Finlay Community School

Maths

Our Whole School Intent

At Finlay, we intend to teach a curriculum that is engaging, relevant and purposeful to all learners. We ensure that our curriculum allows all pupils to achieve and succeed in line with National expectations. We aim for our curriculum to allow all children to develop their knowledge, skills and understanding in line with the National Curriculum (Key Stage 1 and 2) and the Early Years Framework (Pre-School and Reception)

In addition to this, we have identified five core values which are integral to the learning experiences we provide for all of our children. We therefore aspire for our curriculum to allow pupils at Finlay Community School to leave with a **SMILE:** Social Awareness, Mental and Physical Health and Wellbeing, Independence, Life Skills and Excellent Aspirations

1. Maths Intent:

At Finlay, we intend for our children to be equipped with a uniquely powerful set of tools, including mathematical fluency, logical reasoning and problem solving. It is integral to all aspects of life and we endeavour to ensure that children develop an enthusiastic and determined attitude towards Mathematics that will stay with them throughout their life. In Mathematics, we prepare children by, where possible, providing experiential opportunities, encouraging a love of learning and enthusiasm for Maths. Children progress effectively, learning skills and knowledge in a considered and planned order, making links with previous learning at an age appropriate level. This allows children to achieve a depth of understanding and master concepts and mathematical understanding, which can then be applied in other contexts. We intend for children to be rounded Mathematicians and to be able to interpret the numerical world around them. In line with our whole school curriculum intent, a structured, cohesive approach to teaching Maths, allows our children to develop basic life skills that allow them to achieve and succeed in later life.

This document shows the progression in knowledge from Year 1-6 and the coverage in relation to each term.

Example Timetable

	L1	L2	Assembly	Break	L3	L4	Lunch	L5	L6	Story
Mon	Daily Maths	Maths						Keep up intervention Pre teaching	Keep up intervention Pre teaching	
Tues	Daily Maths	Maths						Keep up intervention Pre teaching	Keep up intervention Pre teaching	
Wed	Daily Maths	Maths						Keep up intervention Pre teaching	Keep up intervention Pre teaching	
Thurs	Daily Maths	Maths						Keep up intervention Pre teaching	Keep up intervention Pre teaching	
Fri	Maths							Keep up intervention Pre teaching	Keep up intervention Pre teaching	

Daily Maths

As well as a Maths Lesson, each class carries out a Daily Maths session.

In EYFS and Key Stage 1, we have enrolled in the NCETM Mastering Number course. We have appointed three lead teachers to undertake the training sessions and then implement this in their year group. The sessions are taught daily and are focussed on developing children's early number sense, so they are confident by the time they lead Key Stage 1. Lots of the activities are practical or completed on whiteboards, so staff keep a whole class book of evidence of their sessions. Staff are actively encouraged to take photos and videos and upload to Seesaw, then printing off the post with a QR code for their book.

In Key Stage 2, this consists of a set of arithmetic questions which are answered, marked and recorded daily. This gives the children the opportunity to work on these skills regularly and not just in week blocks. This allows them the opportunity for

lots of repetition in learning and to support them with their natural recall and retention. The questions include opportunity for consolidate of concepts taught in maths lessons too in order to provide deliberate practice. This is a timed session and once children have completed a certain amount of questions, the amount of questions increase. Teachers are able to clearly see where the gaps are and these are either addressed at the end of each session or with a TA in the afternoon. Children are also often extended with some reasoning questions as an application alongside their set fluency questions.

Times Tables Rock Stars

In either paper form or online, *Times Tables Rock Stars* is a carefully sequenced programme of daily *times tables* practice. Each week concentrates on a different *times table*, with a recommended consolidation week for rehearsing the *tables* that have recently been practised every third week or so.

We have a whole school TTRS Display to encourage healthy competition among the classes. We enter competitions and tournaments with other schools in the country and give out certificates to children and classes for taking part. TTRS allows the children to be able to challenge themselves and to beat their score and times.

The expectation is that children play on TTRS at least three times a week as part of our homework requirement. We also have a TTRS Champion of the week certificate that is given out in celebration assembly. TTRS tends to begin when the children are in Year 2, unless required in Year 1.

Numbots

We also have a subscription to Numbots, which is used in EYFS and KS1 predominantly. It can also be used as a targeted programme for pupils in KS2 if required. Numbots is about every child achieving the 'triple win' of understanding, recall and fluency in mental addition and subtraction, so that they can move from counting to calculating. Numbots develops the skills of subitising, number bonds, addition and subtraction.

Can Do Maths - A Maths Curriculum based around the mastery approach to teaching and learning

Teaching for Understanding

Teaching that focuses on developing secure and deep understanding, including the use of practical resources and iconic representations supports the learning and memorisation of mathematical concepts. The teaching of 'rules' and 'tricks' with no understanding and the use of only 'standard' examples contribute to learners feeling they 'can't do' maths.

Belief

All learners need to believe they can succeed and also believe that their teacher, and parents, believe they can succeed. Adopting a growth mindset is at the heart of a 'Can Do Maths' approach including the use of 'yet' and knowing that making mistakes is an essential part of learning. Parents, teachers and the media thinking it's acceptable to use phrases such as 'Don't worry, I can't do maths', 'Maths is too hard', etc all contribute to learners feeling that they 'can't do' maths.

Hard Work

Success comes from hard work. It's as simple as that! Mathematics can be difficult at times but success can be achieved through hard work. Check out the thoughts of Adam Peaty and of Marcus Ellis and Chris Langridge from the Rio Olympics.

Five Essentials for a CanDoMaths Classroom

C

Convince

Convincing, justifying and explaining to others.
The answer is only the beginning.

A

Apply

Applying to different contexts, solving problems and making connections.

N

Not

Understanding what it's 'not' as well as what it is.

D

Draw

Drawing the concept to 'see' structures and relationships.

O

Ok

It's OK not to be able to do it.....yet.
It's OK to make mistakes.

CanDoMathsClub Array of Awesomeness

Lead

- Curriculum Intent
- Curriculum Progression Strand by Strand*
- Road Maps for all Years
- Termly Week By Week Plans
- Subject Leadership Online Support

Plan+Teach

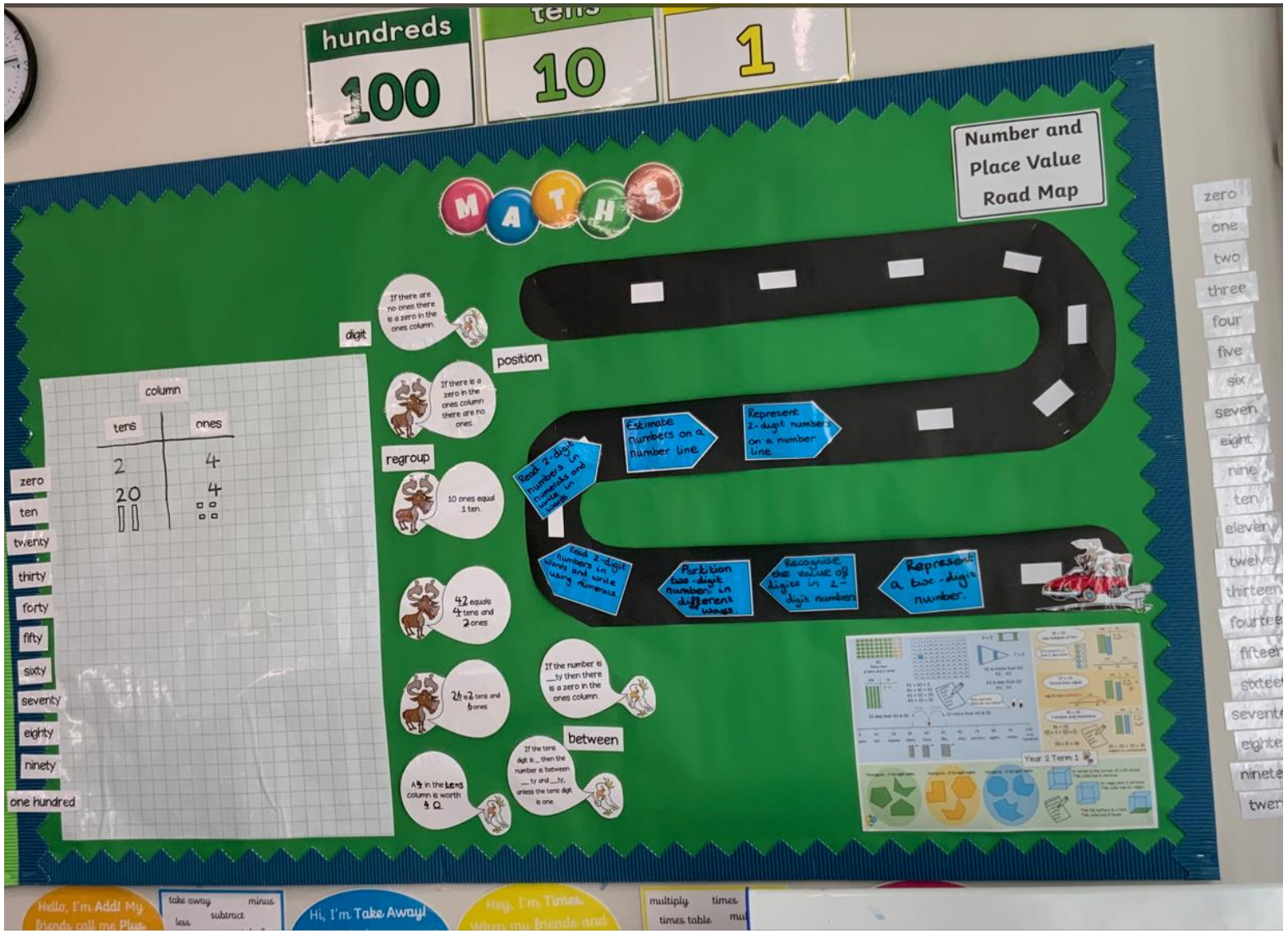
- Lesson By Lesson Manageable Steps
- Maths Mastery Matrix
- Vocabulary & Stem Sentences*
- Deliberate Practice*
- Subject Expertise Videos

Assess

- Unit Quizzes*
- Termly Remember It Tests
- Question Level Analysis
- Keep Up Workouts*
- Knowledge Organisers*

*New for 2020/21

Displays and Classroom Learning Environments



Each class maths display should include:

Road map

Small steps

Overarching concept

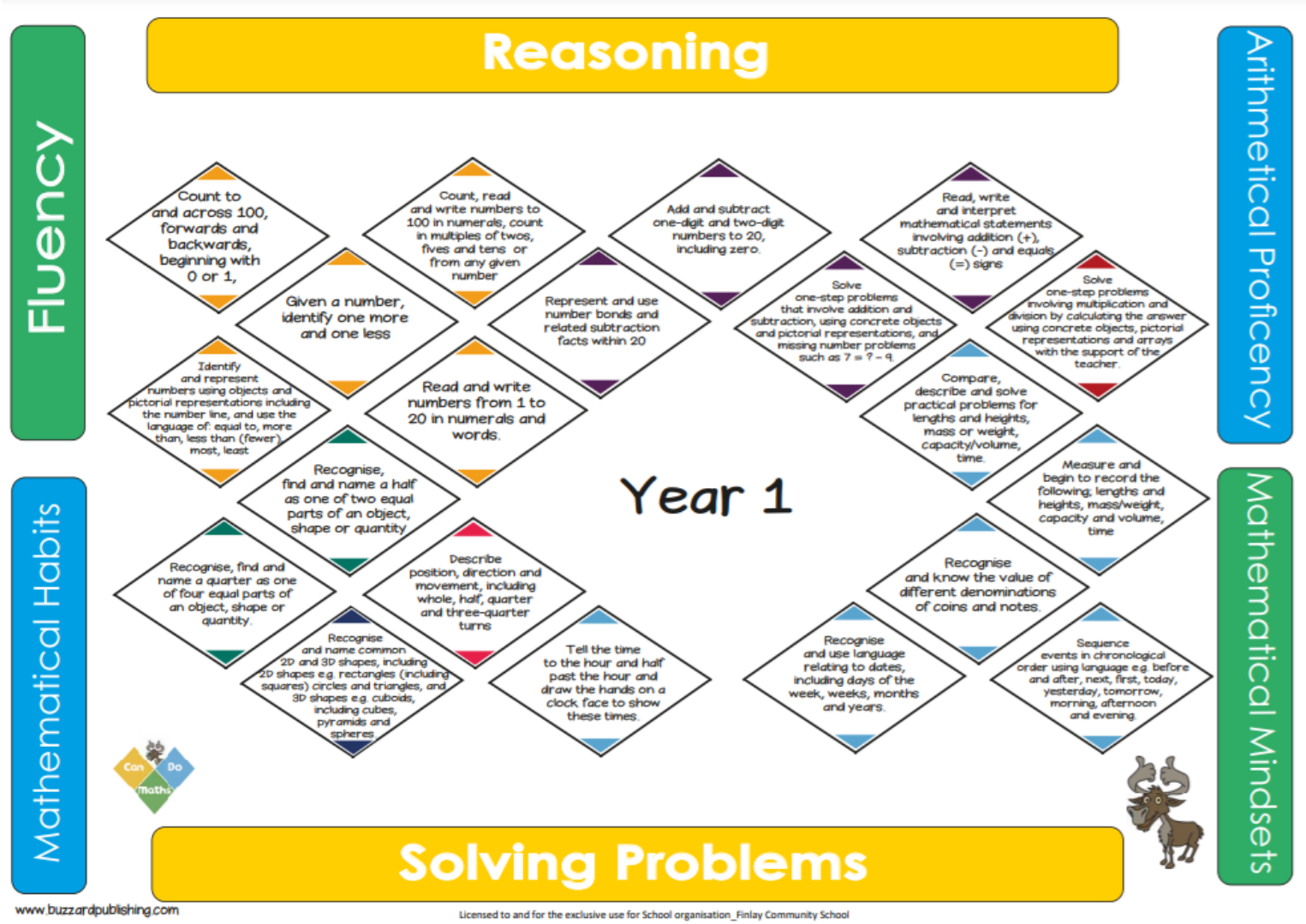
Knowledge organiser

Vocabulary

Modelled examples

The National Curriculum

The Can Do Maths Curriculum allows full coverage of the National Curriculum. In the 3 iii's bundle, there is a poster displaying all of the National Curriculum objectives. These objectives are sequenced over the year, but then also broken down into smaller steps to allow children to dig deep to fully understand.



Sequencing of National Curriculum Objectives

At Finlay, we follow Can Do Maths, supplemented with White Rose resources. We follow the logical sequence of objectives in each year group, which are then broken down into smaller steps.

