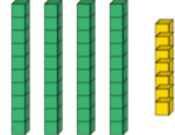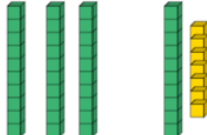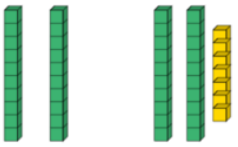# Mathematics Medium Term Planning: Summer term Y2/3.

Week.	Mathematical aspect	Non-negotiable end points Year 2.	Non-negotiable end points Year 3	Curriculum Statements. Year 2.	Curriculum Statements. Year 3.
1.	Number and place value: Read, write, and order and round two- and three- digit numbers	Knows that numbers can be partitioned and rearranged.	Knows the standard form for writing numbers up to 1000. Knows how to write numbers in words.	●To count in steps of 2, 3, and 5 from 0, and count in tens from any number, forward or backward. ● To recognise the place value of each digit in a two-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words. ● To use place value and number facts to solve problems.	● To recognise the place value of each digit in a three-digit number (hundreds, tens, ones). ● To compare and order numbers up to 1000. ● To read and write numbers up to 1000 in numerals and in words.
	400 + 90 + 2 492 Four hundred and ninety two 500 + 40 + 7 547 Five hundred and forty seven 200 + 4 204 Two hundred and four	52 = 5 tens and 2 ones. Rearrange 52 in other ways.	67 tens ones Hide All 60 7 67 is 60 tens and 7 ones. Is that true?	47 = 4 tens 7 ones 47 = 30 + 17 63 60 3 47 = 20 + 27	Write the numbers in standard form 300 + 60 + 3 400 + 6 900 + 30 + 1 Now write the numbers in words. Which of these are not correct? 457 Four hundred and seventy five 600 + 8 Six hundred and eighty 719 Seven hundred and nineteen
2.	Addition and subtraction: using recall of addition and subtraction facts and mental/written calculation strategies	Knows number bonds to and within 20 and to 100. Knows efficient strategies for adding and subtracting for up to two 2 digit numbers mentally and with recording appropriate to the strategy chosen.	Knows the compact algorithms for addition and subtraction including regrouping and exchanging.	To solve problems with addition and subtraction: ● Applying their increasing knowledge of mental and written methods. ● To recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100. ● To add and subtract 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. ● To show that addition can be done in any order (commutative) and subtraction cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	●To add and subtract numbers mentally, including: ● a three-digit number and ones ● a three-digit number and tens ● a three-digit number and hundreds. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. ● To add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction. ● To estimate the answer to a calculation and use inverse operations to check answers.

Columnar addition

625
+ 48
673
1

Regroup the 10

Columnar subtraction

6 14 1
7̶8̶4̶
- 2 8 6
4 6 8

Exchange from tens to ones, hundreds to tens

65

tens	ones
60	5

65 + 35 = 100

10

90

90 + 10 = 100

Bonds to 90
10 + 80
20 + 70
30 + 60
40 + 50

Bonds to 10
1 + 9
2 + 8
3 + 7
4 + 6
5 + 5

87

Amy says you add 23 to 87 to equal 100.

Joe says you add 13 to 87 to equal 100.

Explain who is correct.

Calculate with the best method
74 − 17 =
58 + 12 =
96 + 7 =
38 − 29 =

812	115	736	515	617
164	380	111	953	528
957	517	150	569	772
342	408	456	581	567
770	388	40	417	167

Choose two numbers that you can:
- add together in your head
- add using a written method
- subtract in your head
- subtract using a written method

| 3. | Multiplication and division: using times tables facts and inverse to solve problems | Knows the odds and evens in the times tables for 2,5 and 10. | Knows how to represent problems including *four times as long, twice as high etc* | ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers.
● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication, division and equals signs.
● To recognise and use the inverse relationship between multiplication and division in calculations.
● To show that multiplication of two numbers can be done in any order (commutative) and division for one number by another cannot.
● To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. | ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
● To explain the effect of multiplying by 10 and multiples of 10
● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods.
● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which *n* objects are connected to *m* objects |

Everyone in the Patel family likes toast for their breakfast, with either jam or marmalade.
Two people say their favourite spread is jam.
There are four more marmalade-lovers than jam-lovers.
How many people are in the family altogether?

jam	jam				
marmalade	marmalade	marmalade	marmalade	marmalade	marmalade

8 in the family altogether.

