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.

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

The White Rose Maths Hub Team

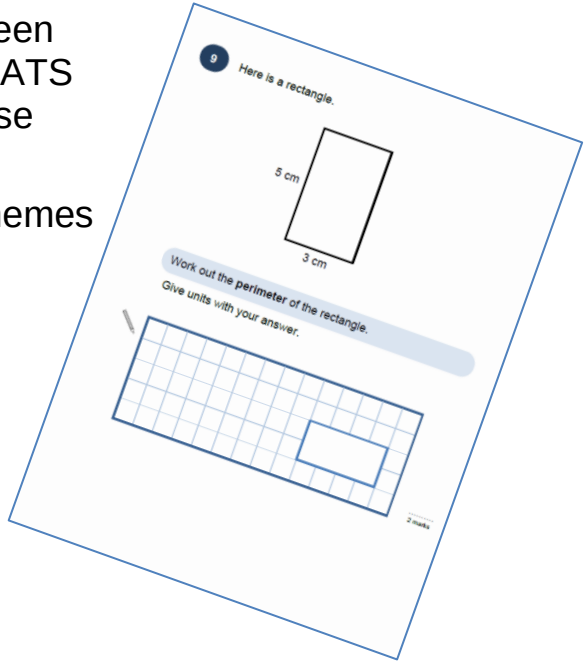
Assessment

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

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

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

The assessments have been designed with new KS2 SATS in mind. 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;

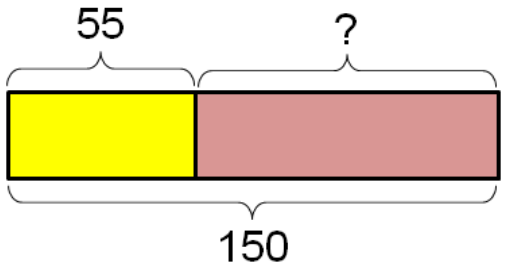
- have number at their heart. A large proportion of time is spent reinforcing number to build competency
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole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

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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
<u>Number – place value</u> 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.		<u>Number – addition and subtraction</u> 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.				<u>Measurement: length and mass</u> 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 =.		<u>Graphs</u> 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	<u>Multiplication and Division</u> 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.		

Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 Week 7 Week 8 Week 9 Week 10 Week 11 Week 12

Term by Term Objectives

Year 2

	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?

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Term by Term Objectives

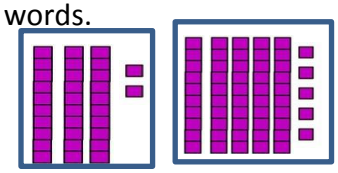
Year 2

<table>
<tr><th></th><th>National Curriculum Statement</th><th colspan="3">All Students</th></tr>
<tr><th></th><th></th><th>Fluency</th><th>Reasoning</th><th>Problem Solving</th></tr>
<tr><td>Place value</td><td>Read and write numbers to at least 100 in numerals and words.</td><td>

Match the numerals to words.

<table>
<tr><td>43</td><td>thirty four</td></tr>
<tr><td>62</td><td>thirty nine</td></tr>
<tr><td>39</td><td>forty three</td></tr>
<tr><td>34</td><td>sixty two</td></tr>
</table>

Write each number represented in numerals and in words.



How much money is there? Write your answer in numerals and words.

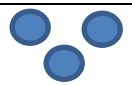

</td><td>

Dan has written the number forty four as 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?

<table>
<tr><th>10s</th><th>1s</th></tr>
<tr><td>  </td><td>  </td></tr>
</table>
How many different numbers can you make with four counters?
Write them in numerals and words.
</td><td>

Match the words to the numerals. Fill in the missing digits.

<table>
<tr><td>Forty four</td><td>3</td><td></td></tr>
<tr><td>Forty six</td><td></td><td>4</td></tr>
<tr><td>Sixty four</td><td>4</td><td></td></tr>
<tr><td>Thirty four</td><td></td><td>6</td></tr>
</table>

Can you find nine numbers in the word search?

f i f t y s i x b t t e
g b n p f l a m t y h r
h j i b o t y u w q i s
c f n t r u d f e l r d
s y e w t n n i n e t y
e t t n y g h j t s y a
v u y v s i w a y k n g
e e t w e n t y f e i h
n d h p v n k e i v n b
t c r a e r u r v o e y
y k e b n a n o e p s o
c u e i g h t y o n e p
</td></tr>
</table>

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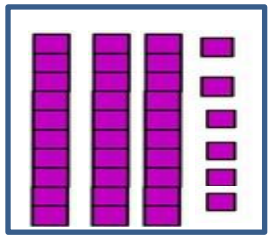
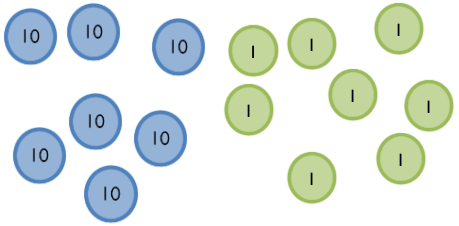
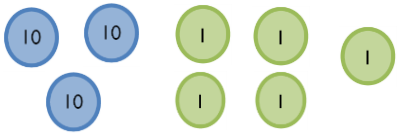
Term by Term Objectives

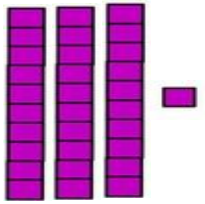
Year 2

<table>
<tr><th></th><th>National Curriculum Statement</th><th colspan="3">All Students</th></tr>
<tr><th></th><th></th><th>Fluency</th><th>Reasoning</th><th>Problem Solving</th></tr>
<tr><td>Place value</td><td>Recognise the place value of each digit in a 2 digit number (tens, ones)</td><td>Use Base 10 or place value counters to make each number and complete each sentence.

