lengths did she swim each day?

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	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Estimate the answer to a calculation and use inverse operations to check answers.	• **Make an estimate:** Which of the following number sentences have an answer between 50 and 60? 274 - 219 533 – 476 132 - 71 • 34 + 45 = 79 Use a subtraction to check the answer to the addition. • Hannah has baked 45 cakes for a bun sale. She sells 18 cakes. How many does she have left? Check your answer by using an addition.	• Niamh estimates the answer to 489 + 109 as shown: 489 + 109 = 500 Do you agree with Niamh? Explain your answer. • Leonie says, '353 - 26 = 333 because 300 – 0 = 300, 50 – 20= 30, 6 – 3= 3 so 353-26 = 333' Do you agree with her answer? Prove your answer by using an addition calculation. • Colin says. 'If I add two numbers together I can check my answer by using a subtraction of the same numbers afterwards. So to check 3 + 4, I can do 4 -3.' Is he always right? Explain why.	• **Is it magic?** Think of a number. Multiply it by 5. Double it. Add 2. Subtract 2. Halve it. Divide it by 5. Have you got back to your original number? Is this magic? Can you work out what has happened? Explain to a friend. • Using the idea above, create your own set of instructions where you think of a number and end up back at the original number. • I think of a number. I divide by 2 and add 98. My answer is 100. What was my number?

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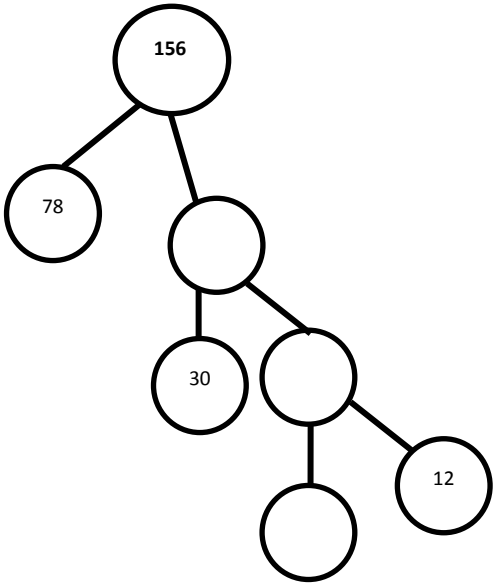
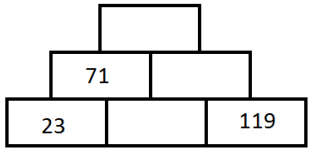
Term by Term Objectives

Year 3

Addition and Subtraction

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	• Work out the missing numbers 127 = 67 + ☐ ☐ + 100 = 450 – 75 299 – 101 > 50 + ☐ • Complete the part whole diagram 	• What order would you answer these missing number problems in? Why?  555 – 299 = 444 - ☐  • Here are 3 digit cards. 6 2 5 Ian and Roy each make a 2 digit number using them. I have made the biggest number possible I have made the smallest number possible Ian Roy What is the difference between their numbers?	• How many 2 digit subtract 2 digit calculations can you find where the answer is 14? ?? - ?? = 14 • ● + ● = 70 ● + ▲ + ▲ + ▲ = 161 Work out the value of a circle and a triangle. ● = ▲ =

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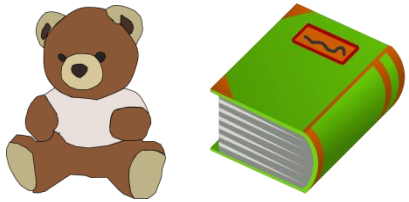
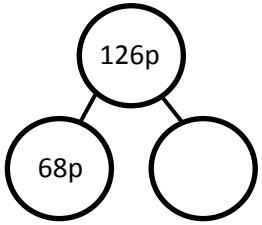
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Add and subtract amounts of money to give change, using both £ and p in practical contexts.	• What is 2 pounds and fifty pence less than 9 pound? • Mary buys these two items.  19p 16p She pays with a 50p coin and is given a 10p and 5p coin as change. Has she been given the correct change? • Complete the part whole diagram. 	• These items are sold in a shop.  Ray buys three items. Two of them are the same item. He spends £23 What items does Ray buy? How do you know? • Which is worth more? 90 ten pence coins or 9 pound coins. Explain why.	• Mo is saving for a book.  16p His mum gives him a quarter of the money. How much more does he need to save? • Mike buys these items and it costs him 30 pence.  Olga buys these items and it costs her 42 pence.  How much does a ruler cost?