What is the same/different about multiples of 5 and 10?

Convince me that all multiples of 2 are even.

At the aquarium and reptile house. The *Wild and Wonderful* TV camera crew filmed the octopus tank and the lizard enclosure.

The crew said they have 12 heads and 76 legs on camera. How many creatures are octopi and how many are lizards?

There are 36 angel fish at the aquarium.
How many clown fish are there?

| 4 & 5 | Multiplication and division: commutativity and associativity. Written methods for x and ÷ Y3. | Knows tables facts for 2, 5 & 10s Knows how to derive corresponding divisions. Know the commutative law for multiplication. | Knows tables facts for 2,3,4,5,8,10s. Knows how to derive corresponding divisions. Know the commutative and associative laws for multiplication. Knows how to multiply/divide two-digit numbers by one-digit | ● To show that multiplication of two numbers can be done in any order (commutative) and division for one number by another cannot.
● To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. | To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. |

		numbers using expanded or formal written methods of short multiplication and division.			

Associativity

(2 × 3) × 4 = 2 × (3 × 4)

(2×3)×4
6×4=24

2×(3×4)
2×12=24

Commutative law

9	12	15	18	21
12	16	20	24	28
15	20	25	30	35

4 x 5 = 20
5 x 4 = 20

Convince me that 5 arrays of 6 would be equal to 6 arrays of 5.

How would you do it?
4 x 6 x 3
3 x 10 x 8
2 x 8 x 4

What is the missing value?
4 x ● x 6 = 240
8 x 2 x ● = 64
● x 3 x 5 = 45

How many ways can you find to multiply three numbers and make 120?
E.g. 5 x 12 x 2

×	30	5
8	240	40

35
x 8
40
240
280

Short division
72 ÷ 3 =

2 4
3 | 7 ¹2

0	2	1
3	5	4

☐ X ☐ = ☐☐

Use four of the digit cards to make a true number sentence. How many different ways can you find?

×	20	4
6	120	24

24
x 6
24
120
144

24
x 6
144
₂

Use this model to calculate
72 x 4
64 x 3

96
90 + 6
60 + 36

16
6(9₃6

Use this model to calculate
72 ÷ 3
84 ÷ 6

6.	Fractions: finding fractions of quantities, shapes and sets of objects, equivalence. Addition and subtraction within 1, finding tenths.	Knows that fractions of amounts can be calculated using multiplication and division facts.	Knows how to connect tenths to place value, decimal measures and to division by 10. Knows unit and non-unit fractions as numbers on the number line and how to represent equivalence.	To recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4. ● To write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of two quarters and one half.	To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. ● To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. ● To compare and order unit fractions, and fractions with the same denominators. ● To add and subtract fractions with the same denominator within one whole (5/7 + 1/7 = 6/7). ● To solve problems that involve all of the above.

1 ten = ten ones

1

$\frac{1}{10}$

$\frac{1}{1}$

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

$\frac{1}{2}$ is shaded
$\frac{1}{4}$ is shaded yellow

$\frac{1}{2}$		$\frac{1}{2}$
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

Complete
16 ÷ 2 =
16 ÷ 4 =

$\frac{1}{3}$
15 ÷ 3 = ☐

Odd one out

0   4   8   12   16

Convince me that
$\frac{5}{10} = \frac{1}{2}$

$\frac{1}{2}$		$\frac{1}{2}$

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

Do both of these of these models show $\frac{4}{10}$?

7.	Measurement: Solving problems in length, mass, capacity. Using fractions Y2.	Knows how to calculate halves and quarters in the context of length, mass and capacity.	Knows how to add and subtract in the context of measures.	To choose and use appropriate standard units to estimate and measure length/ height in any direction; mass; temperature; volume and capacity to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels. ● To compare and order lengths, mass, volume/capacity and record the results using >, < and =.	● To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).

The thermometer reads 40°

The temperature drops by a half. Show this on the scale.

The thermometer reads 10°

The temperature drops by a half. Show this on the scale.

A small bottle of washing liquid is one tenth of the volume of a large bottle. The difference in volume between the small and the large bottles is 360 ml.

What is the volume of the large bottle?

360 ÷ 9 = 40
40 + 360 = 400

360ml

Measure lengths in cm. Find half of these measurements;
24 cm
18 cm
46 cm

Show 200ml on the scale. What if half is poured out, how much would now be in the jug? What about a quarter?