• 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.</td><td>• 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?</td><td>• 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><th>Clue</th><th>Guess 1</th><th>Guess 2</th></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><th>Tens</th><th>Ones</th></tr><tr><td>  </td><td></td></tr></table></td></tr>
</table>

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Term by Term Objectives

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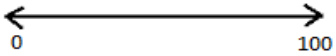
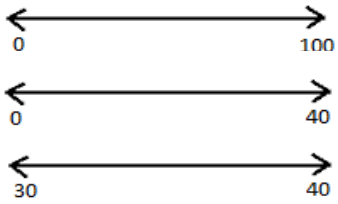
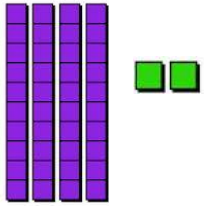
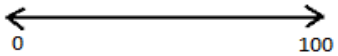
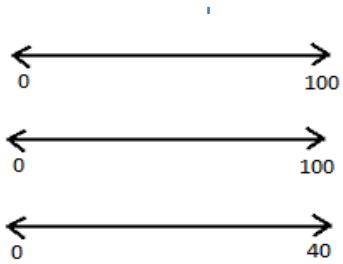
	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Place value	Identify, represent and estimate numbers to 100 using different representations including the number line.	• Place these numbers on the number line. 12, 22, 5, 19  • Use manipulatives to represent the following numbers. 23, 35, 53, 42 • Place the following numbers on the number line. 50, 23, 78  	• Place 36 on each of the number lines below.  • Greg 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.  Convince me	• Match each number line to the clue that describes it.  - 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. • How many different numbers can you make using 4 counters and the place value grid below?  Tens | Ones |

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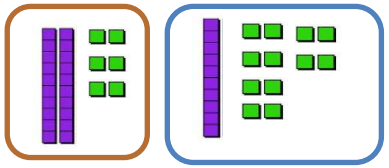
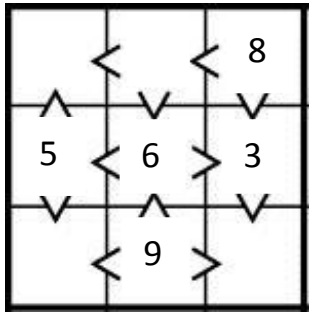
Term by Term Objectives

Year 2

	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 from smallest to largest. 2 tens and 5 ones 27 2 groups of 10 and 8 ones 1 lot of 10 and 19 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 box below? 52 < < 56 The number in the grid is even. Which number must it be?

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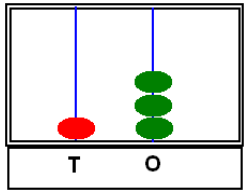
Term by Term Objectives

Year 2

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Place value	Use place value and number facts to solve problems.	• Here is a number line. The number 14 is shown.  Mark the number 7 on the number line. • Jack is making numbers on an abacus. He is using 4 beads to make 2 digit numbers.  Here he has made 14. How many other 2 digit numbers could Jack make using 4 beads on an abacus?	• I am less than 25. My ones digit is double my tens digit. My digits add up to an even number. What am I? • Can you find the chosen number from the grid using the clues below? 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 The digits add up to 7. The tens digit is odd. The number is smaller than 20.	• Here are some digit cards. 4 1 5 Tamsin and Lila each use two of the cards to make a 2 digit number. Tamsin says, **I have made the largest number you can make.** Lila says, **I have made the smallest number you can make.** What is the difference between their numbers?

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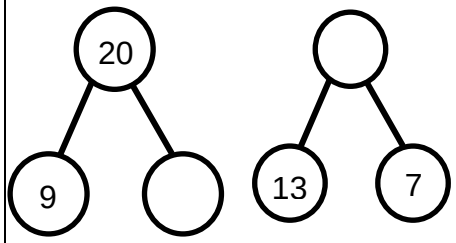
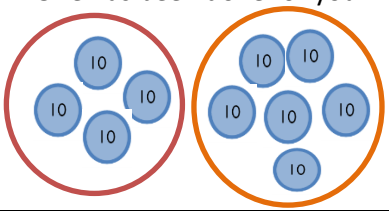
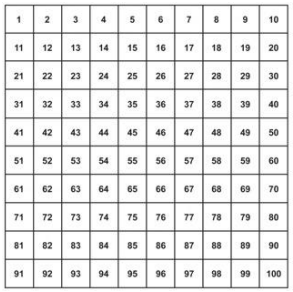
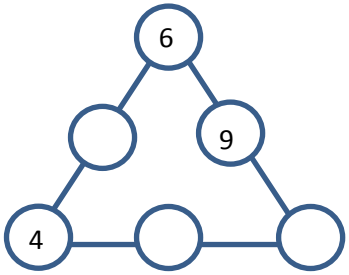
Year 2