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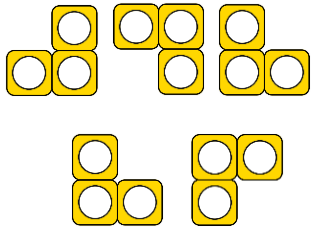
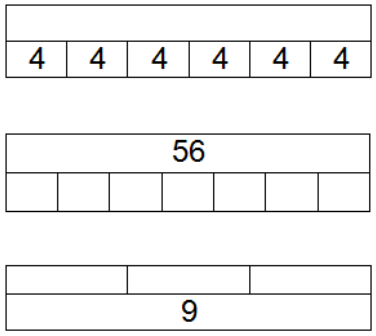
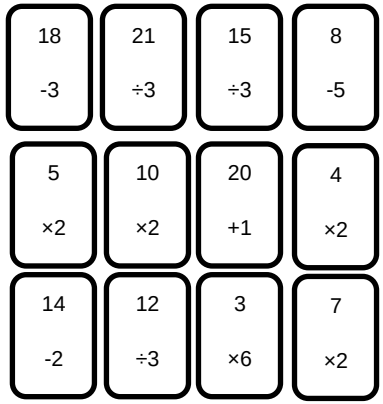
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Multiplication and Division	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	• How many altogether?  • Use cubes to show me 8 groups of 4 Tell me what division and multiplication facts you can find from this. • Complete the bar models.  	• Tom says 'I can use my 4 times table to help me work out my 8 times table'. Is he correct? Convince me. • What pair of numbers could be written in the boxes? □ × □ = 24 • **True or false?** Put these statements into two piles. Explain why. $3 \times 4 = 0 + 12$ $5 \times 8 > 6 \times 8$ $28 \div 4 = 2 \times 4$ • Start this rhythm, clap, clap, click, clap, clap, click. Carry on the rhythm, what will you be doing on the 15th beat? How do you know? What will you be doing on the 20th beat? Explain and prove your answer.	• Megan has a box of pop that are in packs. Some packs have 4 cans in them, some packs have 8 cans in them.  The box contains 64 cans of pop. How many packs of 4 cans and how many packs of 8 cans could there be? Have you found all the possibilities? • Can you sort the cards below so that they would follow round in a loop? The number at the top is the answer, then follow the instruction at the bottom to get the next answer. 

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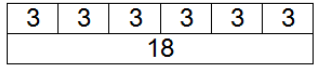
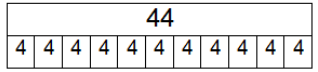
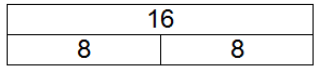
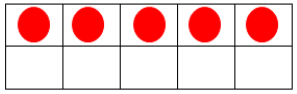
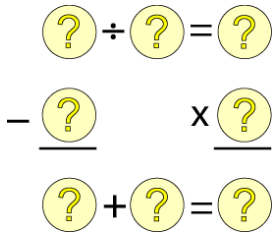
Term by Term Objectives

Year 3

Multiplication and Division

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.	• Cards come in packs of 4. How many packs do I need to buy to get 32 cards? Show your working in a number sentence. • Use the three numbers below to make 4 multiplication and division sentences. 12 4 3 • Write four calculation statements for each bar model.   	• Andy says 'I can use my three times table to work out 180 ÷ 3'. Show what Andy could do to work out this calculation. • Which of the problems below can be solved using 8 ÷ 2? -There are 2 bags of sweets with 8 sweets in each. How many altogether? -A rollercoaster carriage holds 2 people, how many carriages are needed for 8 people? -I have 8 crayons and share them out so people have 2 crayons each. How many people did I share them between? -I have 8 buns and I give two to my brother. How many do I have left? Explain your reasoning for each. • In this ten frame each counter represents 4  Ashi says, "This shows 4 × 5 = 20" Do you agree? Explain why.	• Holly bought a chocolate bar costing 55p. She paid using 8 coins which were either 5ps or 10ps. How many different ways could she have paid? Write down the multiplication sentences you have used to solve the problem. • Use the numbers 1-8 to fill in the circles below.  • Solve the problem and write down all the steps you went through in number sentences. I think of a number, I divide my number by 3, add 4 and times by 2. My answer is 20. What number did I start with?

