Year 2

Mastery Overview
Autumn

MathsHUBS
White Rose

Year 2

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 creates our own network area where teachers form 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

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Assessment

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

Part 1: Fluency based arithmetic practice
Part 2: Reasoning based questions

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

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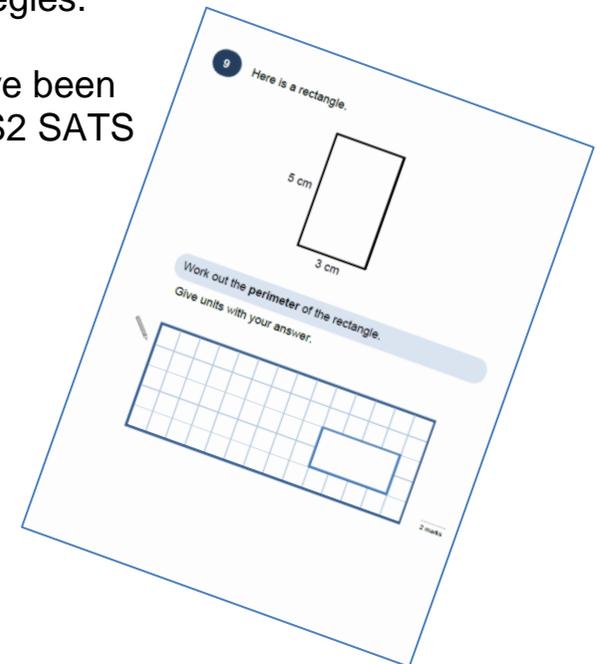
Teaching for Mastery

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

The overviews;

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

Concrete – Pictorial – Abstract

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

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

Pictorial – students should then build on this concrete approach by using pictorial representations.   These representations can then be used to reason and solve problems.
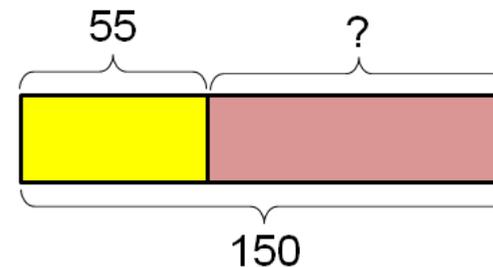
An example of a bar modelling diagram used to solve problems.

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

Frequently Asked Questions

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

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

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

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

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

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

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

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

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

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

NCETM Mastery Booklets

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

It will also give you a detailed idea of what it means to take a mastery approach across your school. Information can be found on the link below.

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

WRMH Primary Network

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

Everyone Can Succeed

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

More Information

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

We are offering courses on:

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

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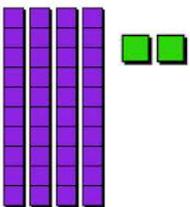
Term by Term Objectives

Year 2

Year 2 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				Measurement: Length and Mass		Graphs	Multiplication and Division		
Spring	Measurement: Money			Geometry: Properties of Shape			Number: Fractions					
Summer	Measurement: Time		Measurement: Capacity, Volume and Temperature		Post SATs Project Work							

Term by Term Objectives

Year 2

Year Group	Y2	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

Number – place value

Count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward.

Recognise the place value of each digit in a two digit number (tens, ones)

Identify, represent and estimate numbers to 100 using different representations including the number line.

Compare and order numbers from 0 up to 100; use <, > and = signs.

Read and write numbers to at least 100 in numerals and words.

Use place value and number facts to solve problems.

Number – addition and subtraction

Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.

Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two digit number and ones; a two digit number and tens; two two digit numbers; adding three one digit numbers.

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods.

Measurement: length and mass

Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) and mass (kg/g) to the nearest appropriate unit, using rulers and scales.

Compare and order length and mass and record the results using >, < and =.

Graphs

Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.

Ask+ answer simple questions by counting the number of objects in each category and sorting the categories by quantity.

Ask and answer questions about totalling and comparing categorical data

Multiplication and Division

Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.

Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign.

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.

Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

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National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Place Value Count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward.	• **Continue the sequence:** 2, 4, 6, 8, 10, __, __, __ 15, 20, 25, 30, __, __ 90, 80 , 70, __, __, __ 21, 18, 15, __, __ , __ • **Fill in the missing numbers** | 10 | | 20 | 25 | 30 | | 40 | • **Circle the odd one out:** 20, 18, 17, 14, 12, 10 3, 8, 13, 18, 23, 27, 33, 12, 15, 18, 20, 24	• **Spot the mistake:** What is wrong with this sequence of numbers? 55, 50, 45, 35 • **True or False** I start at 0 and count in 3's. I say the number 14. • **What comes next?** 21 + 5= 26 26 + 5= 31 31+ 5 = 36	• Harry has made a sequence of numbers using six number cards. Here are three of the cards: can you think of two sequences Harry could have made? 10 20 30 • A spider is climbing a 30m building. Each day it climbs 5m and slides back down 1m. How many days will it take to reach the top? • Sid is counting in 2's, Luke is counting in 3's. Sid says 'If we add our numbers together as we count we can make a new pattern.' What pattern do they make? What happens if Sid counts in 5's and Luke counts in 10's?

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Recognise the place value of each digit in a 2 digit number (tens, ones)	• In the number 36 there are __ groups of ten and __ ones. • The number _____ is made up of seven groups of ten and eight ones. • The number 89 shows __ in the tens place and __ in the ones place.	• Use manipulatives to show and then explain the value of 5 in the following numbers: 35, 56, 75 • Use manipulatives to make 2 digit numbers where the ones digit is two less than the tens digit. What is the largest number you can make? What is the smallest number? • Sally says 'My number has 5 tens. The ones digit is less than the tens.' What could Sally's number be?	• Work in a pair. Partner A writes down a 2 digit number. Partner B guesses the number. Partner A ticks one of the columns in the table below and Partner B keeps guessing until they guess the correct number. <table><tr><td>Clue</td><td>Guess 1</td><td>Guess 2</td></tr><tr><td>Both digits correct</td><td></td><td></td></tr><tr><td>Tens digit correct</td><td></td><td></td></tr><tr><td>Ones digit correct</td><td></td><td></td></tr><tr><td>Neither digit correct</td><td></td><td></td></tr></table> • You have 0-9 number cards Using each card once, make: -Largest even number -Largest odd number - Smallest odd number -Largest multiple of 5 - Number closest to 50. • How many 2 digit numbers can you make using 3 counters and the number grid below? <table><tr><td>Tens</td><td>Ones</td></tr><tr><td>● ● ●</td><td></td></tr></table>

Term by Term Objectives

Year 2

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Place Value Identify, represent and estimate numbers to 100 using different representations including the number line.	• Place these numbers on the number line. 12, 22, 5, 19 0 25 • Use manipulatives to represent the following numbers 23, 35, 53, 42 • Place the following numbers on the number line. 50, 23, 78 0 100	• Place 36 on each of the number lines below. 0 100 0 40 30 40 • reg has made the number 24 using Base 10. Is he correct? Explain your answer. • **True or False?** The arrow on the line below is pointing to 70. 0 100 Convince me	• Match each number line to the clue that describes it. 0 100 0 100 0 40 - The number is over half way along the number line. - The number is bigger than 50. - The number is between 20 and 40. • Play a game of snap with cards that match 2 digit numbers with Base 10 blocks. (See resources) • How many different numbers can you make using 4 counters and the place value grid below? ● ● ● ● | Tens	Ones
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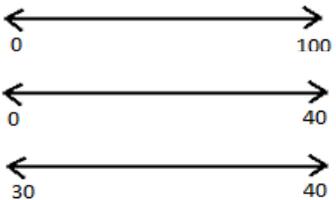
	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Compare and order numbers from 0 up to 100; use <, > and = signs.	• Order the numbers from smallest to largest: 23, 32, 27, 30, 19, 41 • Use <, > and = to make these number sentences correct. 4 tens _____ 40 ones 2 tens _____ 9 ones 4 tens _____ 44 ones • Order the amounts below, 2 tens and 5 ones, 27, 2 lots of 10 and 8 ones, 1 ten and 14 ones.	• If you ordered the numbers below, which would be fourth? Explain how you ordered them. 33, 53, 37, 29, 34, 43 • Use <, > and = to make these number sentences correct. 4 tens + 3 ones____ 3 tens + 13 ones 2 tens and 7 ones__ 1 ten and 14 ones 5 tens and 2 ones __ 4 tens + 15 ones • **True or False:** One ten and twelve ones is bigger than two tens. Explain how you know.	• Bill has written a list of 2 digit numbers. The digits of each number add up to 5. None of the digits are 0. Can you find all the numbers Bill could have written? Write the numbers in order from smallest to largest. • Fill in the missing numbers in the grid using 1, 2, 4 and 7. • What numbers could go in the grid below? 52 | < | | < | 56 The number in the grid is even. Which number must it be?
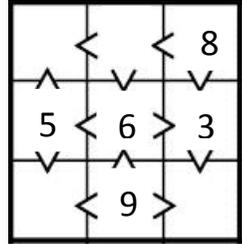
Term by Term Objectives