Anna eats half of this pie. It did have a mass of 800g. What does it weigh now?

Amy has 400ml of juice in a jug. She pours two equal glasses of juice from the jug. She now has 50ml left on the jug. How much juice is in one glass?

Sue has a piece of wood for making a shelf. It measures 157 cm in length. She cuts off 25cm first and then a further 150mm to make it fit. How long is Sue's shelf?

8.	Geometry: properties of shape. Compare and sort using properties and describing shapes.	Knows the mathematical names and properties of 2d and 3d shapes. Knows how to sort and match shapes.	Knows how to describe and classify shapes using mathematical properties.	To identify and describe the properties of 2D shapes, including the number of sides and symmetry in a vertical line. ● To identify and describe the properties of 3D shapes including the number of edges, vertices and faces. ● To identify 2D shapes on the surface of 3D shapes, for example circle on a cylinder and a triangle on a pyramid. ● To compare and sort common 2D and 3D shapes and everyday objects.	To recognise angles as a property of shape and associate angles with turning. To identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. To identify horizontal, vertical, perpendicular and parallel lines in relation to other lines.

3d Shape	Shapes of faces	vertices	edges
Triangular prism	2 triangles 3 rectangles	6	9
Cylinder	2 circles 1 curved surface	0	2
Cuboid	6 rectangles	8	12
Square based pyramid	1 square 4 triangles	5	8

2d Shape		Sides	vertices	Vertical symmetry
Triangle		3 straight sides	3	Yes
Circle		I curved side	0	Yes
Hexagon		6 straight sides	6	Yes
Square		4 straight sides	4	Yes

Shape		Number of sides	Number of right angles	Pairs of parallel lines
Square		4	4	2
Rectangle		4	4	2
Triangle		3	1	0
Pentagon		5	0	0
Hexagon		6	0	0

Shape		Faces	Edges	Vertices
Cube		6	12	8
Cuboid		6	12	8
Cone		1	0	1
Cylinder		2	0	0

Shape		Sides	vertices	Vertical symmetry
Triangle		3 straight sides		Yes
		5 straight sides		Yes
Hexagon		6 straight sides		
Rectangle		4 straight sides	4	

Find different ways to sort these shapes

Cube
Cylinder
Cone
Triangular Prism

Always, sometimes, never

A square is also a rectangle.

A triangle always has a right angle.

A pentagon can have right angles.

Draw triangles on the dotty paper. How many different triangles can you find?

Build three different 3d shapes. What is the same and what is different?

9.	Geometry: Position, direction and right angles	Knows how to describe position and movement using right angles for quarter turns.	Knows how to recognise right angles as 90° turns, clockwise, anticlockwise.	To use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) and movement in a straight line.	To identify horizontal, vertical, perpendicular and parallel lines in relation to other lines.
10.	Calculation: using mental & written calculation strategies Problem solving in all four operations.	Knows the operation to use and chooses the efficient method. Knows facts to 100 using multiples of 10. Knows table facts for 2,5 and 10.	Knows how to calculate with columnar methods regrouping the tens and exchanging in subtraction. Knows how to partition numbers when multiplying in a grid/short method.	● To recognise the place value of each digit in a 2-digit number (tens, ones). ● To use place value and number facts to solve problems. ● Applying their increasing knowledge of mental and written methods. Solve one/two-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems Solve one/two-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which *n* objects are connected to *m* objects.
	Ben and Sita collect animal stickers. They have the same amount. Ben gives away 15 stickers. Sita gives away 32 stickers. How many more stickers does Ben have than Sita now? 	A garden centre sells 8 packs of garden fencing in one day. Each pack has 32 metres of fencing . How many metre lengths were sold in total? 30 x 8 = 240 2 x 8 = 16 32 x 8 = 256 256m		Sita buys these two items for 30p. Ben buys these three items for 42p. What is the cost of a ruler?	 What is the cost of a strawberry donut?
11.	Measurement: time 12-hour, 24-hour clocks. Money Y2	Knows the number of minutes in an hour and hours in a day. Knows how to pay for items with the exact money or with change to be given.	Knows the time in 12-hour and 24-hour representations. Knows the number of seconds in a minute and the number of days in each month, year and leap year.	To compare and sequence intervals of time. ● To 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. ● To recognise and use the symbols for pounds and pence; combine amounts to make a particular value ● To find different combinations of coins that equal the same amounts of money	● To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. ● To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight. ● To know the number of seconds in a minute and the number of days in each month, year and leap year.