	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.	• Complete the part whole models.  • Complete the missing numbers. Use two ten frames to help you. 16 + ☐ = 20 20 = 15 + ☐ 20 - ☐ = 12 • Here are ten tens. How many ways can you split them between the two circles to make different number bonds to 100? One has been done for you.  	• Continue the pattern. 90 = 100 – 10 80 = 100 – 20 How is this pattern the same and different as this one? 9 = 10 – 1 8 = 10 – 2 • Here is a hundred square.  Sam colours in the numbers 1 – 30. Tom colours in the numbers 31 – 60. How many squares are not coloured in? • Kim says ‘ If I know 9 + 1 = 10, I can work out 90 + ____ = 100’ Find the missing number and explain how Kim knows.	• Play a game for 2-4 players. Give each player 2 ten frames. Each child takes turns to roll a die and they place that amount of counters on their ten frame. They must then say how many counters they have altogether and how many more counters they need to make 20. Continue until one player has completed their two ten frames. • Fill in the ○ so the sum of the numbers on each line is 20  • Can you complete the boxes so each row and column adds up to 100? 20 | | 50 30 | 40 | | |

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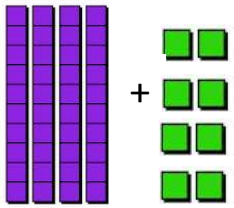
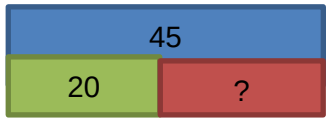
Term by Term Objectives

Year 2

Addition and Subtraction

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
	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. 5 4 2 3 7 8 5 7 3	• 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 weigh 8kg. 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.

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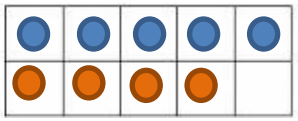
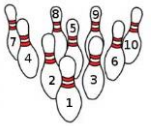
	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	• There are 5 people upstairs on the bus, there are 4 people downstairs. How many altogether? Write a number sentence to show this.  • Ben has 5 buns. He eats 2. How many are left? Write this in a number sentence.  • Write a number sentence to describe the ten frame.  Can you write a different number sentence using the same numbers?	• Write the missing symbols in these number sentences. +, - and = 7 ▢ 2 ▢ 9 8 ▢ 4 ▢ 4 • If you know this, 6 + 3 = 9 What other facts do you know? • Which four number sentences link these 3 numbers? 3 4 7	• Tom is bowling. Which pins must he knock down to score 7? How many ways can you do it?  •  Choose from these number cards to make the following numbers. 5, 6, 7, 8, 9, 10 You can use 2 or 3 number cards. Write your answers in full number sentences. • Three birds each lay an odd number of eggs. They have 9 eggs altogether. Can you think of more than one way to do it? Use cubes to help you solve the problem. Write your answer in a number sentence.

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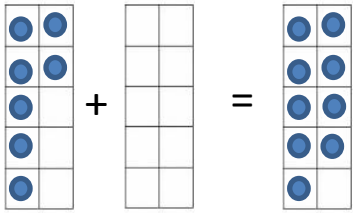
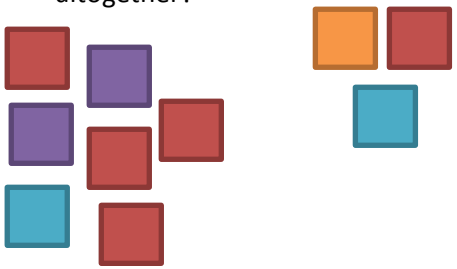
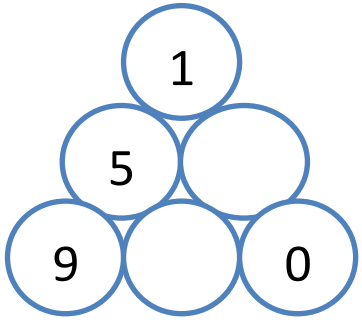
Term by Term Objectives

Year 2

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems.	• Find and make the missing number.  • Jim has 7 cubes. Amy has 3 cubes. How many cubes do they have altogether?  • Lila has 8 stickers. Jack has 6 stickers. How many more stickers does Jack have?	• Complete the number sentence. Use cubes to help you solve the problem. 5 + 2 = 3 + ☐ • How many different ways can you complete the empty boxes? 2 + ☐ = 9 - ☐ • Two numbers have a difference of 6. The larger number is less than 10. What could the two numbers be?	• James has two dice. He rolls them and scores 5 altogether. Which two numbers could he have rolled? Tom scores 9 altogether. Which two numbers could he have rolled? • In the triangle, the number above two numbers is the difference between the numbers. Eg 3 above 7 and 4 Find the missing numbers. Can you do it in more than one way? 

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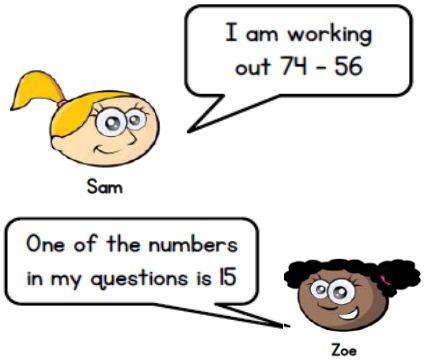
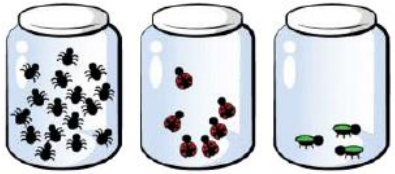
Year 2

	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.	• There are 32 children in Class 2. 17 are girls. How many are boys? • On Monday, Jack swims 12 lengths. On Tuesday he swims 13 lengths. How many does he swim altogether? After Wednesday, Jack has swum 40 lengths in the week. How many lengths did he swim on Wednesday? • The length of the school hall is 21 metres. Tilly runs from one end to the other and then back again. How far has she run?	• Sam and Zoe are working out some subtractions.  Sam's answer is double Zoe's answer. What could Zoe's question be? • Always, sometimes, never. odd number + odd number + odd number = even number Use number cards to make numbers to test out if this statement is true.	• Aron has some balloons. Fiona has 12 more balloons than Aron. In total they have 40 balloons. How many balloons has Fiona got?  • Yasmin has 3 jars of bugs.  There are 7 more bugs in the first jar than the second. There are 3 less bugs in the third jar than the second. There are 40 bugs in total. How many bugs are in the first jar?