Year 2

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Place Value Read and write numbers to at least 100 in numerals and words.	• **Match the numerals to words.** 43 thirty four 62 thirty nine 39 forty three 34 sixty two • **Write the following numbers in words:** 32, 75, 52, 41. • **Write the following numbers in numerals:** seventy four, thirty six, fifty five.	• Dan has written the number 40 4. Is he correct? Explain how you know. • **True or False?** The number fourteen is written as 40 in numerals. Prove it. • What number is represented in the place value grid? | 10s	1s
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●	● ● ● | How many different numbers can you make with four counters? Write them in numerals and words.	• Match the words to the numerals. Fill in the missing digits. | Forty four	3	
Forty six		4
Sixty four	4	
Thirty four		6	 • Complete the wordsearch (see resources) to find the numbers written in words. • Work out the answers to the clues in order to complete the number-word crossword (see resources)

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National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Place Value — Use place value and number facts to solve problems.	Covered above	Covered above	Covered above

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts to 100.	• **Fill in the gaps:** ___ + 16 = 20 20 - ___ = 5 20 + 80 = ___ 100 - ___ = 30 • Add the tens together in the circles. Find the total. • Harry has 15p. Which coin does he need to make 20p?	• **Continue the pattern** 90 = 100 – 10 80 = 100 – 20 Can you make up a similar pattern starting with the numbers 75, 25 and 100? • **Missing numbers** 81 + ___ = 100 100 - ___ = 89 Explain how you can use number bonds to 10 to find the missing numbers above. • Sam says 'If I know 9 + 1= 10, I also know what I add to 90 to make 100.' Is he right? Prove it.	• Jenny has ten 10p's. How many ways can she add them together to make £1. Eg 20p + 80p • Can you find the missing number so each row and column adds up to 100? <table><tr><td>20</td><td></td><td>50</td></tr><tr><td>30</td><td>40</td><td></td></tr><tr><td></td><td></td><td></td></tr></table> • Use the numbers 1, 2 and 3. In pairs, one child chooses a number. The other child has to choose another number to add to the first number. The aim is to be the person who reaches 20 first. You must try to make sure your partner doesn't reach 20.
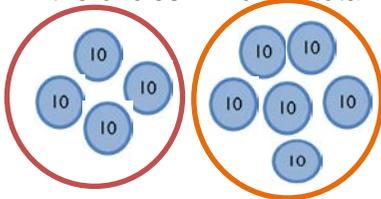
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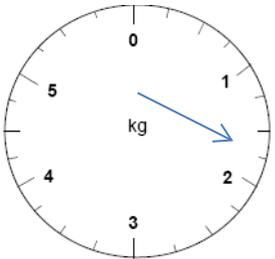
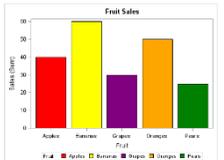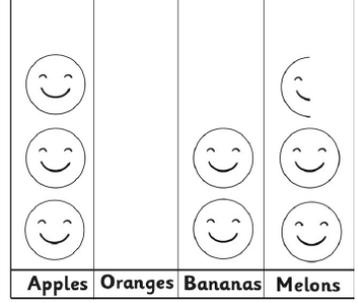| National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.	• Show how the number cards can be sorted to complete each sentence. □ + □ = □ □ = □ + □ □ • □ = □ □ = □ - □ 80 20 100 • Use the bar model below to write 2 additions and 2 subtractions. 100 63 37 • If I know 34 + 43 = 76, what other addition can I write?	• **True or False?** These four calculations have the same answer. 1 + 4 + 2 2 + 4 + 1 4 + 2 + 1 4 + 1 + 2 Explain your answer. • **True or False?** These four calculations have the same answer. 7 – 3 – 2 2- 3- 7 3 – 2 – 7 7 – 2 – 3 Use cubes to help to explain your answer. • Sid says 'In a subtraction, you always start with the biggest number and take away from that.' Do you agree? Explain your answer.	• Use the number cards below to make as many additions and subtractions as you can? How many can you make? 3 7 4 10