EYFS (Please see EYFS intent guide for the progression of skills for pre-school and Reception and milestones for each term)					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Choral counting Group counting Continuous provision counting Counting 5 Counting 6 Counting 7 Developing spatial reasoning including position and shape	Counting 7 Counting 8 Counting 9 Counting 10 Developing spatial reasoning – including length, weight, capacity and volume	Composition of 2, 3 and 4 Calculating within 4 Composition of 5 Calculating within 5 Composition of 6 Calculating with 6 Patterns and relationships including repeated patterns, shapes and colours	Comparing numbers Composition of 7 Calculating within 7 Composition of 8 Calculating within 8 Patterns and relationships: times, events, making connections	Composition of 9 Calculating within 9 Composition of 10 Calculating within 10 Double numbers Developing spatial reasoning	Distributing equally Securing and using number facts Patterns and relationships

Year 1					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Count to and across 100, forwards and backwards, beginning with 0 or 1 Identify and represent numbers using objects and pictorial representations including the number line, and use the language of	Count to and across 100, forwards and backwards, beginning with 0 or 1 Identify and represent numbers using objects and pictorial representations including the number line, and use the language of	Represent and use number bonds and related subtraction facts within 20. Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations,	Represent and use number bonds and related subtraction facts within 20. Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations,	Add and subtract one digit and two digit numbers to 20 including zero. Compare, describe and solve practical problems for lengths and heights, mass or weight, capacity/volume and time.	Solve one step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Compare, describe and solve practical problems

equal to, more than, less than (fewer), most, least Given a number, identify one more and one less Read and write numbers from 0 to 20 in numerals and words Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens, or from any given number Represent and use number bonds and related subtraction facts within 20. Add and subtract one and two digit numbers to 20 including zero Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. Read, write and interpret mathematical statements involving addition, subtraction and equals signs. Recognise and name common 2D and 3D	equal to, more than, less than (fewer), most, least Given a number, identify one more and one less Read and write numbers from 0 to 20 in numerals and words Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens, or from any given number Represent and use number bonds and related subtraction facts within 20. Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. Read, write and interpret mathematical statements involving addition, subtraction and equals signs. Recognise and name common 2D and 3D shapes, including rectangles, squares, circles and triangles	and missing number problems. Read, write and interpret mathematical statements involving addition, subtraction and equals signs. Compare, describe and solve practical problems for lengths and heights, mass or weight, capacity, volume and time. Measure and begin to record the following: lengths and heights, mass/weight, capacity, volume and time.	and missing number problems. Read, write and interpret mathematical statements involving addition, subtraction and equals signs. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Describe position, direction and movement, including whole, half, quarter and three quarter turns.	Measure and begin to record the following: lengths and heights, mass/weight, capacity and volume and time. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. Recognise and use the language relating to dates, including days of the week, months and years. Sequence events in chronological order using language e.g. before and after, next, first,, today, yesterday, tomorrow, morning, afternoon and evening.	for lengths and heights, mass or weight, capacity/volume and time. Measure and begin to record the following: lengths and heights, mass/weight, capacity and volume and time. Recognise and know the value of different denominations of coins and notes.

shapes, including rectangles, squares, circles and triangles and cuboids, cubes, pyramids and spheres.	and cuboids, cubes, pyramids and spheres.				

Year 2					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Count in tens from any number, forward and backward Compare and order numbers from 0 to 100; use <,> and = signs. Identify, represent and estimate numbers using different representations, including the number line. Read and write numbers to at least 100 in numerals and words Recognise the place value of each digit in a two digit number (tens, ones) Use place value and number facts to solve problems Recall and use addition and subtraction facts to 20 fluently, and	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts to 100. 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. Show that 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	Count in steps of 2, 3 and 5 from 0 Calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication, division and equals signs. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	Write simple fractions e.g. ½ of 6 = 3 and recognise the equivalence of two quarters and one half. Recognise, find, name and write fractions: 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity. Find different combinations of coins that equal the same amount of money Compare and sequence intervals of time. Know the number of minutes in an hour and the number of hours in a day. Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Ask and answer questions about totalling and comparing categorical data. Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Compare and order volume/capacity and record the results using >, < and = Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm), mass (kg/g), temperature (degrees Celsius) and capacity (ml/l) to the nearest appropriate unit, using	

derive and use related facts to 100. 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. Show that 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	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 Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication, division and equals signs. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm), mass (kg/g), temperature (degrees Celsius) and capacity (ml/l) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using <, > and =	Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. Tell and write the time to give minutes, including quarter past/to the hour, and draw the hands on a clock face to show these times.	rulers, scales, thermometers and measuring vessels.	

Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.	Identify 2D shapes on the surface of 3D shapes (for example a circle on a cylinder and a triangle on a pyramid) Compare and sort common 2D and 3D shapes and everyday objects. Order and arrange combinations of mathematical objects in patterns and sequences. 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.				

Year 3					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Counting from 0 in multiples of 50 and 100; finding 10 or 100 more or less than a given number. Compare and order numbers up to 1000 Identify, represent and estimate numbers using different representations. Recognise the place value of each digit in a three-digit number (hundreds, tens and ones) Solve number problems and practical problems involving these ideas. Read and write numbers up to 1000 in numerals and in words Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one digit numbers or quantities by 10 Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	Add and subtract numbers mentally including: a three digit number and ones; a three digit number and tens; a three digit number and hundreds. Estimate the answer to a calculation and use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two digit numbers x 1 digit numbers, using mental progressing to formal written methods. Recall and use multiplication and division facts for the 3,4 and 8 times tables. Solve problems including missing	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Estimate the answer to a calculation and use inverse operations to check answers. Add and subtract numbers with up to three digits, using the formal written method of columnar addition and subtraction. Recognise and use fractions as numbers; unit fractions and non-unit fractions with small denominators. Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions and fractions with the same denominators Solve problems that involve all of the above (Fractions)	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two digit numbers x 1 digit numbers, using mental progressing to formal written methods. Recall and use multiplication and division facts for the 3, 4 and 8 times tables. Solve problems including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects Add and subtract amounts of money to give change, using both £ and p in practical contexts.	Recognise and write fractions of a discrete set of objects; unit fractions and non-unit fractions with small denominators. Add and subtract fractions with the same denominator within one whole. Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Compare durations of events Tell and write the time from an analogue clock, including using Roman Numerals from I to XII and 12 and 24 hour clocks. Estimate and read time with increasing accuracy to the nearest minute, record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, morning, afternoon, noon, midnight, am and pm.	Solve one step and two step questions using information presented in scaled bar charts and pictograms and tables. Interpret and present data using bar charts, pictograms and tables. Identify right angles, recognise that two right angles make a half turn, three right angles make three quarters of a turn and four right angles make a complete turn; identify whether angles are greater than or less than a right angle. Recognise angles as a property of a shape of a description of a turn. Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) Measure the perimeter of simple 2D shapes.

Draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them.	number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.			Know the number of seconds in a minute and the number of days in each month, year and leap year.	

Year 4					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Count in multiples of 6, 7, 9, 25 and 1000 Recognise the place value of each digit in a four digit number Count backwards through zero to include negative numbers Find 1000 more or less than a given number Read Roman numerals to 100 and know that, over time, the numeral system has changed to include the concept of zero and place value Round any number to the nearest 10, 100 or 1000. Identify, represent and estimate numbers using different representations. Order and compare numbers beyond 1000. Solve number and practical problems that involve all of the above with increasing large positive numbers. Compare and classify geometric shapes,	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. Estimate and use inverse operations to check answers to a calculation. Add and subtract numbers with up to 4 digits using formal written methods of columnar addition and subtraction where appropriate. Use place value, known and derived facts to multiply and divide mentally; including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recall multiplication and division facts for multiplication up to 12 x 12.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. Estimate and use inverse operations to check answers to a calculation. Add and subtract numbers with up to 4 digits using formal written methods of columnar addition and subtraction where appropriate. Recognise and use factor pairs and commutatively in mental calculation Use place value, known and derived facts to multiply and divide mentally; including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recall multiplication and division facts for multiplication up to 12 x 12.	Multiply two-digit and three-digit numbers by one-digit number using formal written layout. Use place value, known and derived facts to multiply and divide mentally; including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems, such as n objects are connected to m objects. Identify acute and obtuse angles and compare and order angles up to two right angles by size.	Add and subtract fractions with the same denominator Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions, where the answer is a whole number Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by a ten. Recognise and show, using diagrams, families of common equivalent fractions. Compare numbers with the same number of decimal places up to two decimal places Round decimals with one decimal place to the nearest whole number Find the effect of dividing a one or two-digit number by 10 and 100, identifying the	Solve simple measure and money problems involving fractions and decimals to two decimal places. Interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs. Solve comparison, sum and different problems using information presented in bar charts, pictograms, tables and other graphs. Plot specified points and draw sides to complete a polygon. Describe movements between positions as translations of a given unit to the left/ right and up/down. Describe positions on a 2D grid as coordinates in the first quadrant Estimate, compare and calculate different measures including money in pounds and pence.

including quadrilaterals and triangles, based on their properties and sizes. Identify lines of symmetry in 2D shapes presented in different orientations. Complete a simple symmetric figure with respect to a specific line of symmetry.				value of the digits in the answer as ones, tenths and hundredths. Recognise and write decimal equivalents to ¼, ½ and ¾. Recognise and write decimal equivalents of any number of tenths or hundredths. Convert between different units of measure (e.g. kilometre to metre; hour to minute)	Measure and calculate the perimeter of a rectilinear shape, including squares, in cm and m. Read, write and convert time between analogue and digital 12 and 24 hour clocks. Solve problems involving converting from hours to minutes; minutes to seconds; years to months and weeks to days. Convert between different units of measure (e.g. km to m; hour to minute) Find the area of rectilinear shapes by counting squares.

Year 5					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit. Count forward and backwards in steps of powers of 10 for any given number up to 1,000,000 Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. Read Roman numerals to 1000 and recognise years written in Roman numerals. Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. Solve number problems and practical problems that involve all of the above. Read and write decimal numbers as fractions. Read, write, order and compare numbers with	Solve problems involving number up to three decimal places Add and subtract numbers mentally with increasingly large numbers Add and subtract whole numbers with more than four digits, including using formal written methods Use rounding to check answers to calculations and determine in the contact of a problem, levels of accuracy. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime numbers) Identify multiples and factors, including finding factor pairs of a number, and common factors of two numbers.	Identify, describe and represent the position of a shape, following a reflection or translation, using the appropriate language, and know that the shape has not changed. Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving ratio. Multiply and divide numbers mentally drawing upon known facts. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Read and write decimal numbers as fractions. Solve problems involving number up to three decimal places. Solve problems which require knowing percentage and decimal equivalents of ½, ¼. 1/5, 2/5 and 4/5 and those fractions with a denominator of a multiple of 10 or 25. Recognise the percent symbol and understand that per cent relates to number of parts per 100, and write percentages as a fraction with denominator 100, and as a decimal. Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Compare and order fractions, whose denominators are all multiples of the same number.	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as mixed numbers. Add and subtract fractions with the same denominator and denominators that are multiples of the same number.	Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information in tables, including timetables. Distinguish between regular and irregular polygons based on reasoning about equal sides and actions Draw given angles and measure them in degrees Use the properties of a rectangle to deduce related facts and find missing lengths and angles.

up to three decimal places. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Solve problems involving number up to three decimal places. Round decimals with two decimal places to the nearest whole number and to one decimal place Identify 3D shapes including cubes and other cuboids, from 2D representations. .	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Solve problems involving multiplication and division using their knowledge of factors, multiples, squares and cubes. Establish whether a number up to 100 is prime and recall prime numbers up to 19 Recognise and use square numbers and cube numbers, and the notation for squared and cubed.	Multiply numbers up to 4 digits by a one or two digit number using formal written method, including long multiplication for two digit numbers.	Convert between different units of metric methods. Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Use all four operations to solve problems involving measure (e.g. length, mass, volume, money_ using decimal notation, including scaling.		Identify angles at a point and one whole turn, angles at a point on a straight line, and ½ a turn, other multiples of 90 degrees. Know angles are measured in degrees, estimate and compare acute, obtuse and reflex angles. Calculate and compare the area of rectangles, including squares, and including using standard units, square cm, and squared meters, and estimate the area of irregular shapes. Solve problems involving converting between units of time.

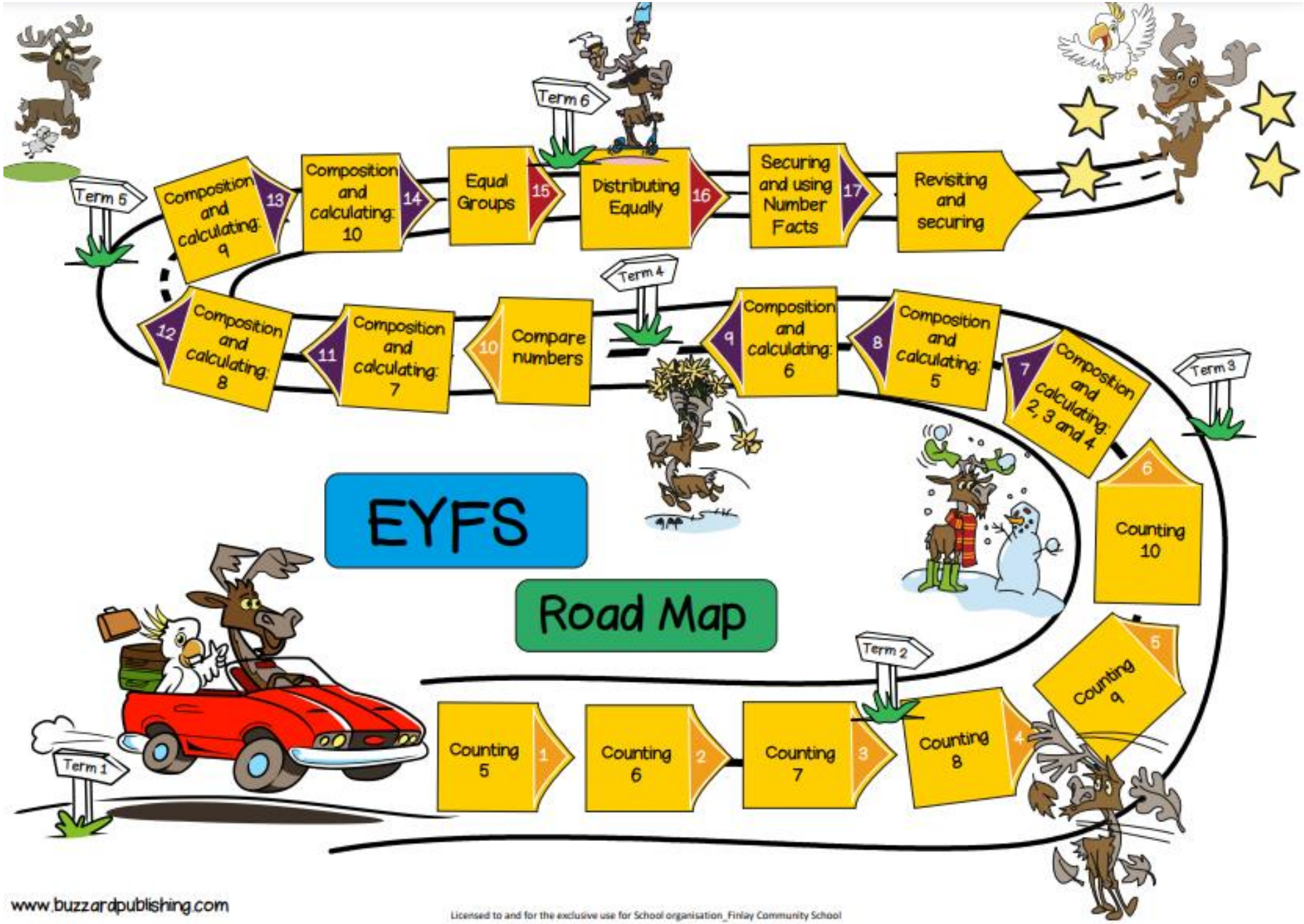
					Estimate volume (e.g. using 1cm cubed blocks to build cuboids, including cubes, and capacity).