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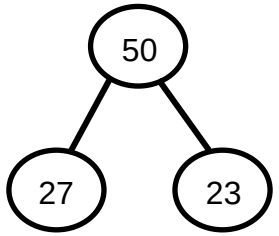
	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.	• Complete the number sentences. $3 + 4 = \square$ $4 + 3 = \square$ $7 - 4 = \square$ $7 - 3 = \square$ $7 = 3 + \square$ $7 = \square + 3$ $7 - \square = 4$ $7 - \square = 3$ $\square + 3 = 7$ $\square + 4 = 7$ $\square - 3 = 4$ $\square - 4 = 3$ • Use = < or > to complete the number sentences. 64 + 13 ☐ 13 + 64 23 – 12 ☐ 12 – 23 • Here is a fact family. 12 + 5 = 17 5 + 12 = 17 17 – 5 = 12 17 – 12 = 5 Use these numbers to create your own fact family. 11 27 16	• 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. • Write the missing symbols + - and = in the number sentence. Can you complete it in two different ways? 40 ☐ 23 ☐ 17 40 ☐ 23 ☐ 17	• Use the number cards below to make as many addition and subtraction sentences as you can. How many can you make? 3 7 4 10 • What could the values of the circle and triangle be? ● + ▲ = 12 12 - ● = ▲ • How many number sentences can you write to describe the part whole model? 

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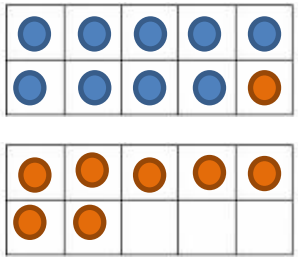
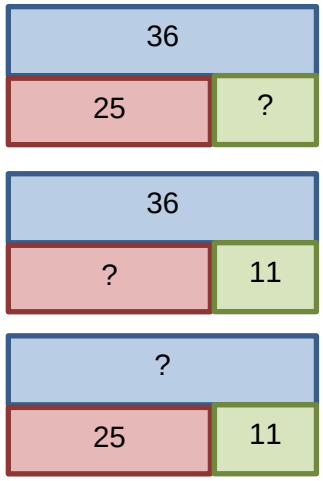
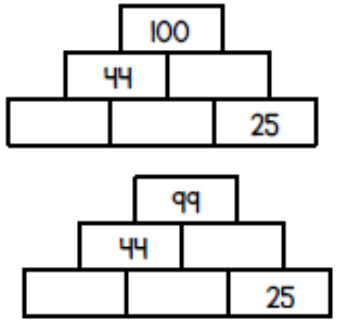
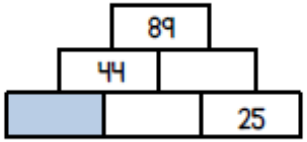
Term by Term Objectives

Year 2

	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.**	• **If I know 34 + 20 = 54, what other addition and subtraction sentences can I write?** • **How many number sentences can you write to describe the ten frames?**  **Make a number on a ten frame using two different coloured counters. Challenge a friend to write number sentences to describe your ten frames.** • **Dan calculates 67 + 8 = 75 Use a subtraction to check his answer.**	• **Write a number sentence to find the value of the ? in each of the bar models.**  **What do you notice?** • **What is the greatest whole number that can fill the box?** $26 + 15 < 60 - \square$	• **In the pyramids the two numbers below add to the make the number above.** **Complete these two pyramids.**  **What is the value of the blue box?**  **How did you get your answer?** • **I think of a number. I take away 7 and add 2. My answer is 15. What is my number?**

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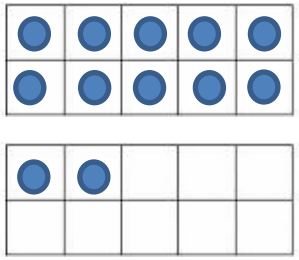
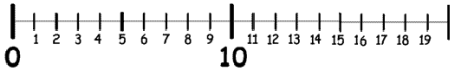
	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Count to twenty, forwards and backwards, beginning with 0 or 1, from any given number.	• Here are two ten frames. Start counting from 10 to see how many counters there are altogether.  How do I know there are at least 10 counters? How do I know where to start counting from? Repeat with different numbers. • Count on from 10 on a number line. When you get to 20 count back.  • Fill in the missing numbers 11 | | 13 | | | 16	• I am going to count to 20. I start at 8. Will I say 11? Convince me. • Spot the mistake: 19, 18, 16, 15, 14 What is wrong with this sequence of numbers? • I count backwards from 20 How many steps does it take me to get to 7?	• Play Get 20. You will need at least two players. Take turns to count on 1 , 2 or 3 numbers starting at 1. Count to 20. Eg Player 1: 1, 2, 3 Player 2 : 4, 5 Player 1 : 6 Player 2 : 7, 8, 9 Keep counting on. Whoever says 20 wins! • Counting backwards, put these numbers in order. 14 16 19 20 17 15 18 • In pairs, one person make a number between 10 and 20 on a ten frame. The other person has to write an addition sentence to describe it. Eg 10 + 2 = 12 Focus on counting on from 10.