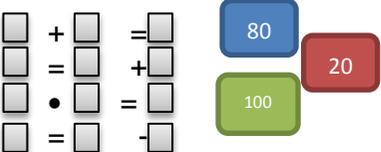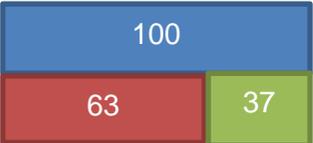
National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a 2 digit number and ones; a 2 digit number and tens; two 2 digit numbers; adding three 1 digit numbers.	• Calculate: • Owen has 45 football cards, he gives 20 to his friend Jack. How many does he have left? Use the bar model to help you. • Work out the total of each row and column. <table><tr><td>5</td><td>4</td><td>2</td></tr><tr><td>3</td><td>7</td><td>8</td></tr><tr><td>5</td><td>7</td><td>3</td></tr></table>	• **True or False?** When you add two odd numbers together you always get an even number. Convince me. • What digits could go in the boxes? ☐ 2 + ☐ 5 = 87 How many ways can you do it? Show me. • Sam says 'I am thinking of a two digit number, if I add ones to it, I will only need to change the ones digit.' Is he right? Explain your answer.	• Take 3 consecutive numbers that are neighbours when you count. Eg 4, 5, 6. Add them together, what do you notice? Choose 3 more neighbour numbers up to 10. See if there is a pattern as you add them. • Lily has 3 dogs. **A** **B** **C** Dog A and B weigh 7kg. Dog B and C weigh8kg. Dog A and C weigh 11kg. What does each dog weigh? • Take five coins: 1p, 2p, 5p, 10p, 20p. Put them in a row using these clues. The total of the first three coins is 27p. The total of the last three coins is 31p. The last coin is double the value of the first coin.
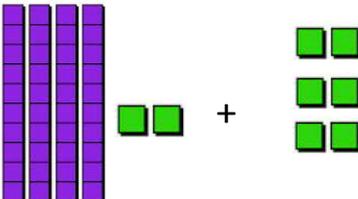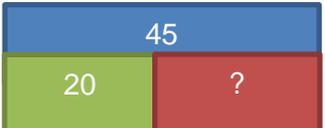
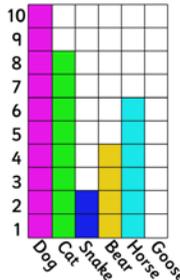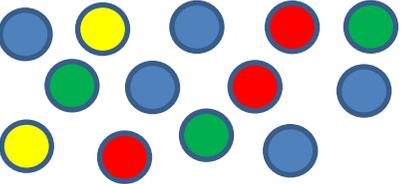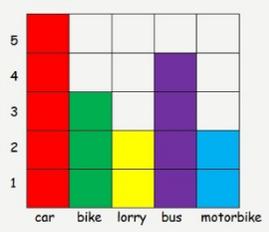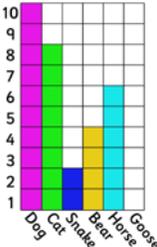| National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• Fill the gaps: 17 + 5 = 22 22 - ___ = 17 • If I know 34 + 20 = 54, what other addition and subtractions sentences do I know? • Dan calculates 67 + 8 = 75, use a subtraction to check his answer.	• Kate has baked 32 buns, she sells 15 buns. She says 'I have 16 more to sell'. Is she right? Use an addition sentence to prove your answer. • Oliver is working out a missing number problem. 17 + ___ = 24 I am going to use a subtraction to solve the problem. Explain how he is going to work out the answer.	• I think of a number. I take away 7 and add 2. My answer is 15. What is my number? • Look at the temperature on the thermometer. The temperature has dropped 8 degrees in 2 hours. What was the temperature 2 hours ago?

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods.	Covered above	Covered above	Covered above

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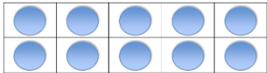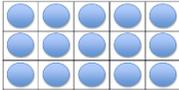| National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**

Measurement
 	
Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) and mass (kg/g) to the nearest appropriate unit, using rulers and scales.
	• How long is the car?
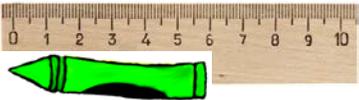	
	• How tall is the teddy bear?
	
	• How much do the cubes weigh?
		• How much do the 2 red bears weigh?
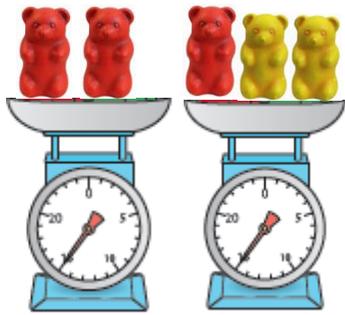		
		Which is heavier the red or the yellow bear? Explain your reasoning.
		