				● To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	● To compare durations of events, for example to calculate the time taken by particular events or tasks

Hours / Minutes table

Hours	Minutes
24 hours in a day	60 minutes in an hour

7 o'clock
7:00 pm
19:00

Half past 1
1:30 am
01:30

Ten past 2
10:10 pm
22:10
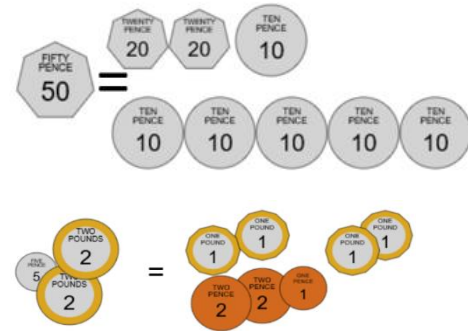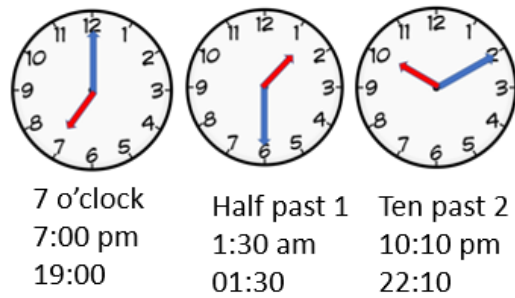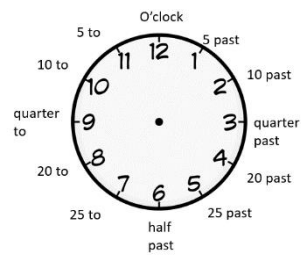
The station clock reads 5 to 12. The next train leaves in 10 minutes. What time will the clock show then?

Pete says that the clock chimes every hour each day. How many times does the clock chime?

Convince me that there are 60 minutes in an hour.

The half price sale

What if I can only pay with a 50p coin. What will my change be in the least amount of coins?

Which coins will now pay exactly for each cake?

Show these times on an analogue clock. Write them in am or pm.

Put these times in order from midnight.

17:45   03: 18   23:07   06:24

| 12.	Statistics: solving problems by asking and answering simple questions	Knows how data is represented and read. Knows how to interpret data.	Knows how to present data in many contexts. Knows how to interpret and analyse data.	To interpret and construct simple pictograms, tally charts, block diagrams and simple tables. To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. To ask and answer questions about totalling and compare categorical data.	To interpret and present data using bar charts, pictograms and tables. ● To solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.

Transport used to get to work
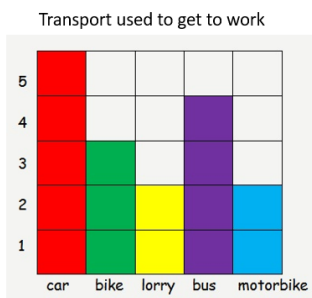
How many more people travel to work by car than by lorry?

What is the difference between the number of people who travel by bus and by bike?

The bar graph shows how many visitors from Thursday to Monday at the campsite.
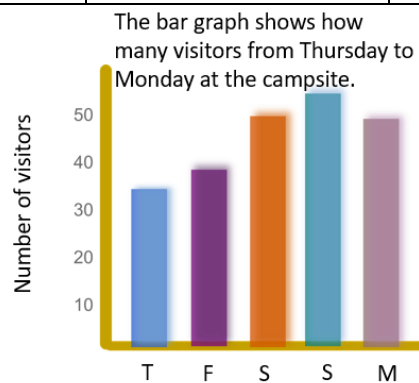
Favourite sandwich	Children in Y2
Cheese	II
Ham	IIII
Chicken	III
Peanut butter	LHI

There are still 5 children to add to the tally in Y2
2 more like chicken
1 more each for the other sandwiches.

Complete the bar chart

Chess	Film
9	12
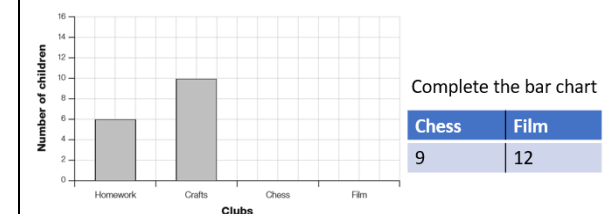
How many fewer children go to homework club than crafts?