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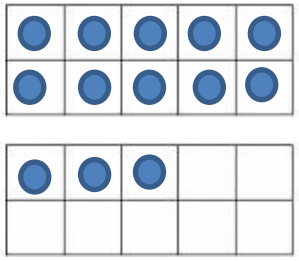
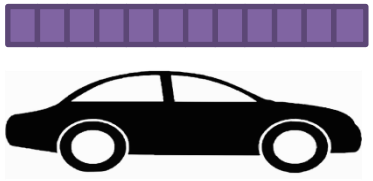
Year 2

<table>
<tr><th></th><th>National Curriculum Statement</th><th colspan="3">All Students</th></tr>
<tr><th></th><th></th><th>Fluency</th><th>Reasoning</th><th>Problem Solving</th></tr>
<tr>
<td>Place Value</td>
<td>Count, read and write numbers from 1 to 20 in numerals and words.</td>
<td>
• Match the numbers to the words.
seventeen — 15
twenty — 12
fifteen — 17
twelve — 20

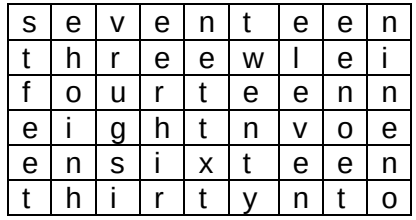
• Write the number shown on the ten frame in numerals and words.

Using your own ten frame show me:

Fourteen, 18, nine, 16,
</td>
<td>
• True or False?
The car is eleven cubes long.


• Dan says;
I can make all the numbers from eleven to twenty using the numbers 1-9

Do you agree?
Explain your reasoning.

• Circle the odd one out and explain what has gone wrong.

11, 12, 13, 14, 51, 16, 17
</td>
<td>
• How many numbers can you find in the word search?

s e v e n t e e n
t h r e e w l e i
f o u r t e e n n
e i g h t n v o e
e n s i x t e e n
t h i r t y n t o

• Match each number to a sentence that describes it.

A number bigger than 10.
An even number.
A number smaller than 15.
16 — 17 — fourteen

• Use two sets of cards. One set with numerals 1 – 20, one set with words 1 – 20.
Play in groups of three, take turns to pick a numeral card and word card. If they match you win the pair, if they don't match put the cards back down.
</td>
</tr>
</table>

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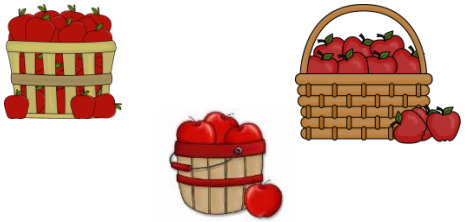
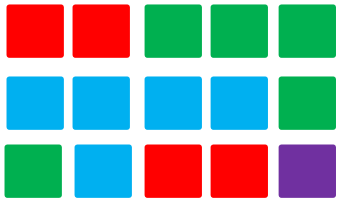
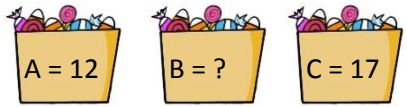
Term by Term Objectives

Year 2

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.	• Using two ten frames, show me a number: a) More than 12 b) Less than 20 c) Equal to 10 + 10 • Complete the sentences. A number is more than 13 but less than 17. The number could be ___. A number is less than 19 but more than 15. The number could be ___. • Look at the baskets of apples. Which has the most? Which has the least? 	• Fill the gaps: ___ is more than 15 but less than 20. ___ is less than eighteen but more than twelve. What numbers could go in the boxes? Explain your answer. • Look at the cubes, are there more of one colour than another? Which colour has the most? If I added two more red cubes which would have the most? Has it changed? Why?  • Tim says '13 is more than twelve but less than eleven'. Is he correct? Prove it.	• Sarah has three bags of sweets.  She says 'Bag A has the least sweets and Bag C has the most.' How many sweets might be in bag B? • Put a number line from 1-20 on the IWB. One child chooses a number. Other children then have 5 guesses to work out what their number is by asking, Is it greater than… is it less than…. Is it more than…etc. • There are three buckets, a red, blue and purple one. 20 balls are shared between the three buckets. There are 3 more balls in the red than the blue. There is one less in the purple than the red. All the buckets have more than 4 balls in them? How many balls are in each bucket? Use cubes to help you solve the problem.

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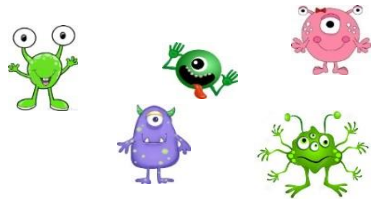
	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Place Value	Count in multiples of twos and fives	• Continue the pattern: Use cubes to build each number. 2, 4, 6, 8, __, __, __, __  5, 10, 15, 20, __, __, __ • Find the missing numbers: | 6 | 8 | | 12 | | 16 | | 30 | 25 | | | 10 | | • How many gloves are there? How many fingers are there? 	• True or False? I count in fives from 10. I say the number 45. Explain your answer. • Ben says 'If I count in 2's from 7 I will say the number 18.' Do you agree? Explain your answer. • What is wrong with this sequence of numbers? | 20 | 18 | 16 | 13 | 12 | 10 | Explain your answer.	• Jenny has made 2 biscuits. She has 20 jelly tots and 8 chocolate buttons to decorate them. She says 'I want to use jelly tots in multiples of 5 and chocolate buttons in multiples of 2.' How many ways could she decorate her biscuits? • Zig and Zag are aliens. Zig eats multiples of 2. Zag eats multiples of 5. Which numbers would they eat? Are there any numbers they would both eat? 2, 5, 8, 10, 15, 20 • Gringlygoos are monsters who have eyes that are multiples of 2 **and** fingers that are multiples of 5. Which monster below is a Gringlygoo? 