		• Can you use the ruler below to measure an item that is longer than 10cm? Explain your answer.
		
		• Decide which item to use to measure the following items.
		    • The length of the hall.
		    • The width of the table.
		    • The weight of a book.
			• Get five boxes that each have a different amount of sand in them. Some tall, some long, some small. Work out which the children think is the biggest (they can measure with a ruler), then introduce the idea: the biggest box is the heaviest. Children then can choose how they work out the answer through weighing.
			
			• Choose 5 objects from around the classroom, estimate how long they are. Then measure them, choosing the most appropriate equipment and unit. How close was your estimate?

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National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Measurement Compare and order length and mass and record the results using >, < and =.	• Order the lengths below from shortest to longest: 12cm, 25cm, 20cm, 15cm • Weigh the items below, write a number sentence showing which is heavier using < or >. • Fill in the boxes using <, > 12☐ 17m Table length☐ Chair height 3kg☐ 7kg	• How long is the pen? How much shorter is the pencil? Show me. • Helen says 'I think the bigger something is, the heavier it is' Do you agree? Use objects in your classroom to prove your answer. • **True or False?** 24cm < 36cm 45cm > 46cm 31m > 30m Explain your reasoning.	• Four students measured their heights. Lucy was taller than Katie, but not as tall as Tim. Gary was taller than Tim. Write down their names in order of their heights, from shortest to tallest. • Usain Bolt can run 100m in 9.58 seconds (just below 10 seconds). How far do you think you can run in 10 seconds? Measure how far you and your friends can run in 10 seconds. Order your distances from longest to shortest. • Hannah is weighing three bags. The green bag is heavier than the pink bag. The orange bag is lighter than the pink bag. Order the bags from heaviest to lightest. If the pink bag weighs 7kg, what could the other bags weigh?
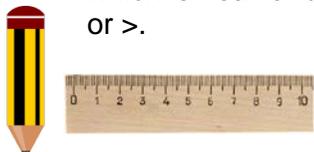
National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Statistics Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	• Look at the bar chart, which fruit is the most popular? Which is the least popular? *Fruit Sales* bar chart • an you use the information in the table to make a tally chart? <table><tr><td>Favourite sandwiches</td><td>Names</td></tr><tr><td>Cheese</td><td>Paul, Lucy, Jim, Noah, Hattie</td></tr><tr><td>Ham</td><td>Libby, James, Pat, Kim</td></tr><tr><td>Chicken</td><td>Matt, Naomi</td></tr><tr><td>Jam</td><td>Dan, Susie, Tim, Hannah</td></tr></table> • Make a pictogram using your tally chart. Make a key where each symbol represents 2 sandwiches.	• Four children are playing cards. Each time one of them wins they take a counter. The results are below. <table><tr><td>Tim</td><td>●● ●</td></tr><tr><td>Tom</td><td>●●●●●</td></tr><tr><td>Sally</td><td>●●●</td></tr><tr><td>Kate</td><td>●●● ●</td></tr></table> Can you present the information in a clearer way? • Complete the tally chart. Compare the tally chart with the pictogram below. What's the same and what's different? <table><tr><td>Apples</td><td></td><td>12</td></tr><tr><td>Oranges</td><td>卌 卌 IIII</td><td></td></tr><tr><td>Bananas</td><td></td><td>4</td></tr><tr><td>Melons</td><td>卌</td><td>5</td></tr></table> Apples Oranges Bananas Melons (pictogram of smiley faces) Can you complete the pictogram? Each smiley face means 2 pieces of fruit. • Using the tally chart and pictogram can you draw a block diagram? Which do you think shows the information the most clearly? Explain your answer.	• Think of something you want to find out eg. What is Class 7's favourite chocolate bar? Collect the data using a tally chart and present it in a pictogram or block diagram. • Split into groups. Everyone needs to write their name on a post it note. Using a blank axis of a block diagram, use your post it notes to find the answers to the following questions: •How many boys and how many girls are there in your group? •Which month has the most birthdays for your group? •How old are the children in your group?

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National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Statistics Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.	• How many people liked dogs the most? Which was the least favourite animal? • Count the coloured dots. Make a tally chart to show how many dots there are of each colour. • Using your tally chart, answer the following questions. Which colour is the most? Which is the least? How many green dots are there?	• **True or False?** The children saw more cars than bikes. • Make up your own true or false statement about the pictogram above. • Henry is making the block diagram below using cubes. He says 'The higher the tower of cubes, the more popular the transport.' Do you agree? Explain your answer. 	• **Which letter is used most in our names?** Conduct a survey in your class to find out which letter appears most in your first names. Work out how to collect the data and then present it in a graph. Answer the questions below: - Which letter appears the most? - Which letter appears the least? - How many times does the letter a appear?