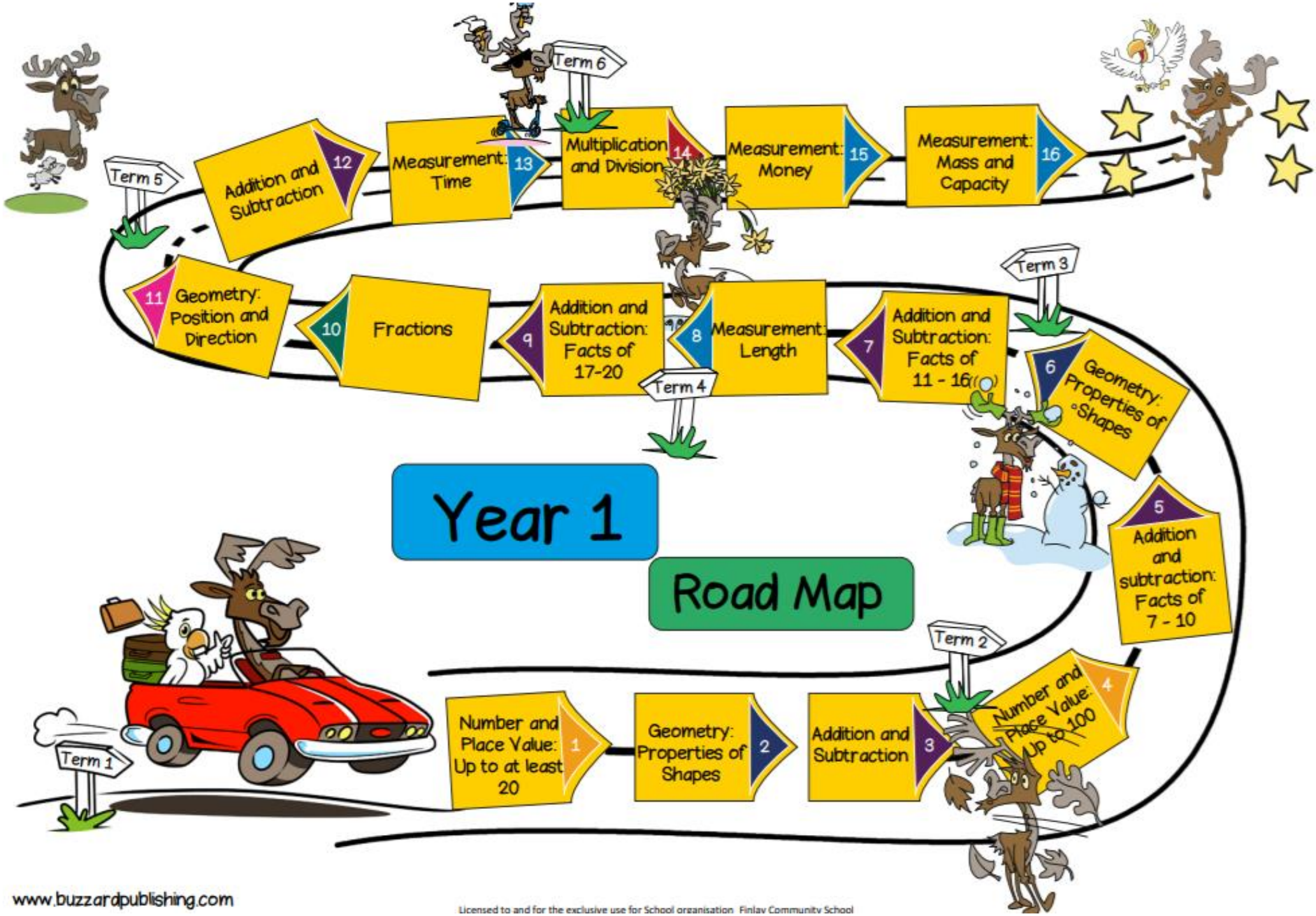
Year 6					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit/ Use negative numbers in context, and calculate intervals across zero. Round any whole number to a required degree of accuracy. Solve number problems and practical problems that involve all of the above. Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. Divide numbers up to 4 digits by a two digit number using the formal written method of long division, and interpret remainders as whole number remainders, fractions or by rounding as appropriate to the context. Divide numbers up to 4 digits by a two digit	Compare and order fractions including fractions >1 Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles Illustrate and name parts of a circle, including radius, diameter and circumference, and know that the diameter is twice the radius. Compare and classify geometric shapes based	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply some pairs of proper fractions, writing the answer in its simplest form. Divide proper fractions by whole numbers	Use simple formulae Express missing number problems algebraically Generate and describe linear number sequences Enumerate possibilities of combinations of two variables. Find pairs of numbers that satisfy an equation with two unknowns. Solve problems involving calculation of percentages and the use of percentages for comparison. Solve problems involving similar shapes where scale factor is known or can be found. Solve problems involving unequal sharing and grouping, using knowledge of fractions and multiples. Solve problems involving the relative sizes of two quantities, where missing values can be found by using	Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average.	

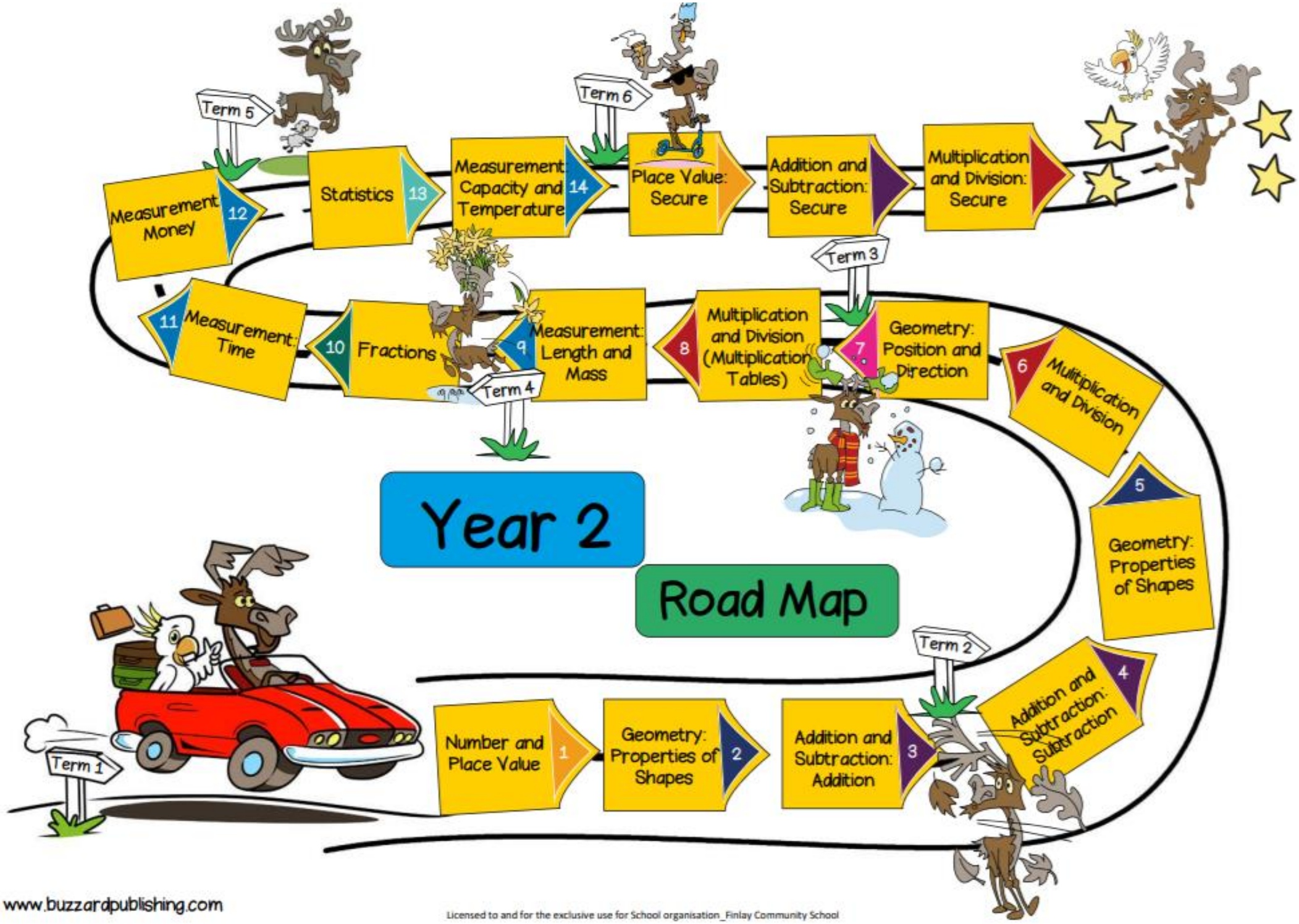
number using the formal written method of short division where appropriate, interpreting the remainders according to the context. Solve problems involving addition, subtraction, multiplication and division. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. Use written division methods in cases where the answer has up to two decimal places. Multiply one digit numbers with up to two decimal places by whole numbers Solve problems which require answers to be rounded to specified degrees of accuracy. Draw and translate simple shapes on the coordinate plane, and reflect them in the axes. Describe positions on the full coordinate grid (all four quadrants).	on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. Recognise, describe and build simple 3D shapes, including making nets. Draw 2D shapes using given dimensions and angles. Use their knowledge of order of operations to carry out calculations involving the four operations.		integer multiplication and division facts. Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to three decimal places. Recognise that shapes with the same areas can have different perimeters and vice versa. Convert between miles and kilometres. Calculate the area of parallelograms and triangles. Recognise when it is possible to use formulae for area and volume of shapes		

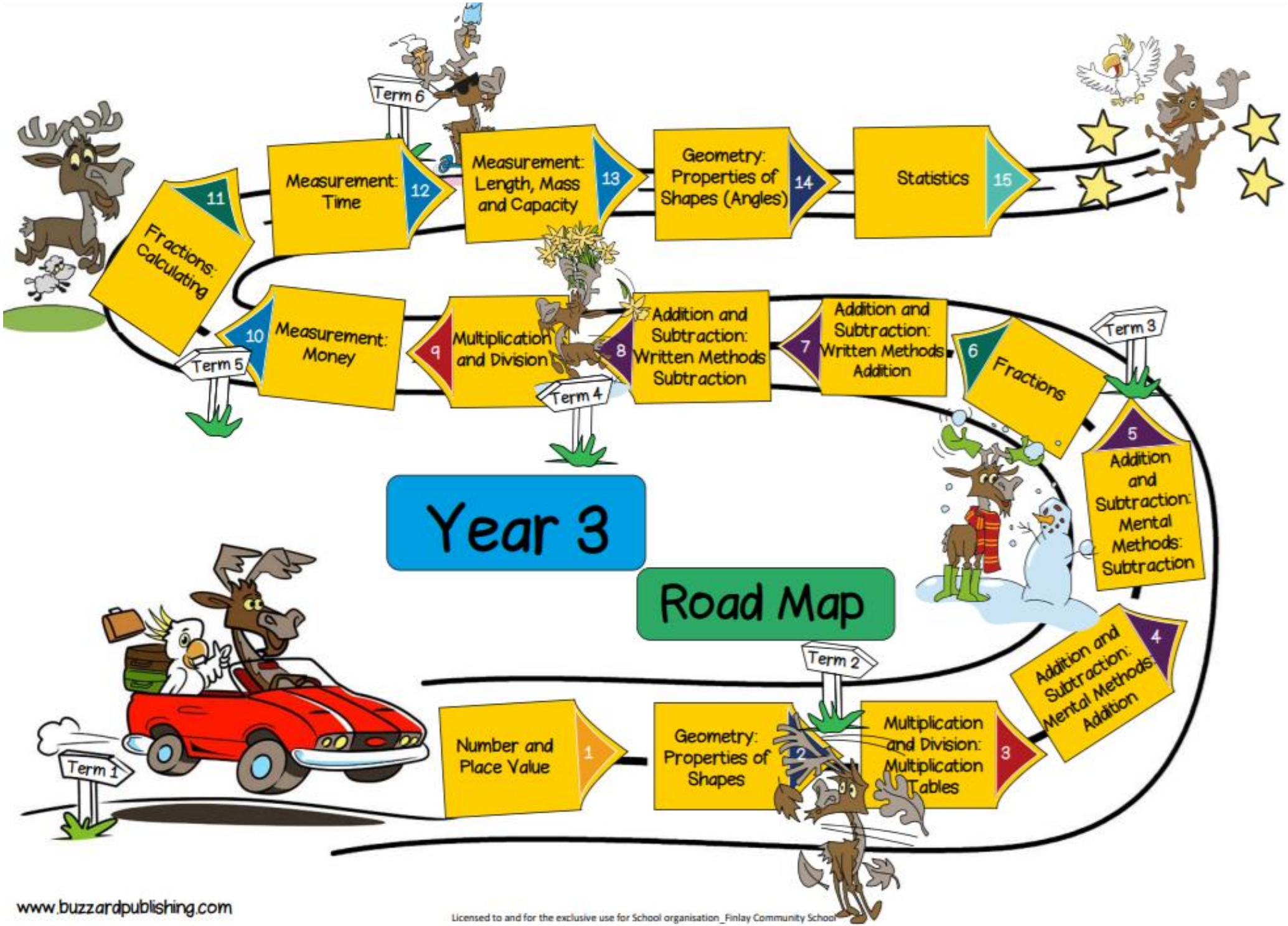
			Calculate, estimate and compare volume of cubes and cuboids, using standard units, including cm cubed or cubic metres, and extending to other units.		