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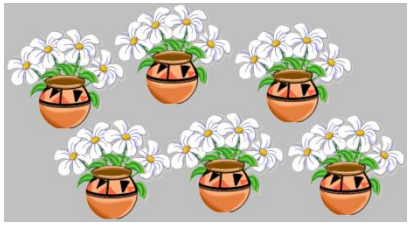
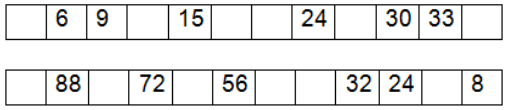
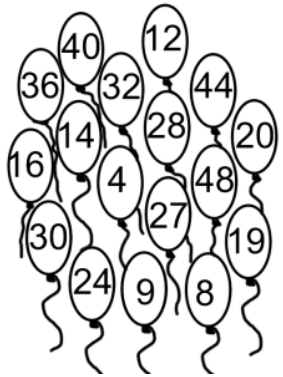
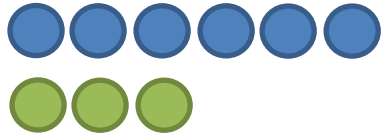
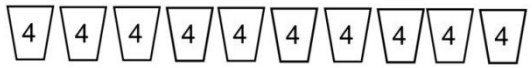
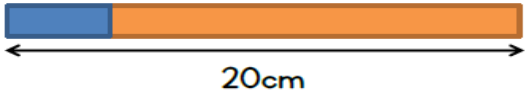
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context.	• How many cupcakes are there altogether?  • Kate arranges her flowers so there are 4 in a vase.  How many flowers does she arrange? • Fill in the missing boxes  	• Colour in the multiples of 4 What's the same? What's different?  What's the same? What's different? • Sasha needs 40 points to buy a football. Blue counters are worth 3 points and green counters are worth 4 points. In a game she wins  Does she have enough? Explain why.	• At the fair, how many buckets did each person knock down?  Ben 16 James 28 Amrit 12 Kaci 32 Jenna 8 • Here is a blue strip of paper.  An orange strip of paper is four times as long.  The strips are joined end to end.  How long is the blue strip? How long is the orange strip?

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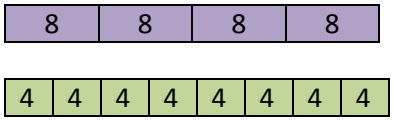
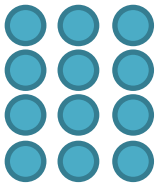
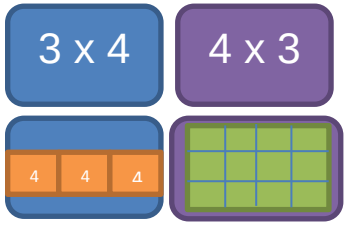
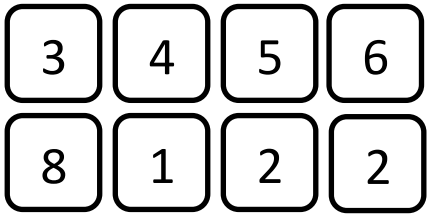
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	• Write multiplication sentences for the bars below.  • Fill in the gaps: ☐ × 4 = 48 4 × ☐ = 48 What do you notice? • Use the array to fill the number sentences below: __ × __ = __ __ = __ × __ __ ÷ __ = __ __ = __ ÷ __ 	• **True or false?** 3 × 5 × 2 = 6 × 5 is the same as 5 × 6 = 2 × 5 × 3 Explain why. • **True or False?** 3 ÷ 9 = 27 Explain why. • Here is a calculation 2 × 8 × 5 What is the best way to solve this? Why?	• Play a game of Go Fish, there are sets of four cards that the children have to try and collect. Each set will look like the one below.  As players collect cards they must ask each other- do you have 3 x 4 or do you have an array showing 3 x 4 or do you have a bar model showing 3 x 4. The language they are using will model their understanding of the commutative law. • Use the number cards to make as many different multiplication and division calculation statements as you can. 

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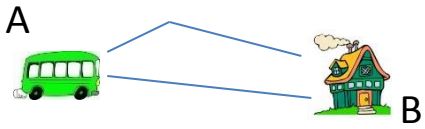
Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Measurement	Measure, compare, add and subtract: lengths (m/cm/mm).	• How long is the pencil?  • Find the length from A – B, find the length from B-C. Which is longer? How much longer?  • Insert <, > or = below. 13cm ☐ 140mm 1m ☐ 90cm 1m – 10mm ☐ Half a metre	• If I have 3m of ribbon and cut it into 50cm lengths, how many lengths can I cut? Convince me. • Abigail's ruler has broken. How could she still use it to measure things?  • Harry is measuring the length of this pencil. Explain what he is doing wrong. 	• A coach is three times as long as a car. A train is 6.5m longer than a coach. The train is 36.5m long. How long is the car? *(It may help you to use bar modelling)* • Which of the following statements could be true? - A chair is about 120mm tall. - A ruler is about 300mm long. Check them and correct the false ones by using measuring equipment. Can you create some for a friend? • The length of a swimming pool is 50m. Miss Jones swims 2000m every morning. How many lengths is this?