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Statistics	Ask and answer questions about totalling and comparing categorical data.	• Use the bar graph to answer the following questions: -How many cats and dogs were there altogether? -How many more bears were there than snakes? - Add together the animal with the most votes and the animal with the least. How many altogether?	• Harry said 'If I add the number of lorries and bikes together then it will be equal to the number of cars' Is he right? Convince me. • Lucy says 'To find the total number of vehicles I need to add all the cars up.' Is she correct? Explain your answer.	• **What is the most common colour of car that passes school?** Conduct a traffic survey. Make a tally chart and then create a pictogram and bar chart. Answer the questions such as: - How many cars were there altogether? - How many more blue cars were there than red cars?

	National Curriculum Statement	All students		
		Fluency	**Reasoning**	**Problem Solving**
Multiplication and Division	Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.	• Calculate: 4 x 5= 20 ÷ 2 = 6 x 10= 25 ÷ 5 = • A flower has 5 petals. How many petals do 5 flowers have? • Circle the odd numbers. 12 13 17 18 21	• Which has more? 4 bags of sweets with 5 in each or 3 bags of sweets with 10 in each? Explain your reasoning. • 20 = ▢ x ▢ What numbers could go in the boxes? Prove it. • I have 35p in my pocket in 5p coins. How many coins do I have? Draw a picture to prove your answer.	• Tubes of bubbles come in packs of 2 and 5. Holly has 22 tubes of bubbles. How many of each pack could she have? How many ways can you do it? • Sally and Katie want to share sweets out equally between them. They can buy bags of 17, 18 or 21 sweets. Which bag should they buy? What other packs of sweets could they buy? • Fran and Lily had a tub of lollies. When they shared them between them they had one left over. Just as they had finished sorting, three of their friends came and wanted some lollies so they shared the same lollies again. This time they had 2 left over. How many lollies might have been in the tub?

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	National Curriculum Statement	All students		
		Fluency	Reasoning	Problem Solving
Multiplication and Division	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign.	• 5 x 3= 15 Write a division sentence using the same numbers. • Write these addition sentences as multiplication sentences. 5 + 5 + 5+ 5= 5 x 4 2 + 2 + 2 = 10 + 10 = • Can you write 4 number sentences to describe the array?	• How many number sentences can you write to describe this array? Can you use addition, multiplication and division? Explain your answers. • Which four number sentences link these numbers 2, 4, 8? Prove it. • Write these addition sentences as multiplication sentences. 10 + 10 + 10 + 5 + 5= 2 + 2 + 2 + 10 + 10 = 5 + 5 + 5 + 2 + 2 + 2=	• Ted buys 4 books for £2 each. If he has a £10 note, how much change will he get? Write the multiplication sentence you need to do. • Use the number cards to make multiplication and division sentences. How many numbers up to 20 can you make? 1 2 3 4 5 • Use the picture below to think of multiplication and division sentences using x , ÷ and =

National Curriculum Statement	All students		
	Fluency	**Reasoning**	**Problem Solving**
Multiplication and Division Show that the 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. What do you notice? 4 | 4 | 4 | 4 | 4 5 | 5 | 5 | 5 • Fill in the gaps: ☐ X 3 = 15 3 x ☐ = 15 • Here are some number cards. Use them to fill in each number sentence below. 2 10 20 __ x __ = __ __ = __ x __ __ ÷ __ = __ __ = __ ÷ __	• **True or False?** 2 x 5 = 5 x 2 2 x 5 = 10 x 1 2 x 5 = 1 x 10 What do you notice? • Circle the incorrect number sentence. Explain your reasons. 4 x 5 = 20 5 x 4 = 20 20 ÷ 5 = 4 5 ÷ 20 = 4 • The rectangle is made of 2 rows of 4 and 4 columns of 2. Can you write 2 multiplication sentences to show this? What do you notice about the numbers?	• Use the number cards to make multiplication and division sentences. How many can you make? 20 2 5 10 4 • Cassie has 4 bags with 5 sweets in each, Rachel has 5 bags with 4 sweets in each. How many do they have each? Can you split the sweets into different numbers of bags so they both still have the same number?

	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 contexts.	Covered above	Covered above	Covered above

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