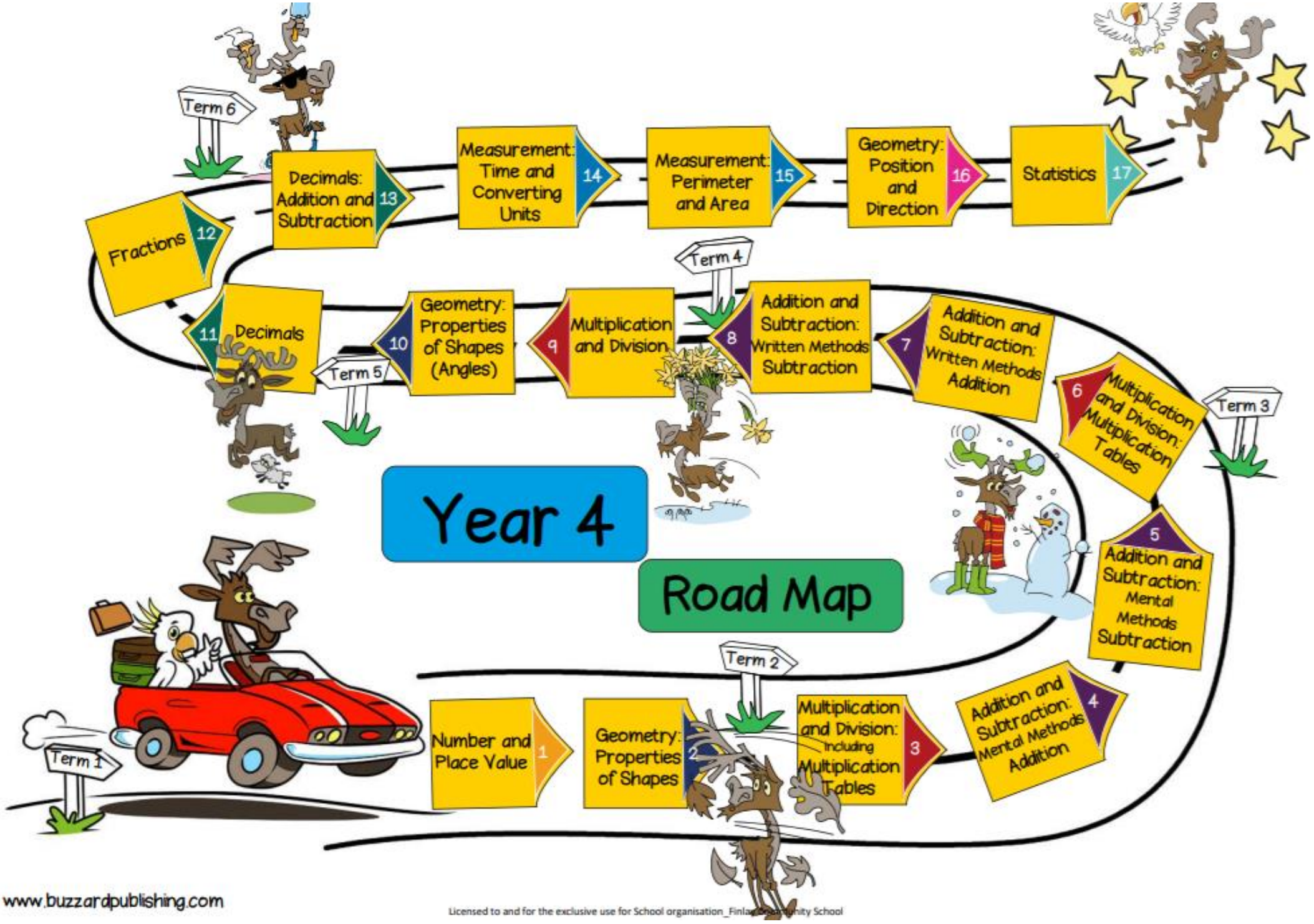
EYFS – Year 6 Yearly Concept Overviews

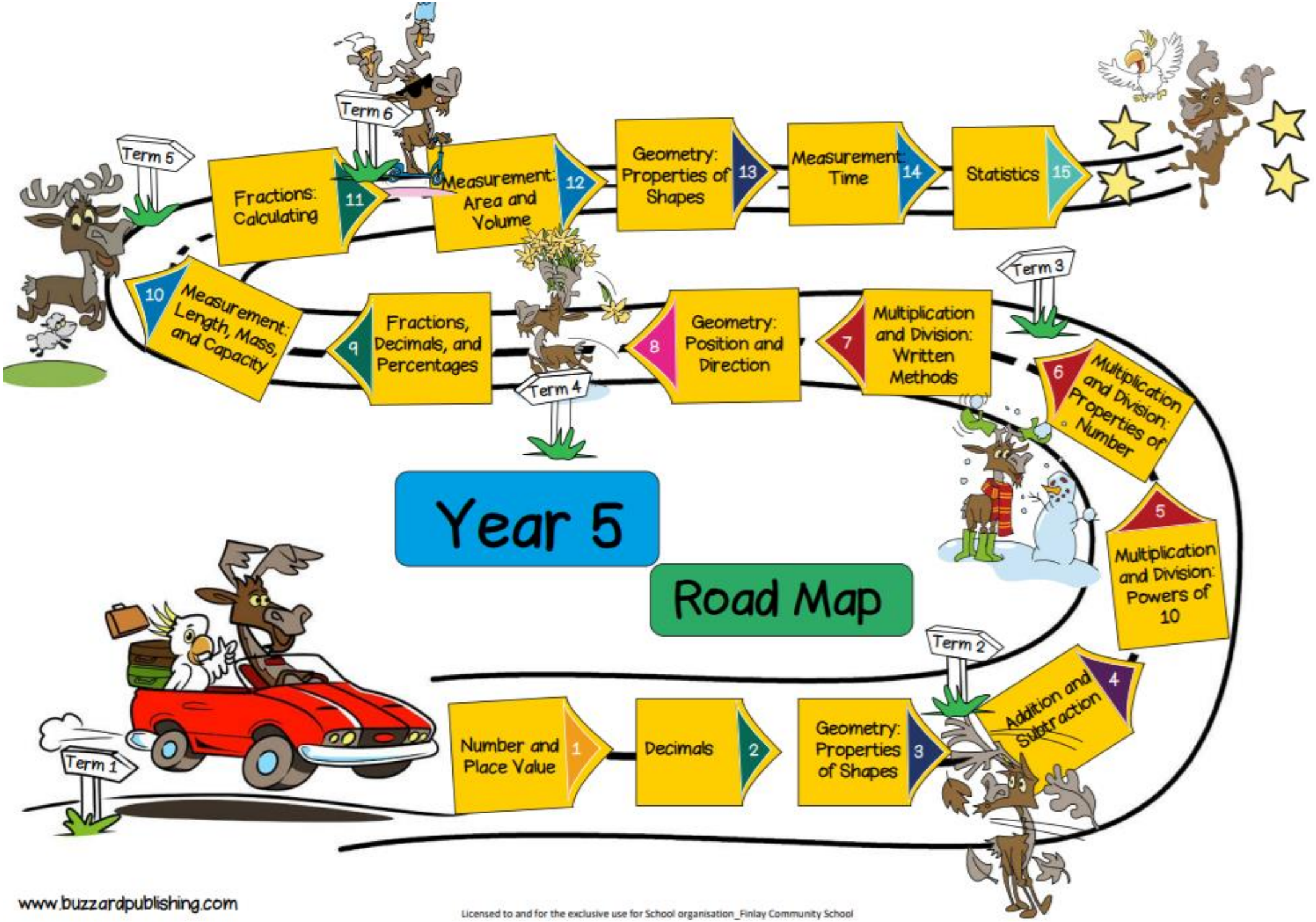


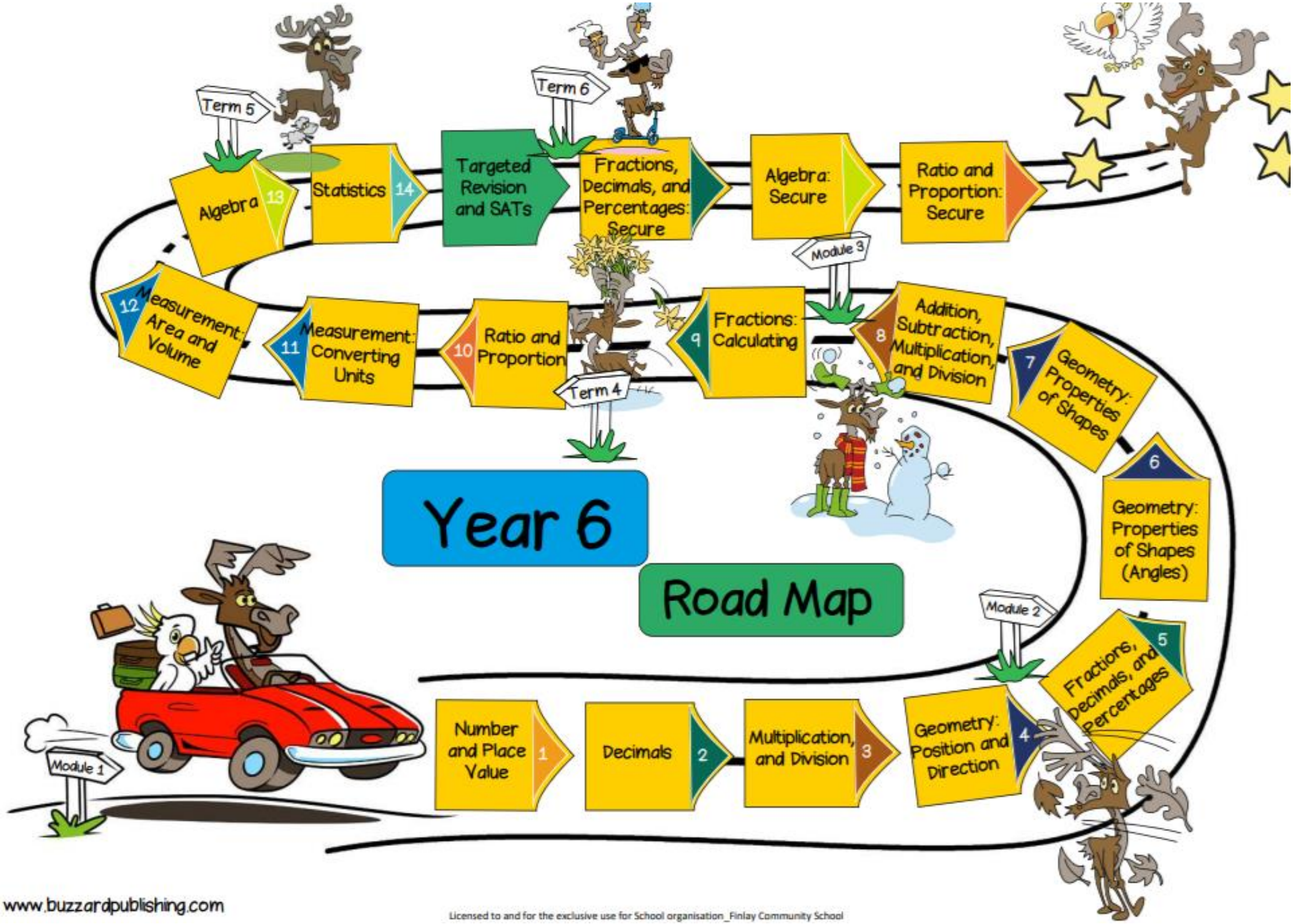












Each of these road maps is then turned into termly plans with allocated small steps which marry up to the dates and weeks of each term. These documents show how each small step links to the Key Performance Indicators, as well as the Ready to Progress DfE criteria.

Year 1 Term 1

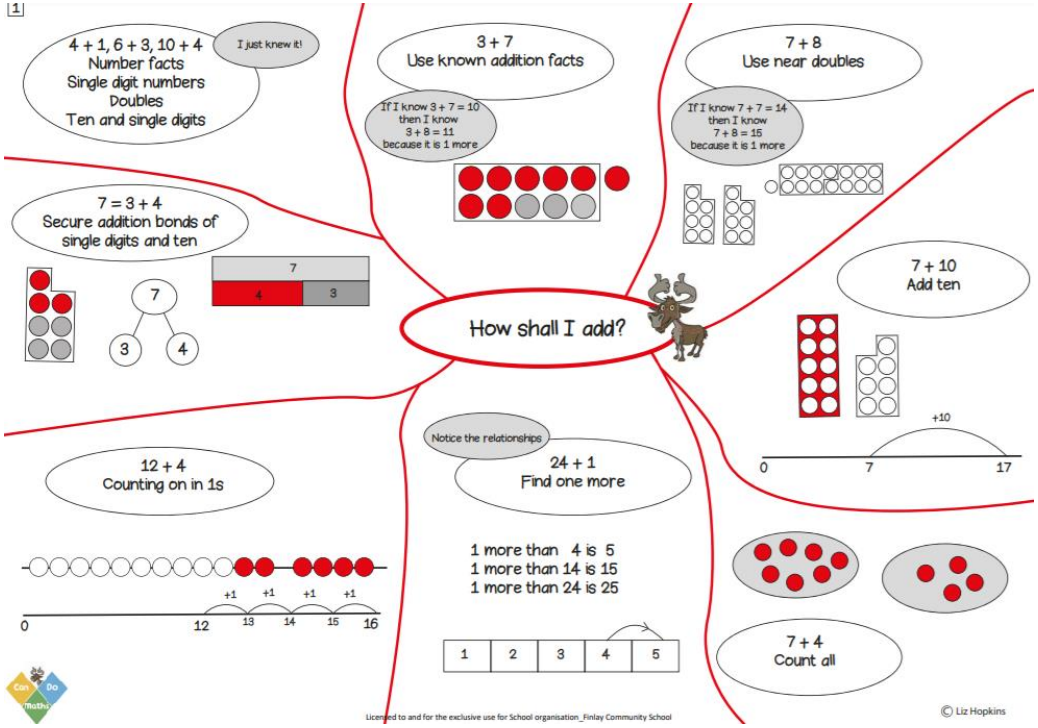
Term 1 W/c		KPI	DfE RTP	Maths Lessons: Intelligent Practice Lesson by Lesson Plan		Fact Check	Maths on Track: Deliberate Practice Suggested focus based on the ArithmeKit Magic 24
02/09/2021	T	KPI 1, 2	1NPV-1, 2	Number and Place Value: Up to 20	TDD		
	F				Remember This?	1 more	Continuous provision activities
06/09/2021	M			Number and Place Value: Up to 20	Count at least 20 objects		Continuous provision activities
	T				Represent numbers from 10 to at least 20		Continuous provision activities
	W				Explore the structure of numbers up to at least 20		Deliberate Practice: Past and Present
	T				Represent numbers to at least 20 on a number line		Deliberate Practice: Past and Present
	F				Estimate numbers on a number line		1 more up to 10
13/09/2021	M			Number and Place Value: Up to 20	Within the range 0 - 20 count forwards from a given number to another given number	1 less	Continuous provision activities
	T				Within the range 20 - 0 count backwards from a given number to another given number		Continuous provision activities
	W				Read numbers 0 - 20 in words and write using numerals		Deliberate Practice: Past and Present
	T				Read numbers 0 - 20 in numerals and write in words		Deliberate Practice: Past and Present
	F				Compare numbers identifying which one is more		1 less up to 10
20/09/2021	M	KPI 7	(1NPV-1)	Number and Place Value: Up to 20	Compare number identifying which one is less	1 more	Continuous provision activities
	T				Order numbers		Continuous provision activities
	W				Find 1 more than a number up to at least 20		Deliberate Practice: Past and Present
	T				Find 1 less than a number up to at least 20		Deliberate Practice: Past and Present
	F				Extra Problem Solving		1 more up to 20
27/09/2021	M	KPI 4	1G-1, 2	Geometry: Properties of Shapes	Recognise 2 –D shapes	1 less	Continuous provision activities
	T				Recognise and name rectangles		Continuous provision activities
	W				Recognise and name squares		Deliberate Practice: Past and Present
	T				Recognise and name circles		Deliberate Practice: Past and Present
	F				Recognise and name triangles		1 less up to 20
04/10/2021	M	KPI 3	1AS-2	Geometry: Properties of Shapes	Compare 2-D shapes and explain how they are similar or different	1 more	Continuous provision activities
	T				Extra Problem Solving		Continuous provision activities
	W				Add 1 to numbers up to 20		Deliberate Practice: Past and Present
	T				Subtract 1 from numbers up to 20		Deliberate Practice: Past and Present
	F				Write addition problems by combining two sets using + and =		1 more and 1 less
11/10/2021	M	KPI 8, 9	1AS-1 1NF-1	Addition and Subtraction	Write subtraction problems by taking away, using - and =	1 less	1.1 Count objects
	T				Extra Problem Solving		1.6 Know teens are ten and the rest
	W				Partition 5		Deliberate Practice: Past and Present
	T				Find and represent all addition number facts of 5		Deliberate Practice: Past and Present
	F				Find and represent all subtraction number facts of 5		CanDoBonds of 5 +
18/10/2021	M			Addition and Subtraction	Partition 6	Bonds of 5	1.1 Count objects
	T				Find and represent all addition number facts of 6		1.6 Know teens are ten and the rest
	W				Find and represent all subtraction number facts of 6		Deliberate Practice: Past and Present
	T				*Extra Problem Solving*		Deliberate Practice: Past and Present
	F				*End of Term Assessment: Remember It 1*		CanDoBonds of 5 +/-
Half Term							

Progression of Calculation Strategies.

