Year 2 Maths

Counting	
Objectives	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward
Reasoning	**Spot the mistake:** 45,40,35,25 What is wrong with this sequence of numbers?
	True or False? I start at 3 and count in threes. I will say 13?
	What comes next? 41+5=46 46+5=51 51+5=56 ……
Vocabulary	two hundred … one thousand count in twos, threes, fives and so on tally sequence continue rule > greater than < less than Equal to

Comparing numbers	
Objectives	compare and order numbers from 0 up to 100; use <, > and = signs
Reasoning	**Do, then explain** 37 13 73 33 3 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.

Vocabulary	Number Numeral Zero, one, two, three … twenty, teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred None how many …? count, count (up) to, count on (from, to), count back (from, to) forwards, backwards count in ones, twos, fives, tens equal to, equivalent to is the same as more, less, most, least many, odd, even, multiple of, few, pattern, pair

IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS	
Objectives	identify, represent and estimate numbers using different representations, including the number line
Vocabulary	Exact Exactly
Resources / models	Dienes Counters Cubes Number track Number line

READING AND WRITING NUMBERS (including Roman Numerals)	
Objectives	read and write numbers to at least 100 in numerals and in words
Vocabulary	Copy, Sequence, order Ones, tens, digit, the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest, one more, ten more, one less, ten less, equal to, compare, order, size, first, second, third… twentieth, hundredth, last, last but one, before, after, next between, half-way between, above, below
Resources / models	Digit cards Number tracks Number lines Numicon Dienes

UNDERSTANDING PLACE VALUE	
Objectives	Recognise the place value of each digit in a two-digit number (tens, ones)
Reasoning	**Do, then explain** Show the value of the digit 2 in these numbers? 32 27 92 Explain how you know.
	Make up an example Create numbers where the units digit is one less than the tens digit. What is the largest/smallest number?
Vocabulary	Ones / units Tens hundreds one-, two-, or three-digit number place, place value stands for, represents exchange twenty-first, twenty-second…
Resources / models	Digit cards, place value cards, dienes

PROBLEM SOLVING	
Objectives	use place value and number facts to solve problems
Reasoning	Odd one out
Resources / models	

NUMBER BONDS	
Objectives	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
Reasoning	**Continue the pattern** 90 = 100 – 10 80 = 100 – 20 Can you make up a similar pattern starting with the numbers 74, 26 and 100?

	Missing numbers 91 + ☐ = 100 100 - ☐ = 89 What number goes in the missing box?
Vocabulary	Inverse Operation Equal Relationship Pattern
Resources / models	Bar model , number lines Numicon Cuisinaire Bead strings

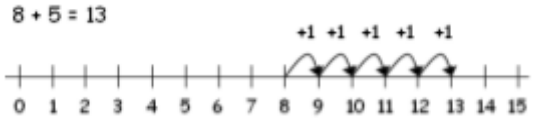
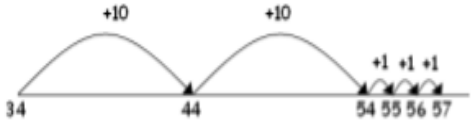
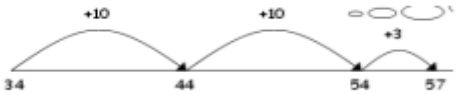
MENTAL CALCULATION	
Objectives	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers
Reasoning	**True or false?** Are these number sentences true or false?73 + 40 = 113 98 – 18 = 70 46 + 77 = 123 92 – 67 = 35 Give your reasons.
	Hard and easy questions Which questions are easy / hard? 23 + 10 = 93 + 10 = 54 + 9 = 54 + 1 = Explain why you think the hard questions are hard?
	Other possibilities ☐ + ☐ + ☐ = 14 What single digit numbers could go in the boxes? How many different ways can you do this?
Vocabulary	One more Ten more One less Ten less *one hundred more*