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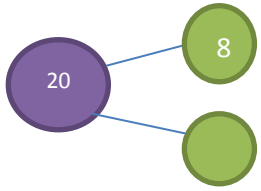
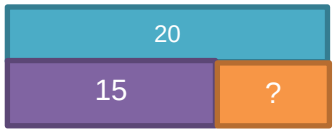
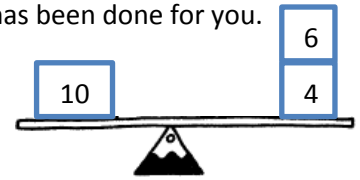
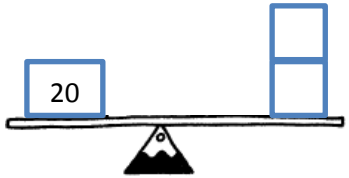
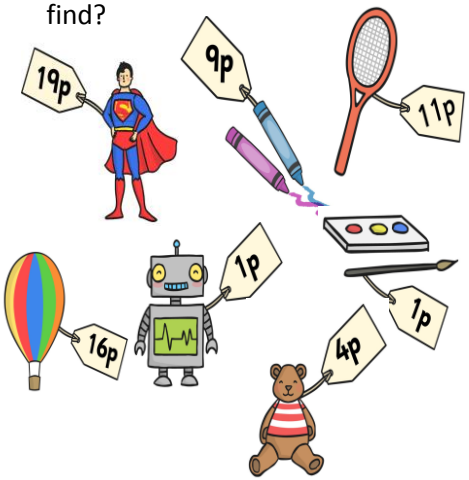
Year 2

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Represent and use number bonds and related subtraction facts within 20.	• Fill in the missing numbers: □ + 11 = 20 18 + □ = 20 20 - □ = 12 • Fill in the missing bonds:  Can you make a diagram linking 17 and 20? What would the missing bond be? • Use the bar model to write 4 number sentences. 2 additions and 2 subtractions. 	• Fill in the missing numbers. 11 + □ = 20 20 - □ = 11 Can you make two more number sentences using the same three numbers? • Continue the pattern 10 + 5=15 9 + 6 =15 Can you make a similar pattern for 20? • The see-saw must balance. One has been done for you.  How many ways can you complete the see-saw? 	• I have 20p to spend, choose 2 toys that you can buy for exactly 20p. How many pairs can you find?  • Find the number bonds to 20 in the word search. They must have a + sign in between the numbers. 1 + 19 6 + 6 2 14 2 16 + 4 0 5 + 1 + 10 + 10 + 6 3 + 3 13 + 7 20 2 + 18 15 + 18 3 + 17 6 8 + 5 + 3 2 + 20 12 5 + 2 8 + 3 + + 5 + 19 + 1 4 0 8

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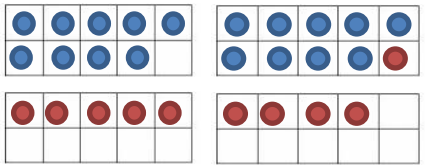
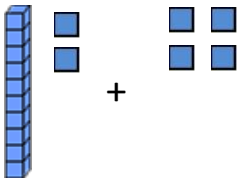
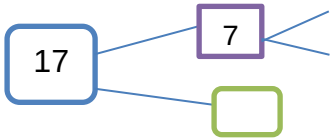
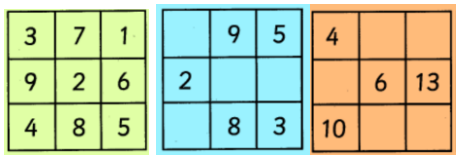
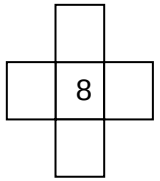
	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Add and subtract one digit and two digit numbers to 20, including zero.	• Use two ten frames to add numbers crossing 10. 9 + 5 = 14  Repeat for other numbers. 6 + 5 = 6 + 7 = Model to always start with the larger number and link to counting on from the larger number in your head. • Complete the addition  • There are 18 people on the bus, 7 get off at the bus stop. How many people are still on the bus? 	• Complete the diagram. Can you extend it?  • What do you notice? 20 – 12 = 8 20 – 8 = 12 Can you make up some other number sentences like this using three numbers? • I'm thinking of a number, I have subtracted 5 and the answer is 8. What number was I thinking of? Explain how you know. • I'm thinking of a number. I have added 11 and the answer is 17. What was my number? Show me how you worked it out.	• The number is the green top left corner, adds to the number in the blue top left corner to make the number in the orange top left corner. Use this rule to complete the orange square.  • Use the same rule to complete the squares below.  • Fill in the blanks so each row and column adds up to 15. Can you use 4 different numbers? How many ways can you do it? 