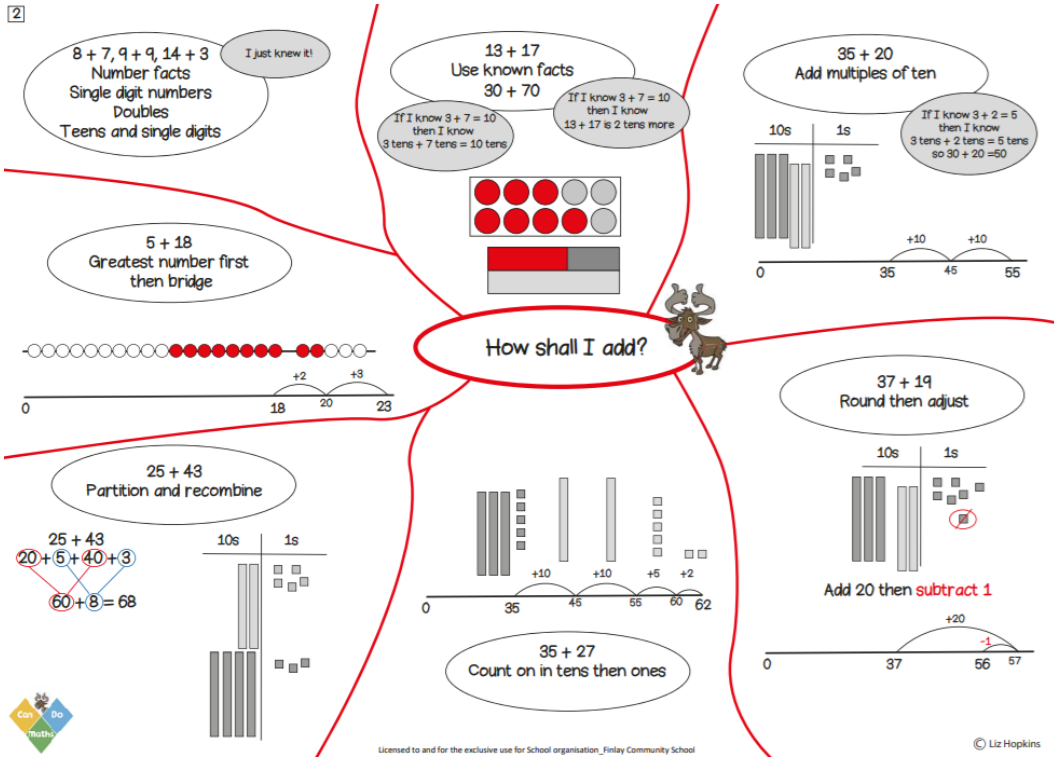
Through a mastery approach to teaching and learning, children have the chance to explore different representations and methods, both mental and formal, to solve calculations related to the four rules of number. We use a calculation policy so staff know which methods, manipulatives and representations to use for their class, but also to understand what strategies children have previously been taught.

An example of progression for addition

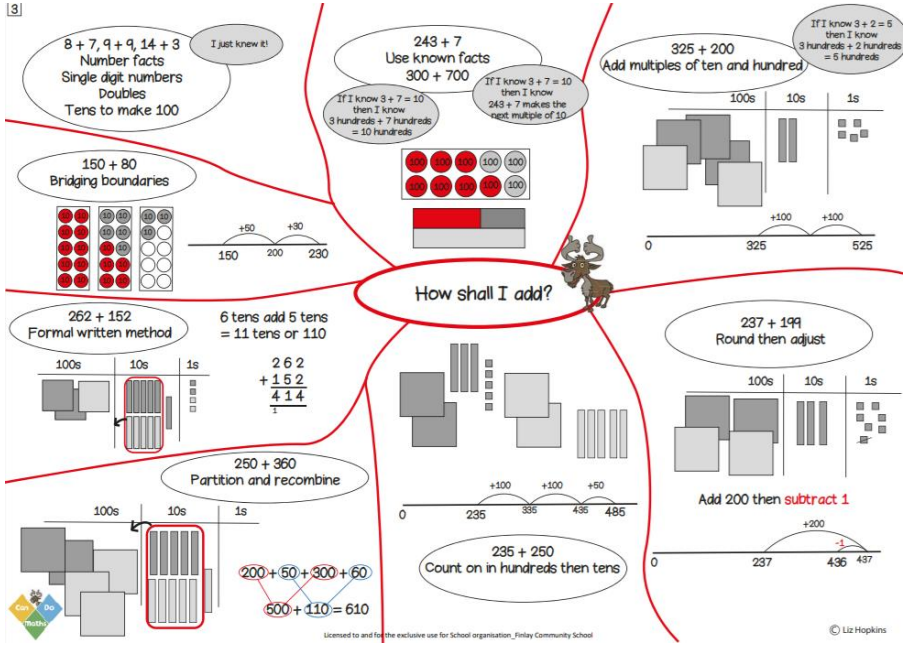
Year 1:



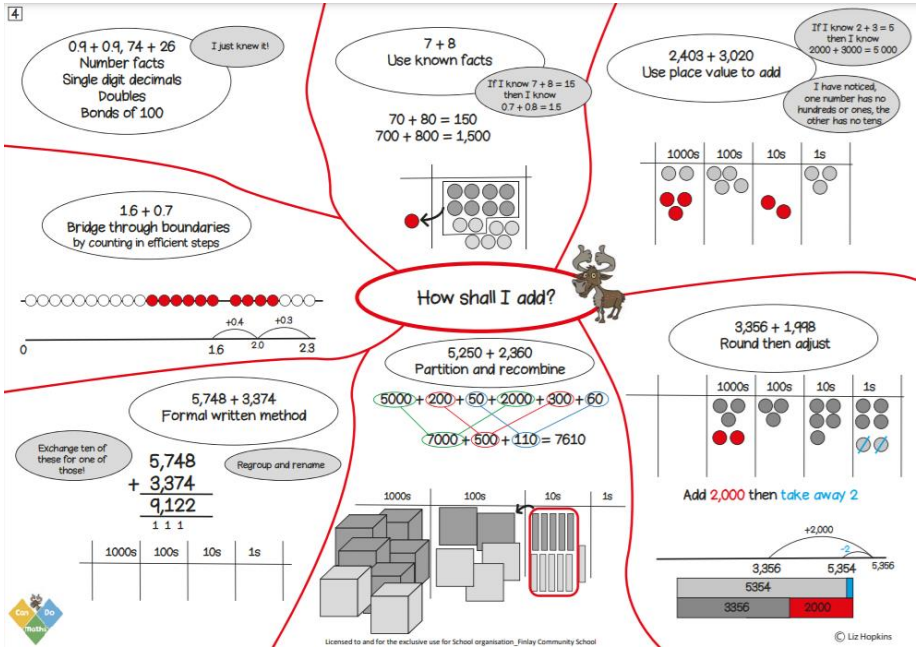
Year 2:



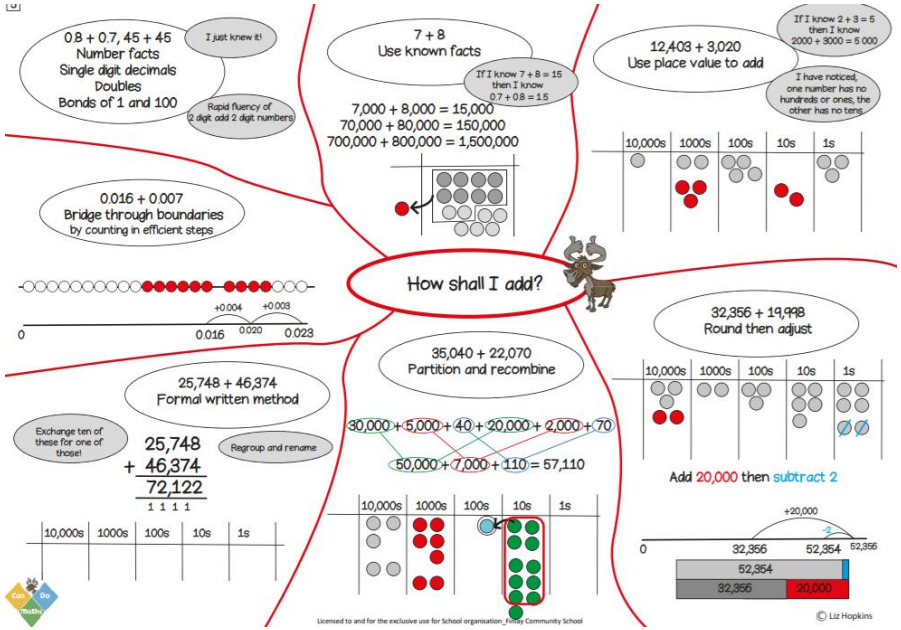
Year 3:



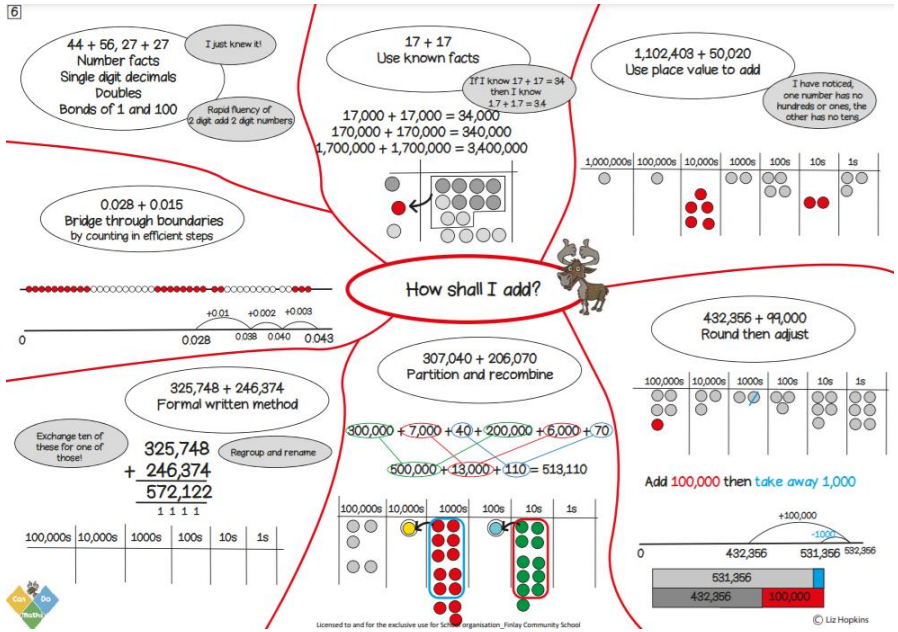
Year 4:



Year 5:



Year 6:



Developing Children's Mathematical Vocabulary

Children have the opportunity to use and develop mathematical vocabulary throughout every block of work. Each unit on the roadmap comes with a vocabulary guide which includes the STEM sentences that should be used when teaching. STEM sentences are sentences which teachers say and children use, which enhance verbal and written reasoning. There are also display vocabulary cards, which should be put on working walls to again help children communicate mathematically.

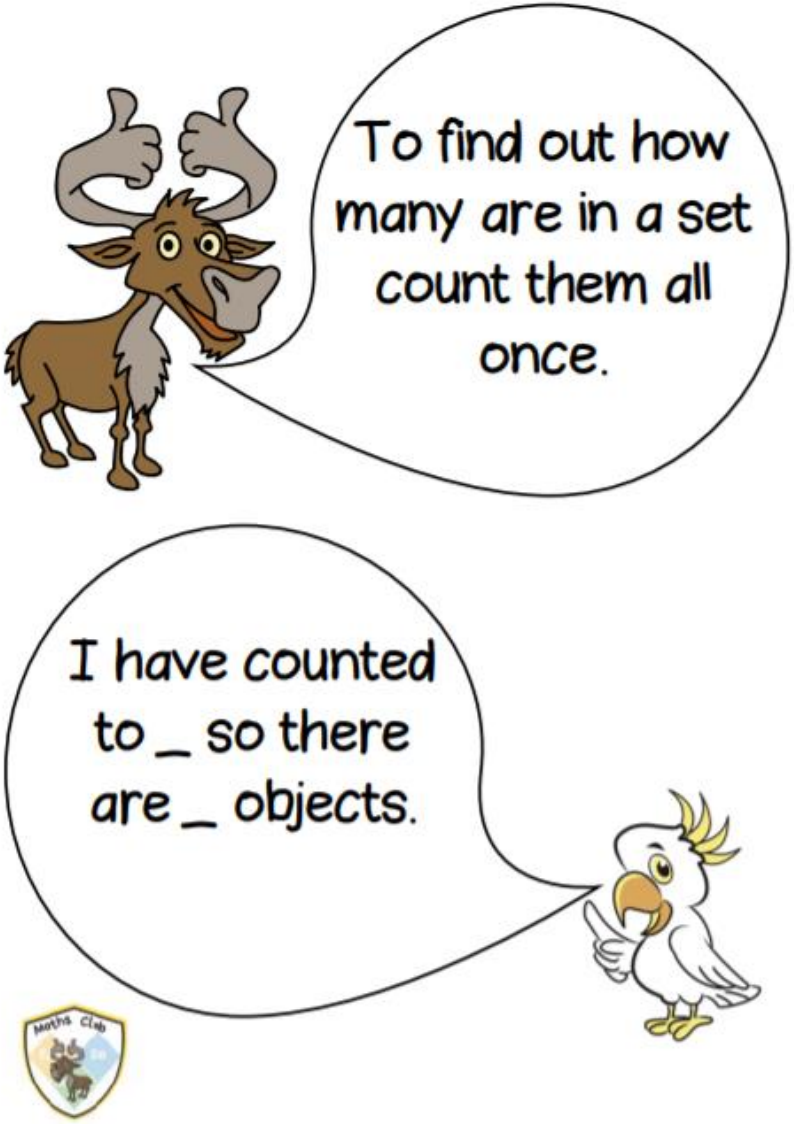
Manageable Step	Generalised sentence	Stem Sentence	Essential Vocabulary to use during the unit
Count at least 20 objects	To find out how many are in a set count them all once	I have counted to _ so there are _ objects	zero, one, two, three.... to twenty tens ones tens frame digit number position more less greater larger smaller
Represent numbers from 10 to at least 20	When a tens frame is full there are 10 counters	I have 1 full tens frame and _ more. My number is_ I have _ full tens frames and _ more. My number is _	
Explore the structure of numbers up to at least 20	2 full tens frames make 20	1_ is one full tens frame and _	
Represent numbers to at least 20 on a number line		A number that is _teen lies between ten and twenty A number between twenty and thirty is 2_ When I count on a number line... If the number is between ten and twenty then the number is 1_ If the number is between twenty and thirty then the number is 2_	
Estimate numbers on a number line			
Within the range 0 -20 count forwards from a given number to another given number.	When I count forwards the numbers get larger		
Within the range 20 - 0 count backwards from a given number to another given number	When I count backwards the numbers get smaller		
Recognise the patterns in the number sequence 0 - 30			
Read numbers 0 - 20 in words and write using numerals			
Read numbers 0 - 20 in numerals and write in words			
Compare numbers identifying which one is more	If I have counted more then the number is larger	_ is more than _ because... _ is less than _ because ...	
Compare number identifying which one is less			
Order numbers	A number with no full tens frames is smaller than a number with a full tens frame		
Find 1 more than a number up to at least 20	One more is the next number	One more than _ is _	
Find 1 less than a number up to at least 20	One less is the number before	One lees than _ is _	

^ The document above is available for each unit in each year group. The generalised vocabulary sentence and STEM sentence is linked to each manageable step.