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Term by Term Objectives

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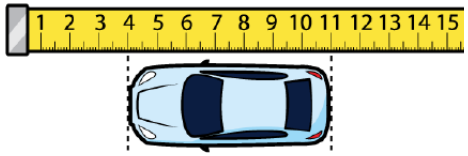
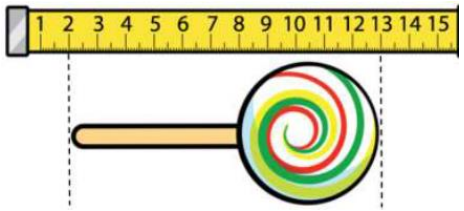
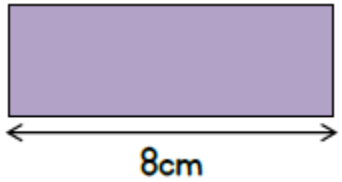
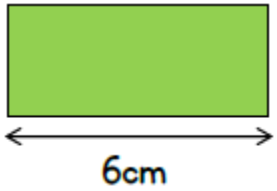
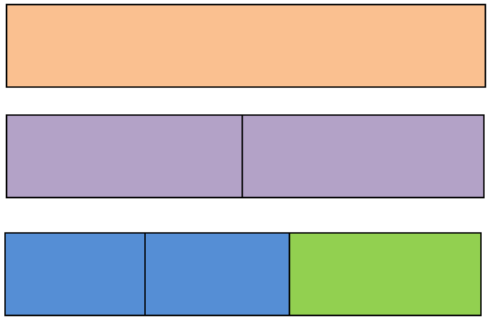
	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Measurement	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	• Complete the missing boxes. 90mm – ☐ = 6cm 7m + ☐ = 810cm 70cm + 9mm = 1m – ☐ 45mm + ☐ = 10cm – 4cm • How much longer is the lolly than the car?   	• **Odd one out.** 200mm 5cm 7.5cm 8cm Explain your reasons. • Terry and Anne had 40cm of string between them. He cut 15 off and took the remaining half. Anne had the rest. How much string did Anne get? Explain how you know.	• Each purple block is 8cm long.  Each green block is 6cm long.  How long is a blue block? 

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Year 3

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Measurement	Measure the perimeter of simple 2D shapes.	• What is the perimeter of the rectangle? 4cm  • A square has sides of 3cm. What is the perimeter of the square? • Measure the perimeter of the triangle. 	• A square has sides that are in whole cm. Which of the following measurements could be its perimeter? 18cm, 8cm, 25cm, 24cm Explain your thinking. • Tick the correct statement about the shapes below.  Shape A Shape B - Shape A has a bigger perimeter than shape B. - Shape B has a bigger perimeter than shape A. - Shape A has the same perimeter as shape B. Explain how you know.	• This shape is made from identical squares. The perimeter of the whole shape is 24cm. Find the perimeter of the central square. Explain how you found the solution.  • How many different rectangles can you draw with a perimeter of 20cm? • A rectangle has sides where the length is double the width. If the perimeter is 12cm, what are the length and the width of the rectangle?

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Term by Term Objectives

Year 3

	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Measurement	Continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed and simple equivalents of mixed units.	Practical examples: • How many 30 centimetre rulers fit into a 1 metre ruler? How do you know? How many 30 centimetre rulers fit into a 2 metre ruler? How do you know? When will a group of 30 centimetre rulers equal an amount of 1 metre rulers? Explain why. Is this the only time? • In small groups, can you measure the height of each person using metre sticks and 30 centimetre rulers? What is easy? What is hard? Record your findings in a table. Work out the difference between the smallest and tallest person. What other questions can you find the answers to by looking at your data? • Bring in a range of different 'gifts' in cuboid boxes. Which of these will use the most wrapping paper? Which will use the least? Estimate amount of wrapping paper needed for each and then wrap presents. How can you ensure you use the least possible amount of wrapping paper?		

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