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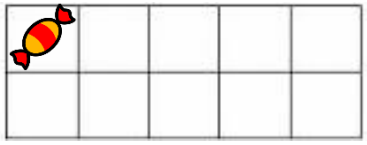
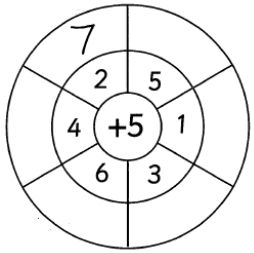
Term by Term Objectives

Year 2

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	• Here is a ladybird. If the ladybird lost 5 spots how many would it have left? Write a number sentence to show your working.  • Tom has 10 stickers, he gets 7 more. Can you write a number sentence to show how many stickers Tom has altogether? • Together, Sam and Matt have 15 sweets. Sam has 8 sweets. How many does Matt have? Write a number sentence to show your working. Use a ten frame to help you. 	• Can you make four number sentences using 14, 5 and 19? • 13 + 5 = 18 Can you make three other number sentences using the same three numbers? • Write the missing symbols in the following number sentences. 17 ☐ 3 ☐ 20 20 ☐ 5 ☐ 15 16 ☐ 20 ☐ 4	• Add the centre number to all the numbers surrounding it to complete the outer ring.  • Write a number story to describe the number sentence 6 + 8 = 14 Here is an example. Jane has 6 balloons. Tom has 8 balloons. Jane and Tom put their balloons together and have 14 balloons altogether. Can you draw a picture for your number story?

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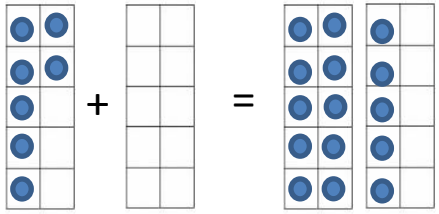
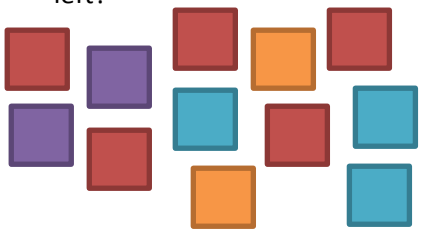
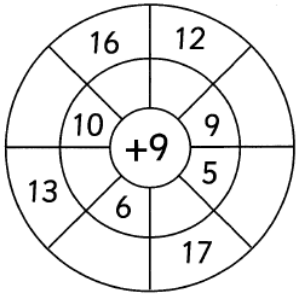
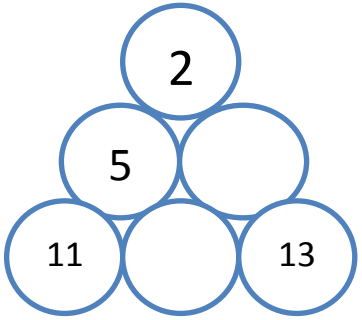
Term by Term Objectives

Year 2

	National Curriculum Statement	All Students		
		Fluency	**Reasoning**	**Problem Solving**
Addition and Subtraction	Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7= ? – 9	• Complete the missing number.  • Dan has 12 cubes. He gives 6 to Amy. How many cubes does he have left?  • Lila has 8 stickers. Jack has 6 stickers. How many stickers do they have altogether?	• Complete the number sentence. Use cubes to help you solve the problem. 5 + 8 = 9 + ☐ • How many different ways can you complete the empty boxes? 5 + ☐ = 12 - ☐ • Sam has some biscuits. He gives 3 to his dad. Now Sam has 13 biscuits. How many did he have to start with? Draw a picture to explain how you know.	• Add the centre number to all the numbers surrounding it to complete the outer ring.  • In the triangle, the number above two numbers is the difference between the numbers. Eg 3 above 7 and 4 Find the missing numbers. Can you do it in more than one way? 

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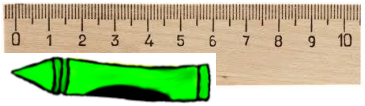
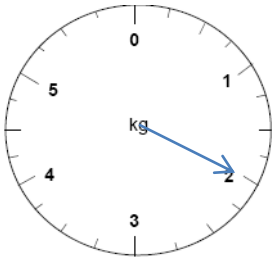
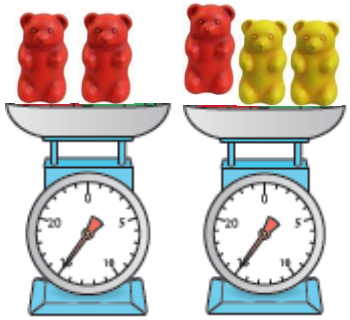
Term by Term Objectives

Year 2

	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.
				• Always, sometimes, never
				The bigger the box, the heavier it is.
				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).
				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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Term by Term Objectives

Year 2

	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 <, > 12m ☐ 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?