Working wall display cards

ones	tens
number	digit
more	position
greater	less
smaller	larger

tens frame



Words to use in this unit

zero, one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty,

tens
ones
digit
number
tens frame

position
more
less
greater
larger
smaller

Knowledge Organisers

Knowledge organisers should be shared with the children at the beginning of each half term of work.

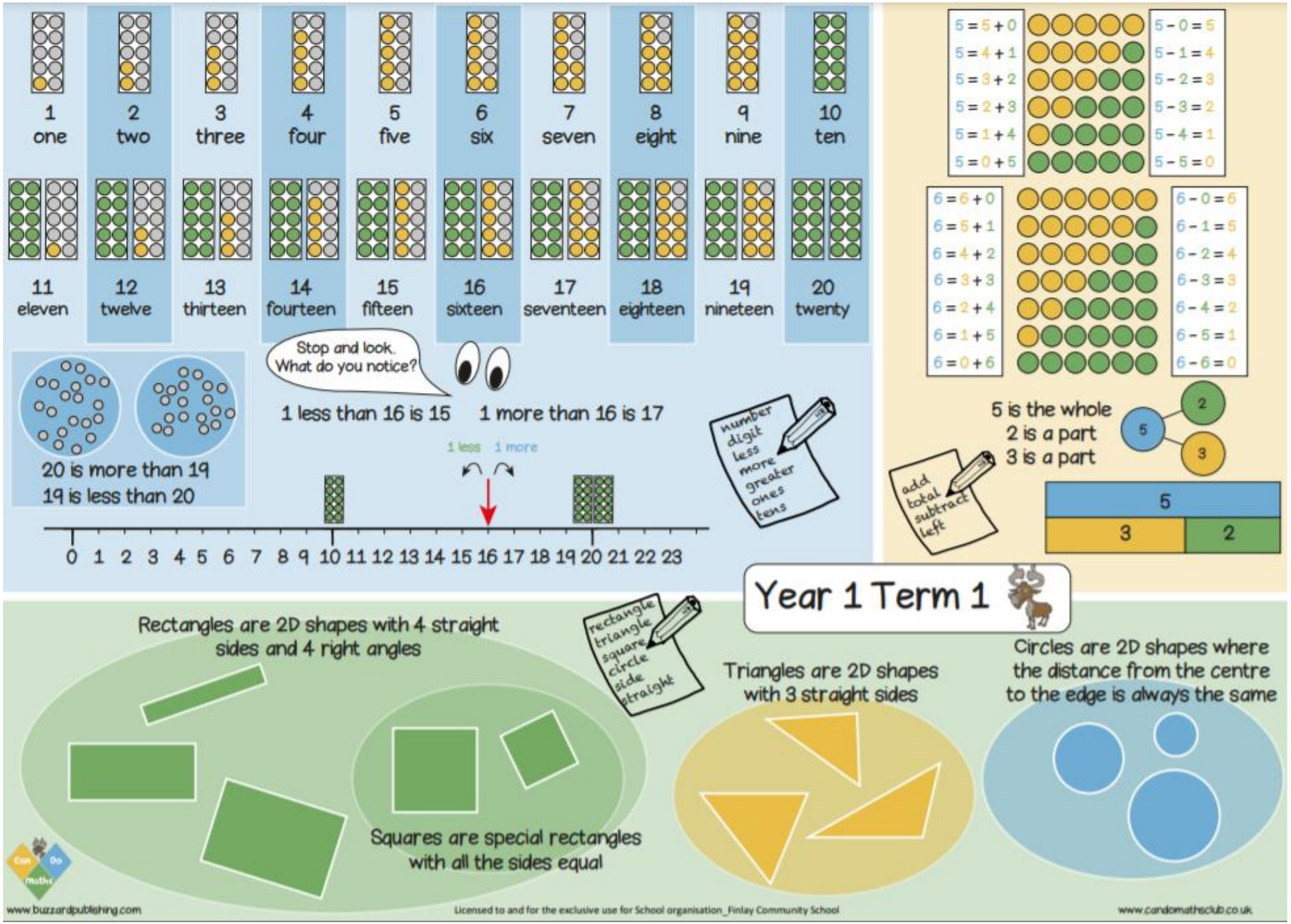
The children should take a copy of this home.

The children should have quizzes based on the information on their knowledge organisers on a regular basis and use this as a tool for learning.

Knowledge Organisers should show:

- Key maths facts
- Examples of calculations
- Mathematical concepts
- STEM sentences

There are six knowledge organisers per year group. These can be found in our resource bank. I have attached an example into this intent guide.


1 one
2 two
3 three
4 four
5 five
6 six
7 seven
8 eight
9 nine
10 ten
11 eleven
12 twelve
13 thirteen
14 fourteen
15 fifteen
16 sixteen
17 seventeen
18 eighteen
19 nineteen
20 twenty
Stop and look. What do you notice?
1 less than 16 is 15
1 more than 16 is 17
20 is more than 19
19 is less than 20
1 less
1 more
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
number
digit
less
more
greater
ones
tens
5 = 5 + 0
5 = 4 + 1
5 = 3 + 2
5 = 2 + 3
5 = 1 + 4
5 = 0 + 5
5 - 0 = 5
5 - 1 = 4
5 - 2 = 3
5 - 3 = 2
5 - 4 = 1
5 - 5 = 0
6 = 6 + 0
6 = 5 + 1
6 = 4 + 2
6 = 3 + 3
6 = 2 + 4
6 = 1 + 5
6 = 0 + 6
6 - 0 = 6
6 - 1 = 5
6 - 2 = 4
6 - 3 = 3
6 - 4 = 2
6 - 5 = 1
6 - 6 = 0
5 is the whole
2 is a part
3 is a part
5
2
3
add
total
subtract
left
5
3
2
Year 1 Term 1
Rectangles are 2D shapes with 4 straight sides and 4 right angles
rectangle
triangle
square
circle
side
straight
Triangles are 2D shapes with 3 straight sides
Circles are 2D shapes where the distance from the centre to the edge is always the same
Squares are special rectangles with all the sides equal
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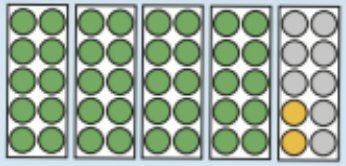


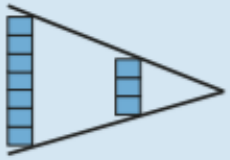
42
forty-two
4 tens and 2 ones

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	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

42 = 40 + 2
42 = 30 + 12
42 = 20 + 22
42 = 10 + 32

number
digit
less
greater
ones
tens

3 = 3

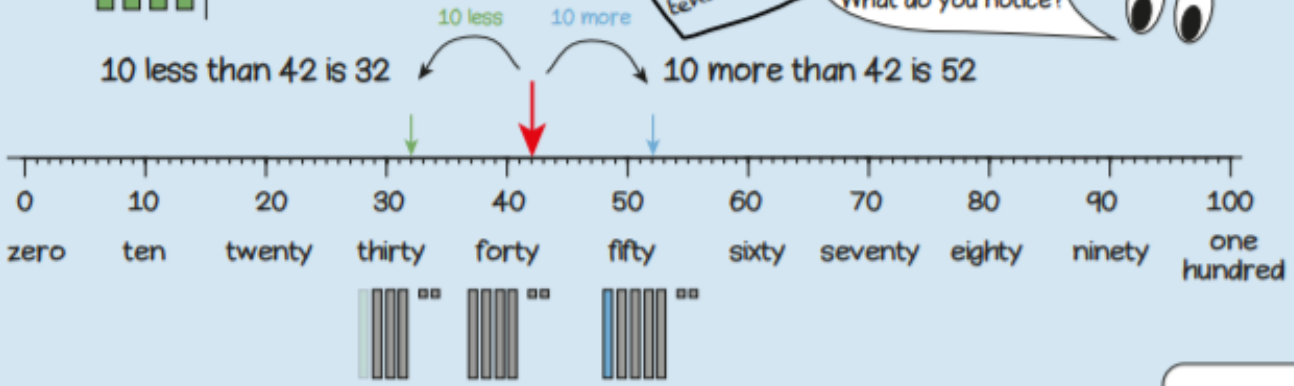


7 > 3

52 is more than 42
52 > 42

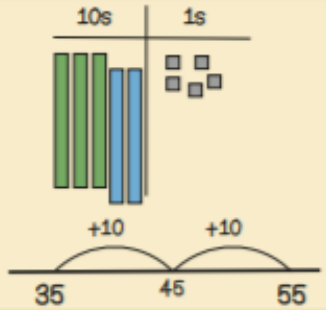
42 is less than 52
42 < 52

Stop and look.
What do you notice?



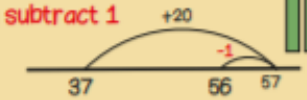
35 + 20
Add multiples of ten

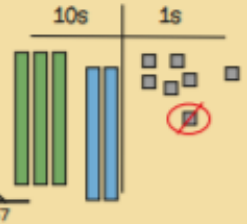
If I know 3 + 2
then I also know...



37 + 19
Round then adjust

Add 20 then subtract 1

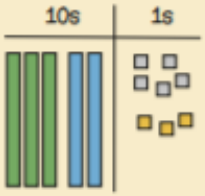




35 + 23
Partition and recombine

35 + 23
30 + 5 + 20 + 3
50 + 8 = 58

addend
sum
plus
total



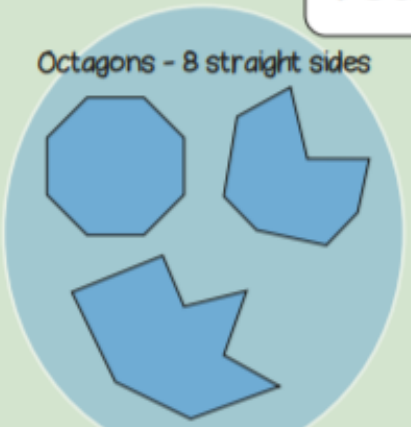
35 + 23 = 23 + 35
Addition is commutative

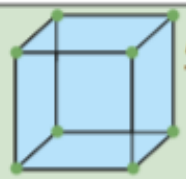
Year 2 Term 1

Pentagons - 5 straight sides

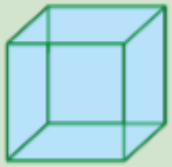
Hexagons - 6 straight sides

Octagons - 8 straight sides





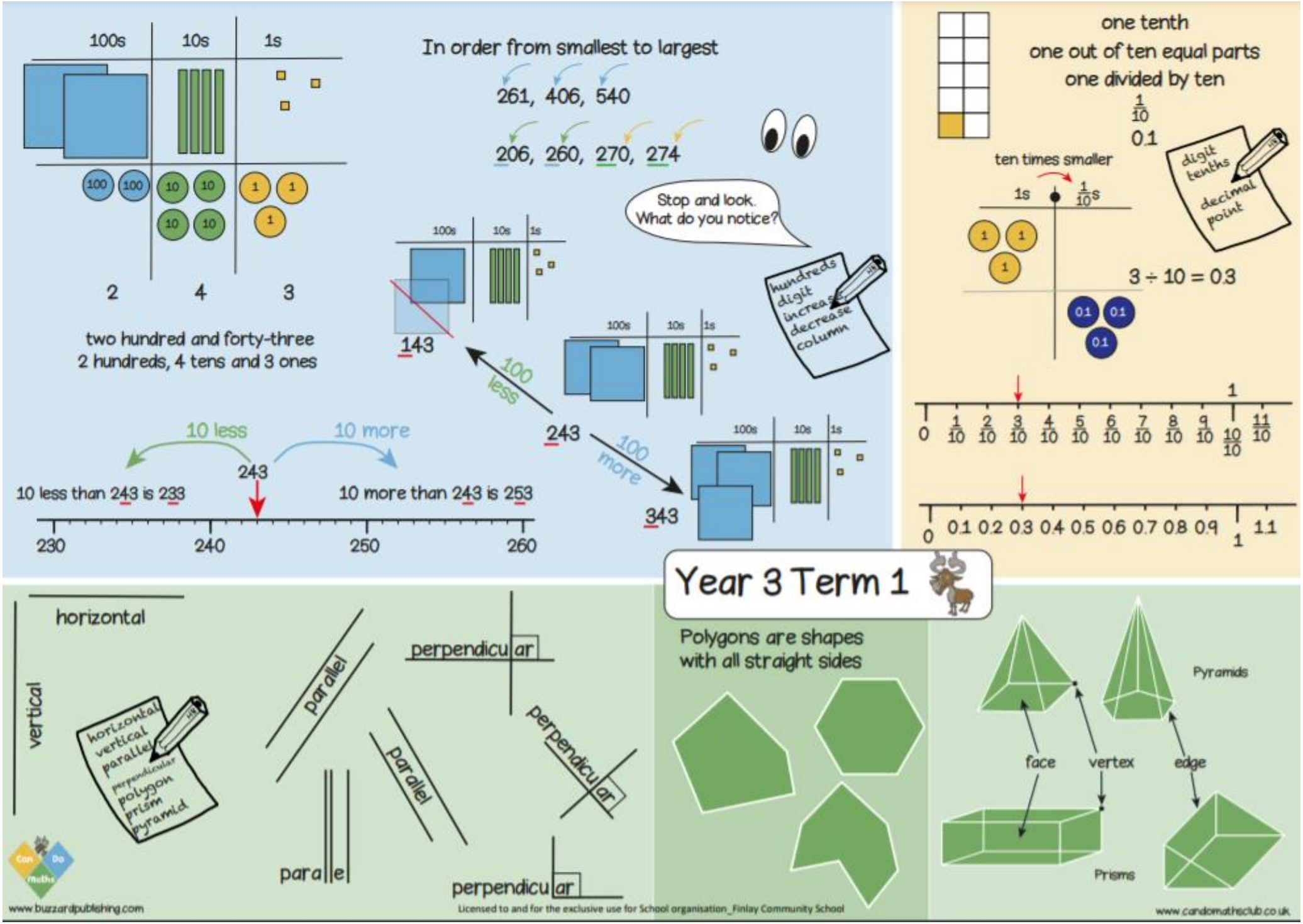
A vertex is the corner of a 3D shape.
This cube has 8 vertices.