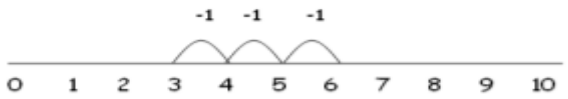
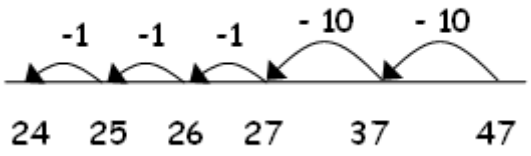
	one hundred less *number facts* *tens boundary* *bridge*
Resources / models	Numberline Numicon Dienes Counters Bead strings
Objective	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
Reasoning	**Fact families** Which four number sentences link these numbers? 100, 67, 33
	What else do you know? If you know this: 87 = 100 – 13 what other facts do you know?
	Missing symbols Write the missing symbols (+ - =) in these number sentences: 80 ☐ 20 ☐ 100 100 ☐ 70 ☐ 30 87 ☐ 13 ☐ 100
Vocabulary	commutative

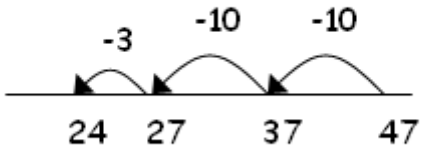
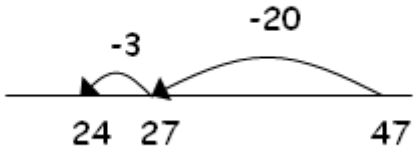
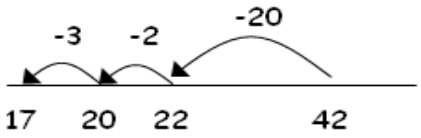
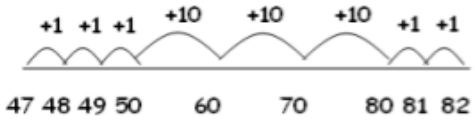
WRITTEN METHODS	
Objectives	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers
Reasoning	**Convince me** What digits could go in the boxes? 7 ☐ - ☐ 2 = 46 Try to find all of the possible answers.

<table>
<tr><td></td><td colspan="2">How do you know you have got them all?
Convince me</td></tr>
<tr><td></td><td colspan="2">Missing numbers
Fill in the missing numbers (using a range of practical resources to support)
12 + ☐ = 19
20 - ☐ = 3</td></tr>
<tr><td>Vocabulary</td><td colspan="2">Vocabulary

add, more, plus, and, make, altogether, total, equal to,, equals, double, most, count on, number line

sum, tens, ones, partition, addition, column ,tens boundary</td></tr>
<tr><td rowspan="4">Resources / models</td><td> 
</td><td>Children then begin to use number lines and are encouraged to count on from the largest number.</td></tr>
<tr><td>34 + 23 = 57
 
</td><td>Children then move on to drawing their own empty number line. Children count on in tens and units (ones).</td></tr>
<tr><td>34 + 23 = 57
 
</td><td>Then helping children to become more efficient by adding the units in one jump (by using the known fact 4 + 3 = 7).</td></tr>
<tr><td>34 + 23 = 57
 
</td><td>Followed by adding the tens in one jump and the units in one jump.</td></tr>
</table>

	37 + 15 = 52  	Children can use known number facts to bridge through 10 e.g. 7 + 3 = 10 So 5 – 3 = 2 So there are 2 left to count on. This links to how we can add up in our heads.
	34 + 23 = 57 30 + 4 20 + 3 50 + 7 = 57	Children will move onto columnar addition. They will initially be supported in this by using practical equipment
Vocabulary	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is__? difference, count on, strategy, partition, tens, units	
Subtraction Resources / models	6 – 3 = ☐  	Children then move on to using number lines. The number line helps to show that we are looking for the difference between 6 and 3.
	47 -23 = 34 I have 47cm of ribbon. I cut off 23cm. How much ribbon do I have left?  	Children move on from counting back in ones. To counting back in tens and ones.