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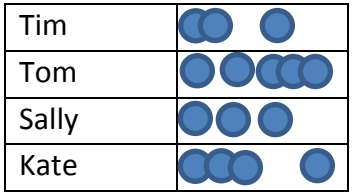
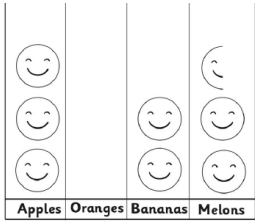
Term by Term Objectives

Year 2

	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?  • Can you use the information in the table to make a tally chart? **Favourite sandwiches / Names** Cheese – Paul, Lucy, Jim, Noah, Hattie Ham – Libby, James, Pat, Kim Chicken – Matt, Naomi Jam – Dan, Susie, Tim, Hannah • 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.  Tim Tom Sally Kate 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? Apples – 12 Oranges – tally marks Bananas – 4 Melons – 5  Apples Oranges Bananas Melons 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?	• 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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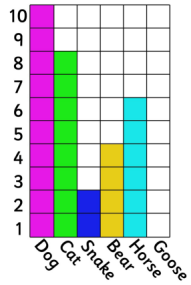
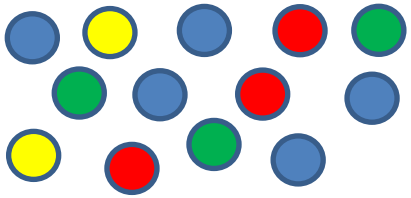
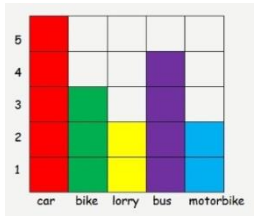
Term by Term Objectives

Year 2

	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?

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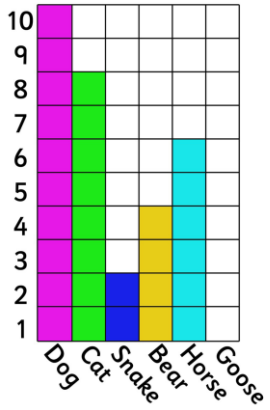
Term by Term Objectives

Year 2

	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 and Lucy have carried out a traffic survey.  Harry says; '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? 

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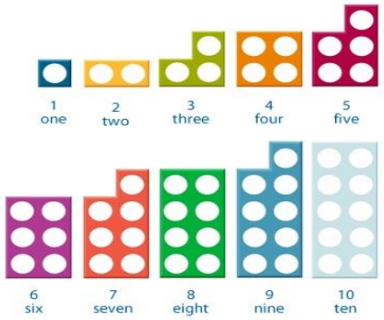
Term by Term Objectives

Year 2

	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.	• Use towers of cubes to 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 • Look at Numicon up to 10  Which numbers are odd? Which are even? What's the same about the even numbers? What's the same about the odd numbers?	• 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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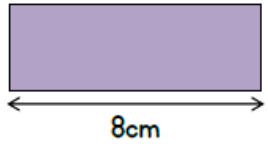
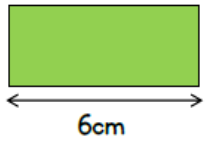
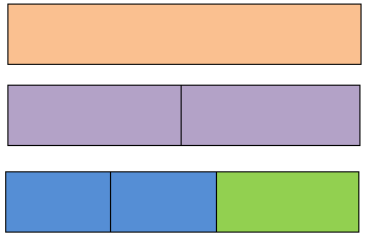
Term by Term Objectives

Year 2

	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. One has been done for you. 5 + 5 + 5+ 5= 5 x 4 2 + 2 + 2 = 10 + 10 = • Can you write 4 number sentences to describe the array? 	• Use the number cards to make multiplication and division sentences. How many numbers up to 20 can you make?  eg 1 x 1 = 1 • Use the picture below to think of multiplication and division sentences using x , ÷ and = 	• Each purple block is 8cm long.  Each green block is 6cm long.  How long is a blue block?  Can you write a multiplication or division sentence for each step of working out you do?

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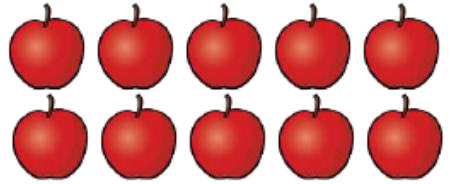
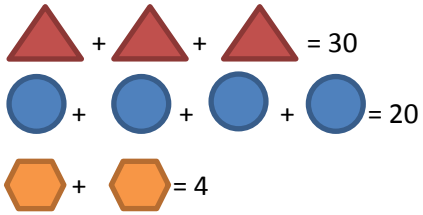
Term by Term Objectives

Year 2

	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.	• Use the pictures to fill in the missing numbers.  groups of = Addition sentence: Multiplication sentence: • I have five 10p coins, exactly enough to buy a chocolate bar.  I need 1 more 10p to buy bottle of pop. How much is a bottle of pop?	• Compare the number sentences using < > or = 3 + 3 + 3 + 4 ☐ 3 x 4 + 4 5 x 4 + 2 + 2 ☐ 5 + 5 + 5 + 5 + 2 + 2 • + + = 12 + = 12 = = • Erik bakes 5 trays of muffins. Each tray contains 6 muffins.  He sells 16 muffins and eats 5 How many muffins does he have left?	• Here are some apples.  Class 2 are asked work out the total. Here are four different ways they do it. Fill in the missing blanks. ….. + ….. = 10 ….. + ….. + ….. + ….. + ….. = 10 …… × …… = 10 …… × …… = 10 • If  Complete the addition 

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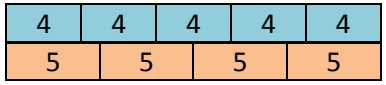
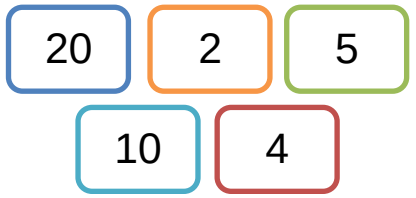
Term by Term Objectives

Year 2

	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?  • Fill in the gaps: □ X 3 = 15 3 x □ = 15 • Here are some number cards. Use them to fill in each number sentence below.  __ 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?  • 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?

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