An edge joins 2 vertices.
This cube has 12 edges.

pentagon
hexagon
octagon
vertex
edge
face

The flat surface is a face.
This cube has 6 faces.


100s
10s
1s
2
4
3
two hundred and forty-three
2 hundreds, 4 tens and 3 ones
In order from smallest to largest
261, 406, 540
206, 260, 270, 274
Stop and look.
What do you notice?
hundreds digit increase decrease column
143
100 less
243
100 more
343
10 less
10 more
10 less than 243 is 233
10 more than 243 is 253
230
240
250
260
one tenth
one out of ten equal parts
one divided by ten
1/10
0.1
ten times smaller
1s
1/10s
digit tenths decimal point
3 ÷ 10 = 0.3
0
1/10
2/10
3/10
4/10
5/10
6/10
7/10
8/10
9/10
10/10
1
11/10
0
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9
1
1.1
Year 3 Term 1
horizontal
vertical
horizontal
vertical
parallel
perpendicular
polygon
prism
pyramid
parallel
perpendicular
parallel
perpendicular
Polygons are shapes with all straight sides
Pyramids
face
vertex
edge
Prisms
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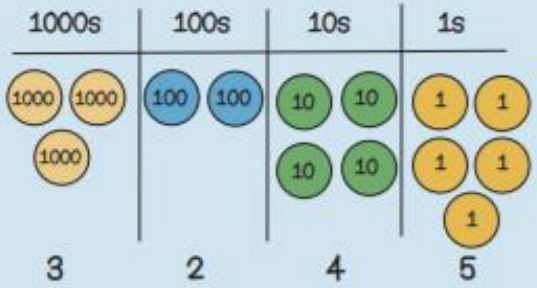


three thousand, two hundred and forty-five

3 thousands, 2 hundreds, 4 tens and 5 ones

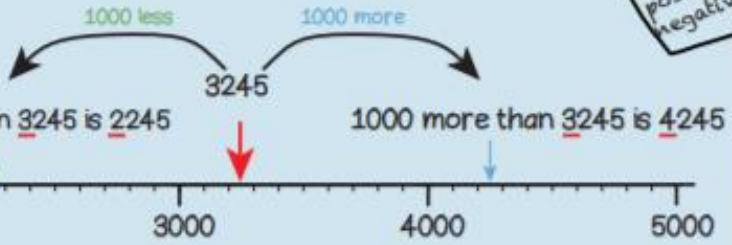
In order from smallest to largest

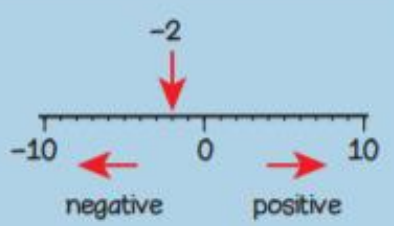
2987, 5894, 6080

4261, 4406, 4540

Stop and look. What do you notice?

thousands digit round multiple positive negative





5 or more - round up
4 or less - round down

Round to the nearest ten

6538 → 6540

Round to the nearest hundred

6538 → 6500

Round to the nearest thousand

6538 → 7000

Year 4 Term 1

Equilateral Triangles
3 equal sides

trapezium
parallelogram
rhombus
kite
adjacent
equilateral
scalene
isosceles

Isosceles Triangles
2 equal sides

Scalene Triangles
all sides different

Quadrilaterals are shapes with
4 straight sides

parallelogram - opposite sides parallel

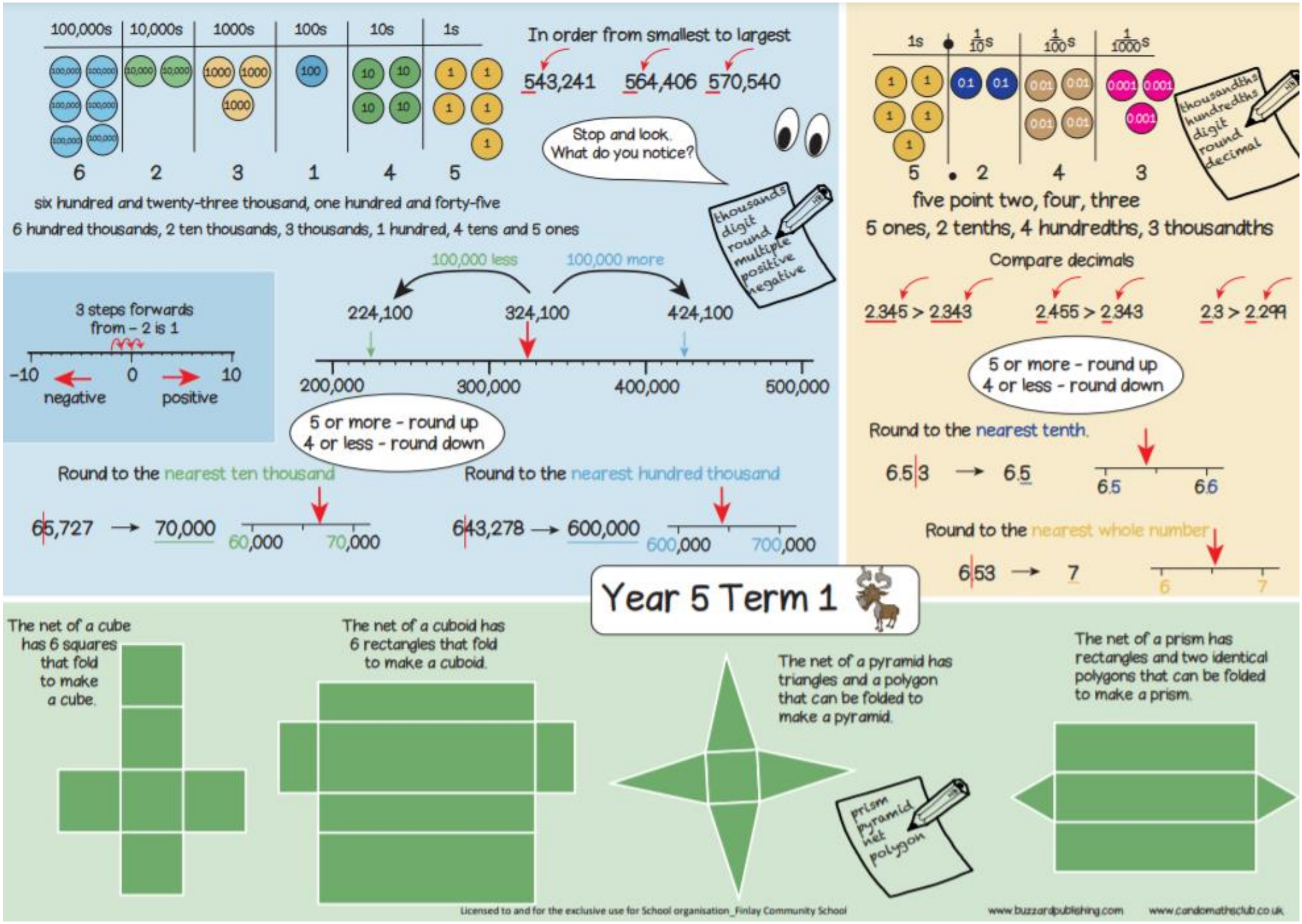
rectangles - 4 right angles

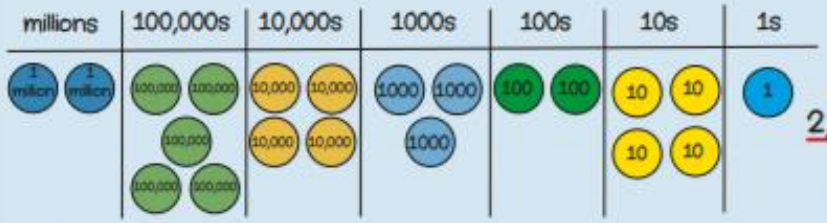
rhombus - 4 equal sides

squares

Trapezium - exactly one pair of parallel sides

Kites - 2 pairs of equal adjacent sides





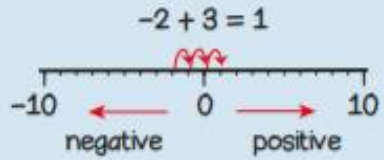
In order from smallest to largest

2,043,241 2,764,406 2,870,540

Stop and look.
What do you notice?

two million, five hundred and forty-three thousand, two hundred and forty-one

2 millions, 5 hundred thousands, 4 ten thousands, 3 thousands, 2 hundreds, 4 tens and 1 one



5 or more - round up
4 or less - round down

Round to the nearest million

2,643,278 → 3,000,000

Multiplying and dividing by 10, 100 and 1000

M	HTh	TTh	Th	100s	10s	1s	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	
					1	3	6			13.6 x 10 move digits one place left
Ten times greater				1	3	6				
		1	3	6	0	0				13.6 x 1000 move digits 3 places left
Ten times smaller					1	3	6			13.6 ÷ 10 move digits one place right
					0	1	3	6		13.6 ÷ 100 move digits 2 places right

millions digit round multiple positive negative

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	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

A prime number has exactly 2 factors:
2, 3, 5, 7, 11, 13, 17, 19...

15 and 21 have the common factors 1 and 3

15 and 21 are common multiples of 3

prime common multiple factor multiplier divisor

If I know... then I also know... because...

0.8 × 7 = 8 × 7 ÷ 10

4.2 × 5 = 42 ÷ 2

56,000 ÷ 80 = 700

$$\begin{array}{r} 2427 \\ \times\ 38 \\ \hline 19416 \\ 72810 \\ \hline 92226 \\ {\scriptstyle 1\,1} \end{array}$$

$$24\overline{)3339} = 139\text{ r }3$$

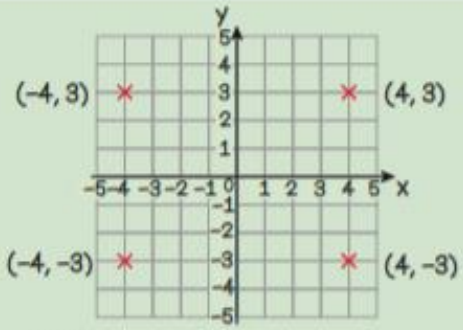
$$24\overline{)3339.000} = 139.125$$

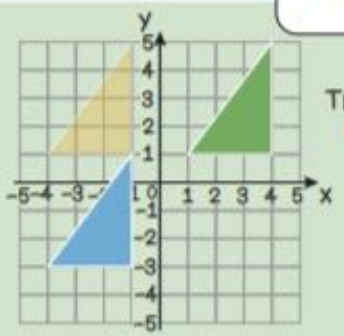
1	24
2	48
4	96
5	120
8	192
10	240

$3339 \div 24 = 139\text{ r }3 = 139\frac{3}{24}$

$= 139.13$ (to 2dp)

Year 6 Term 1

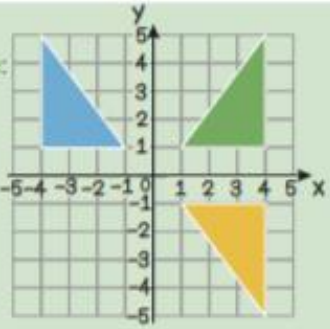




Translate the triangle
5 squares left and
4 squares down.

object image plot reflect translate

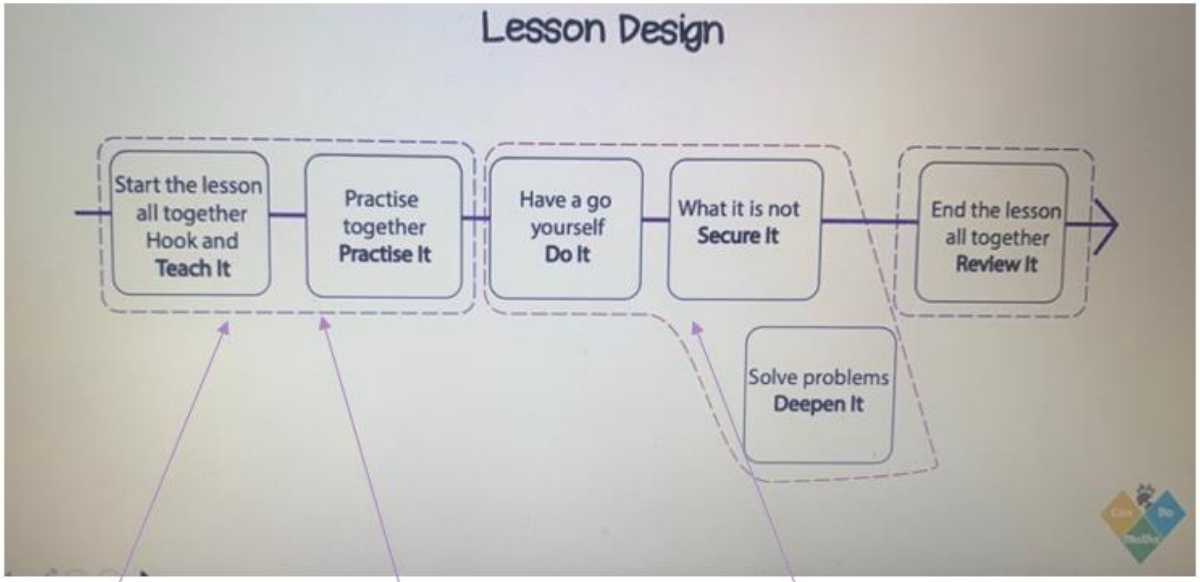
Reflect the triangle:
in the x axis
in the y axis



Lesson Design and Structure

Staff have received training as to what the lesson design and structure should look like.

USING CAN DO MATHS TO SUPPORT THE TEACHING OF THE NATIONAL CURRICULUM REQUIREMENTS – WHAT DOES A LESSON LOOK LIKE?



The role of additional adults is **so** important here. Adults should not just be sat 'listening' but actively assessing learning of pupils to provide immediate feedback/ intervention/ challenge whilst the input is happening. They can also support the teacher in discussion about concepts after talk partner work.

Here you may have a 'target group' who need more intervention after the input. This can be done by the Teacher whilst the TA helicopters round to assess all children's work and give feedback – do not just stay sat in one seat and get the children to queue to see you

Identify who may need pre-teaching and complete this before the lesson.

We all start the lesson together – Teach it

We then assess what the children know – Practise it – Assessment for Learning – all children should be involved – whiteboards

Have a go yourself – Do it – What it is, What it also is

Twist it/ Secure it – We are going to call it Twist it – What it's not

Deepen it – Problem solving

End the lesson together – Review it

Provide Keep Up Same Day Intervention if needed

USING CAN DO MATHS TO SUPPORT THE TEACHING OF THE NATIONAL CURRICULUM REQUIREMENTS – TEACH IT AND PRACTISE IT

Hook – start the lesson by showing the children a problem/question – What do you notice? Allow children to share a range of ideas but do not get distracted here – focus it in to what your intended manageable small step of learning is.

Teach it – Model how to understanding the small step, explain your thinking, verbalise the language, show using different representations, use manipulatives, ask questions to provoke discussion – there should be active engagement within this teaching. Allow children to articulate the learning to each other/ rich discussion. Share your STEM sentence – My Turn, Your Turn – I say it, you say it. Questionning is important here to scaffold and challenge. https://www.youtube.com/watch?v=n0_xDd5UyAU
Prove that… Convince me that… Teach your friend… Are you able to show me that…? What is the same? What is different? What can you see? What do you notice…? What would happen if…? Why is that accurate…? Can you show me another way…? Can you explain your reasoning…? Can you draw/show me using…? How do you know that…?