		Then to counting back in tens, and the ones in one chunk.
		Then subtracting the tens in one jump and the ones in one jump.
	42 – 25 = 17 	When children know 3 + 2 = 5, they can use this to help them bridge through 10.
	82 – 47 = 35 There were 82 seats on the train and 47 people got on the train. How many more people could sit on the train? 	Counting on. If the numbers in a calculation are close together or near to a multiple of 10 children can use the counting on method. Starting from the smallest number and counting up to the largest number. Finding out how many are in between.

INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS	
Objectives	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
Reasoning	**Making an estimate** Which of these number sentences have the answer that is between 50 and 60 74 - 13 55 + 17 87 – 34
	Always, sometimes, never Is it always, sometimes or never true that if you add three numbers less than 10 the answer will be an odd number
Vocabulary	Inverse, inverse relationship, number sentence,

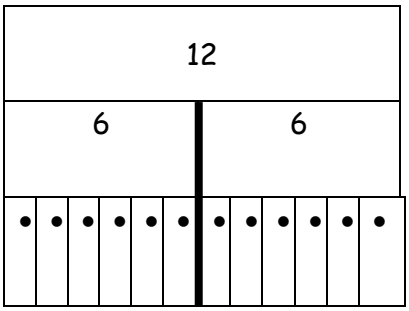
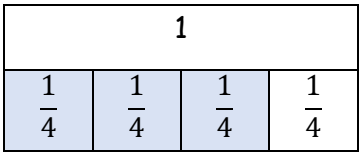
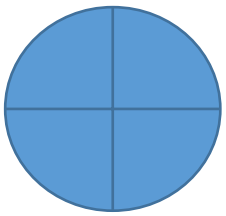
PROBLEM SOLVING	
Objectives	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods
	solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)
Resources / models	See written methods too

MULTIPLICATION & DIVISION FACTS	
Objectives	*count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward* (copied from Number and Place Value)
	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
Reasoning	**Missing numbers** 10 = 5 x ☐ What number could be written in the box?
	Making links I have 30p in my pocket in 5p coins. How many coins do I have?
	Use known facts to derive the inverse
Vocabulary	Repeated addition, repeated subtraction Odd, Even Multiplication facts, Division facts

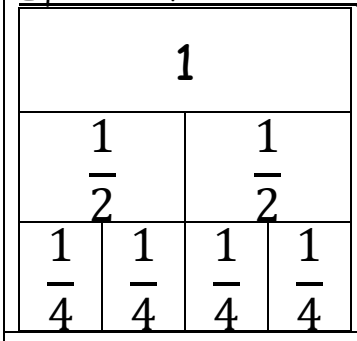
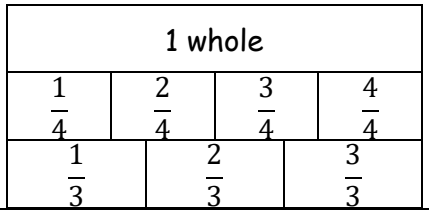
MULTIPLICATION & DIVISION Mental calculations	
Objectives	*show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot*
Reasoning	**Making links** Write the multiplication number sentences to describe this array X X X X X X What do you notice? Write the division sentences.
Vocabulary	array Commutative
Resources/ Models	Counters Cubes Squared paper

<table>
<tr><th colspan="2">COUNTING IN FRACTIONAL STEPS</th></tr>
<tr><td>Objectives</td><td>Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)</td></tr>
<tr><td rowspan="2">Reasoning</td><td>Spot the mistake
7, 7 ½ , 8, 9, 10
8 ½, 8, 7, 6 ½,
… and correct it</td></tr>
<tr><td>What comes next?
5 ½, 6 ½ , 7 ½ , …., ….
9 ½, 9, 8 ½, ……, …..</td></tr>
<tr><td>Resources / models</td><td><u>Counting fractions</u>
<table>
<tr><td colspan="4">1</td><td colspan="4">2</td><td></td></tr>
<tr><td>$\frac{1}{4}$</td><td>$\frac{2}{4}$</td><td>$\frac{3}{4}$</td><td>$\frac{4}{4}$</td><td>$\frac{5}{4}$</td><td>$\frac{6}{4}$</td><td>$\frac{7}{4}$</td><td>$\frac{8}{4}$</td><td>$\frac{9}{4}$</td></tr>
<tr><td>$\frac{1}{4}$</td><td>$\frac{2}{4}$</td><td>$\frac{3}{4}$</td><td>1</td><td>$1\frac{1}{4}$</td><td>$1\frac{2}{4}$</td><td>$1\frac{3}{4}$</td><td>2</td><td>$2\frac{1}{4}$</td></tr>
</table></td></tr>
</table>

<table>
<tr><th colspan="2">RECOGNISING FRACTIONS</th></tr>
<tr><td>Objectives</td><td>recognise, find, name and write fractions $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ of a length, shape, set of objects or quantity</td></tr>
<tr><td rowspan="2">Reasoning</td><td>What do you notice?
¼ of 4 = 1
¼ of 8 = 2
¼ of 12 = 3
Continue the pattern
What do you notice?</td></tr>
<tr><td>True or false?
Half of 20cm = 5cm
¾ of 12cm = 9cm</td></tr>
<tr><td>Vocabulary</td><td>Equivalent fraction
Mixed number
Numerator, denominator
Two halves
Two quarters
Three quarters
One third
Two thirds
One of three equal parts</td></tr>
</table>

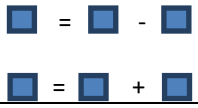
Resources / models	<u>Fractions of amounts</u> $\frac{1}{2}$ of 12  <u>Fractions of shape</u> $\frac{3}{4}$ of a shape  

DECIMALS AND PERCENTAGES	
Objectives	write simple fractions e.g. $^{1}/_{2}$ of 6 = 3 and recognise the equivalence of $^{2}/_{4}$ and $^{1}/_{2}$.
Reasoning	**Odd one out**. Which is the odd one out in this trio: $\frac{1}{2}$ 2/4 $\frac{1}{4}$ Why?
	What do you notice? Find $\frac{1}{2}$ of 8. Find 2/4 of 8

	What do you notice?
	Ordering Put these fractions in the correct order, starting with the smallest. $\frac{1}{2}$ $\frac{1}{4}$ 1/3
Vocabulary	<u>Equivalent fractions using a fraction wall</u> 
	<u>Reasoning</u> Is $\frac{2}{4}$ bigger then $\frac{1}{3}$? 

EQUATIONS	
Objectives	*recognise and use the inverse relationship between addition and subtraction and use this to check calculations and **missing number** problems.* (copied from Addition and Subtraction)
	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)
Reasoning	**Connected Calculations** Put the numbers 19, 15 and 4 in the boxes to make the number sentences correct. □ = □ - □ □ = □ + □
Vocabulary	

SEQUENCES	
Objectives	*compare and sequence intervals of time* (copied from Measurement)
	order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and direction)

Reasoning	**Connected Calculations** Put the numbers 19, 15 and 4 in the boxes to make the number sentences correct. 
Vocabulary	

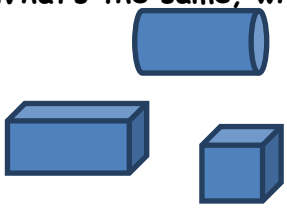
COMPARING AND ESTIMATING	
Objectives	compare and order lengths, mass, volume/capacity and record the results using >, < and =
Reasoning	**Top tips** Put these measurements in order starting with the smallest. 75 grammes 85 grammes 100 grammes Explain your thinking
	Position the symbols Place the correct symbol between the measurements > or < **36cm ☐ 63cm** **130ml ☐ 103ml** Explain your thinking
Vocabulary	gram (singular) grammes (plural) kilogram kilogrammes litre millilitre centimetre millimetre metre
Objective	compare and sequence intervals of time
Reasoning	**Undoing** The film finishes two hours after it starts. It finishes at 4.30. What time did it start? Draw the clock at the start and the finish of the film.
	Explain thinking The time is 3:15pm. Kate says that in two hours she will be at her football game which starts at 4:15. Is Kate right? Explain why.

Vocabulary	Hour Minute second

MEASURING and CALCULATING	
Objectives	choose and use appropriate standard units to estimate and measure **length/height** in any direction (m/cm); **mass** (kg/g); **temperature** (°C); **capacity** (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
	recognise and use symbols for pounds **(£) and pence (p)**; combine amounts to make a particular value
	find different combinations of coins that equal the same amounts of money
	solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
Reasonin	**Application** (Practical) Draw two lines whose lengths differ by 4cm.
	Possibilities How many different ways can you make 63p using only 20p, 10p and 1p coins?
Vocabulary	standard units, estimate, measure, **length, height** (m/cm); **mass** (kg/g); **temperature** (°C); **capacity** (litres/ml) to the nearest appropriate unit

TELLING THE TIME	
Objectives	tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.
	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)
Reasoning	**Working backwards** Draw hands on the clock faces to show when break started and when it finished 15 minutes later at 10:35.
	The answer is …. 3 hours What is the question?
	What do you notice? What do you notice? 1 hour = 60 minutes ½ hour = 30 minutes ¼ hour = 15 minutes

	Write down some more time facts like these.
Vocabulary	O'clock, half past, quarter past, quarter to 5 past, 10 past, 20 past, 25 past 25 to, 20 to, 10 to, 5 to Earlier, later

IDENTIFYING SHAPES AND THIER PROPERTIES	
Objectives	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
	identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
	identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
Reasoning	**What's the same, what's different?** Pick up and look at these 3-D shapes.  Do they all have straight edges and flat faces? What is the same and what is different about these shapes?
	Visualising In your head picture a rectangle that is twice as long as it is wide. What could its measurements be?
Vocabulary	Rectangular, Circular, Triangular, Pentagon, Hexagon, Octagon, Cube, cuboid, sphere, cone, cylinder, triangular prism, square based pyramid, tetrahedron

COMPARING AND CLASSIFYING	
Objective	compare and sort common 2-D and 3-D shapes and everyday objects.
Reasoning	**Always, sometimes, never** Is it always, sometimes or nerver true that when you fold a square in half you get a rectangle.
	Other possibilities Can you find shapes that can go with the set with this label? "Have straight sides and all sides are the same length"

Vocabulary	Circle, triangle, square, rectangle, Rectangular, Circular, Triangular, Pentagon, Hexagon, Octagon, Cube, cuboid, sphere, cone, cylinder, triangular prism, square based pyramid, tetrahedron

POSITION, DIRECTION AND MOVEMENT	
Objectives	use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)
Reasoning	**Working backwards** If I face forwards and turn three quarter turns clockwise then a quarter turn anti-clockwise describe my finishing position.
Vocabulary	Straight line, rotation, right angle, quarter turn, half turn, three quarter turn, clockwise, anticlockwise.

PATTERN	
Objectives	order and arrange combinations of mathematical objects in patterns and sequences
Reasoning	**What comes next?**  **Explain why**
Vocabulary	Pattern, sequence, explain, what comes next, order

INTERPRETING, CONSTRUCTING AND PRESENTING DATA	
Objectives	interpret and construct simple pictograms, tally charts, block diagrams and simple tables
	ask and 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
Reasoning	**True or false?** (Looking at a simple pictogram) "More people travel to work in a car than on a bicycle". **Is this true or false?** **Convince me.** Make up you own 'true/false' statement about the pictogram

	What's the same, what's different? Pupils identify similarities and differences between different representations and explain them to each other
	Create a questions Pupils ask (and answer) questions about different statistical representations using key vocabulary relevant to the objectives.
Vocabulary	Tally graph, block graph, pictogram represent label, title most popular, most common least popular, least common
Resources / models	