You (Teacher and TA) should be using live assessment to intervene with any children who appears unsure/ finding it easy and needs a challenge question asked.

Remember the importance of the additional adult here.

Practise it – Example 'What it is' question to assess whether children are ready to begin the seamless transition into the Do It task. You may need to regroup here to provide more intervention.

Where to find resources

Each unit of work has a mastery matrix with suggested tasks. We also use White Rose Hub, Gareth Metcalfe I See Reasoning and Classroom Secrets to supplement tasks. Test Base is also used across school.

USING CAN DO MATHS TO SUPPORT THE TEACHING OF THE NATIONAL CURRICULUM REQUIREMENTS – INDEPENDENT TASK

Year 3Unit1NumberandPlaceValue

Curriculum Progression

Manageable Steps

Depth of Understanding

	Represent 3-digit numbers	Recognise the value of digits in 3-digit numbers	Partition 3-digit numbers in different ways	Read 3-digit numbers in words and write using numerals
What it is What it is also	Using place value resources to represent the following numbers: 234 342 423 570 705	Find the value of the underlined digits: 365 365 365 550 306	Fill in the missing numbers. 654 = 600 + ☐ + 4 437 = ☐ + 30 + 7 842 = ☐ + 40 + ☐ 427 = 400 + 10 + ☐ 573 = 400 + ☐ + 13	Write the following numbers using numerals: Four hundred and sixty-one Eight hundred and ninety-two Six hundred and seventy-four One hundred and seventeen Nine hundred and twelve
What it is not	Colin thinks that he has represented 243:  Explain why he is incorrect.	Colin thinks that the five in 563 is worth hundreds. Explain why he is incorrect.	Colin thinks 376 can only be partitioned as 300 + 70 + 6 Explain why he is incorrect.	Colin thinks he has written two hundred and thirty-six. 200306 Explain why he is incorrect.
What problems can I solve?	Investigate how many different 3-digit numbers you can represent with five pieces of Base Ten equipment. How many more numbers can you make with one more piece?	Make as many different 3-digit numbers as you can using the digits 2 and 5. Circle the numbers that have 5 hundreds.	Always/Sometimes/Never True There are at least 10 ways to partition a 3-digit number.	Use the number words to fill in the gaps in as many ways as you can Four Seven Three ..... hundred and ..... ty ..... Write the numbers using numerals.

This curriculum progression document is what you will use to create your manageable steps. I would look at this document first when deciding what to cover in your teach it task.

DO IT – *What it is? What it also is? Five and fly…* The what it also is provides a different way of looking at the same skill but will provide the first level of challenge – children should still be able to succeed and this helps build resilience

TWIST IT – *What it's not…* This is a common misconception and requires children to spot the mistake. Children should reason using the word because. Children should also do the calculation themselves first to then spot the mistake
Do it, Notice it (what is different) Advise…

DEEPEN IT – *Problem solving…* This should be open ended/have more than one solution.

CHALLENGE IT – Further challenge for high flyers – resources like Gareth Metcalfe I see Reasoning, Classroom secrets etc can be good for this

Example weekly lesson plan

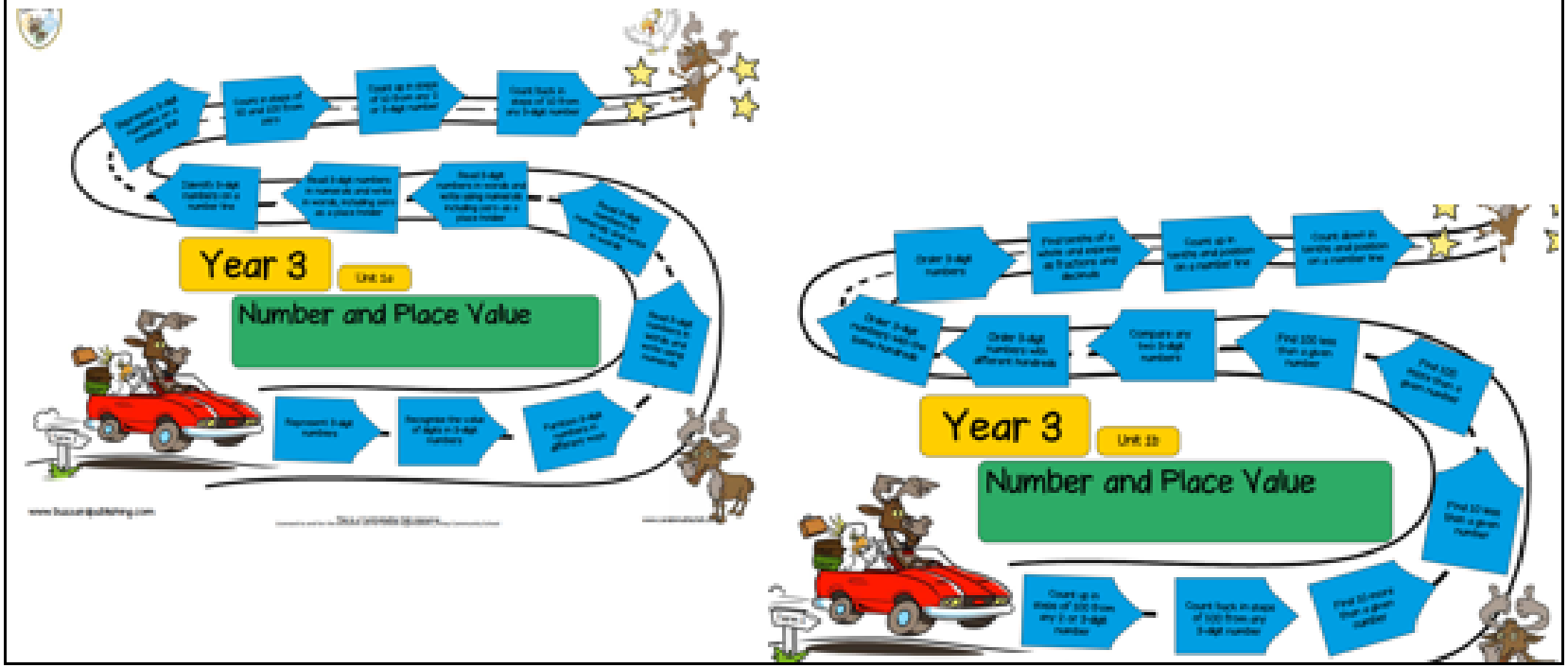
Lesson plans are to be shared with Teaching Assistants to support pre-teaching and keep up intervention.

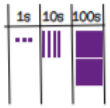
Finlay Community School Weekly Plan

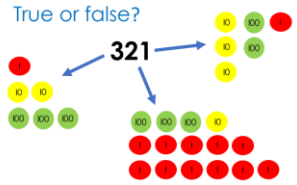
Mathematics

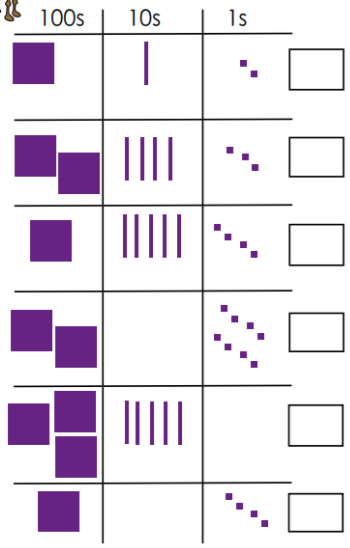
WB: 6.9.21	**Unit name and number:** 1a- Number and Place Value	**Total number of small steps:** 25	**Total number of lessons:** 25 lessons

Unit Roadmap with Small Steps



Day and Date	Small Step	Teach it – whole class input	Practice it – Questions for AFL (1-2 to begin with)	Do it – What it is… What it also is… Five and Fly…	Twist it – What it's not – misconceptions	Deepen it – problem solving	Review it	Assessment
Monday 6.9.21	TBAT Represent Three Digit Numbers	Write the number 23. How many tens? How many ones? Draw a place value grid on the board | | 10s | 1s | | | 2 | 3 | How would I write 23? Well I have two tens and 3 ones. Let's try 47. Show me how we would write 47. How many tens? How many ones? Show me using Base 10. 47 48 49 50 – What happens now? I cannot have 10 ones in a column so I exchange for 1 ten. 10 ones equals 1 ten (MTYN – 10 ones equals 1 ten) Let's try 95, 96, 97, 98, 99, 100 – now exchange 10 ones for 1 ten. Now we have 10 tens. We now exchange for 1 100 – model size comparison base 10. 10 tens equals 1 100. (MTYN – 10 tens equals 1 100) Model how to show 345 with Base 10. **STEM Sentence:** 10 ones equal 1 ten 10 tens equal 1 hundred A…… in the ….. column is worth …… …….. equals …… ones, …… tens and …… hundreds	Can you show me using base 10 – either with the concrete resources or by drawing a representation how to represent 425? 306? *Teacher and TA to helicopter – stretch those who have achieved this to convince their partner they are correct.* You may need to regroup children here for further intervention	Using place value resources to represent the following numbers: 234 342 423 570 705 Convince me that you have represented one of these calculations accurately.	Colin thinks that he has represented 243:  Explain why he is incorrect.	Investigate how many different 3-digit numbers you can represent with five pieces of Base Ten equipment. How many more numbers can you make with one more piece?	What did we learn today? Show me using base 10/place value counters how to make 423 – how many tens? How many hundreds? How many ones?	

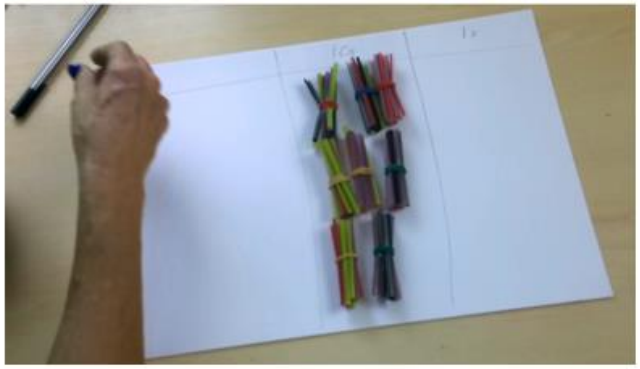
Tuesday 7.9.21	TBAT Recognise the value of digits in 3-digit numbers	Using Base 10, show me how to make 324. Convince me that you are correct. 324 is made of three hundreds, 2 tens and 4 ones. What is the value of the 2? What is the value of the 3? 122 – I think there is one hundred and 2 ones. Make this number using Base 10. Am I correct or incorrect? – get children to realise I have missed the 2 tens. But the 2 is the same digit? Why is it not just worth 2? Because it is in the tens column. STEM sentence: A…… in the ….. column is worth …… ……. equals …… ones, …… tens and …… hundreds	324 – What is the value of the underline digit? *Teacher and TA to helicopter – stretch those who have achieved this to convince their partner they are correct.* You may need to regroup children here for further intervention	Find the value of the underlined digits: 3<u>6</u>5 3<u>6</u>5 36<u>5</u> 5<u>5</u>0 3<u>0</u>6 Convince me that one of these answers is correct using the STEM sentence: I know the 6 is worth…. Because it is in the ….. Column.	Colin thinks that the five in 563 is worth hundreds. Explain why he is incorrect.	Make as many different 3-digit numbers as you can using the digits 2 and 5. Circle the numbers that have 5 hundreds.	What did we learn today? Tell me the value of each underlined digit in this number and explain how you know – 425 425 is made of 4 hundreds, 2 tens and 5 ones. This is because the 4 is in the hundreds column, the 2 is in the tens column and the 5 is in the ones column.	
Wednesday 8.9.21	TBAT Partition 3-digit numbers in different ways	Show me how to partition 438. Show me using Base 10, place value counters, visual representation, number sentence – allow children to choose how to represent. Can I only partition 438 into 400 + 30 + 8? Model part part whole diagram 438 = 300 + ……. How can I partition 538? How many ways?	Fill in the missing numbers: 247: …….. + …….. + 7 *Teacher and TA to helicopter – stretch those who have achieved this to convince their partner they are correct.* You may need to regroup children here for further intervention	Fill in the missing numbers. 654 = 600 + ☐ + 4 437 = ☐ + 30 + 7 842 = ☐ + 40 + ☐ 427 = 400 + 10 + ☐ 573 = 400 + ☐ + 13	Colin thinks 376 can only be partitioned as 300 + 70 + 6 Explain why he is incorrect.	Always/Sometimes/Never True There are at least 10 ways to partition a 3-digit number. 	What did we learn today? How many different ways can we partition 524? Is it only 500 + 20 + 40?	

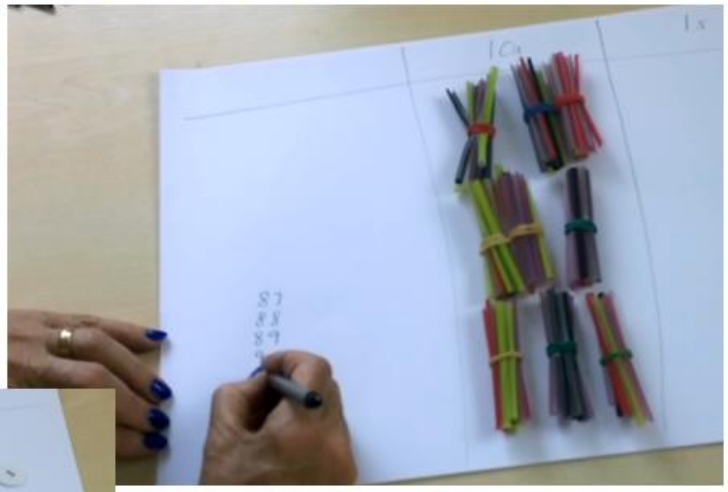
Thursday 9.9.21	TBAT Read 3-digit numbers in words and write using numerals	Write the following number using numerals – three hundred and fifty one. Use place value grid Three hundred – I place a 3 in the hundreds column 50 is the same as five tens so I put the 5 in the tens column 1 is one so needs to be placed in the 1s column. Now try: 427, 304, 712	Write the following number using numerals – three hundred and fifty one *Teacher and TA to helicopter – stretch those who have achieved this to convince their partner they are correct.* You may need to regroup children here for further intervention	Write the following numbers using numerals: Four hundred and sixty-one Eight hundred and ninety-two Six hundred and seventy-four One hundred and seventeen Nine hundred and twelve	Colin thinks he has written two hundred and thirty-six. 200306 Explain why he is incorrect.	Use the number words to fill in the gaps in as many ways as you can Four Seven Three ..... hundred and ..... ty ..... Write the numbers using numerals.	What did we learn today? I need to write the number three hundred and seven. Explain to me what I need to do. – step by step verbal instructions	
Friday Deliberate Practice	TBAT Consolidate my learning from the week – reading, writing and partitioning 3 digit numbers	 What are the numbers?  	What is the value of the underlined digit? 4<u>3</u>1 ____ 6<u>2</u>8 ____ 7<u>0</u>9 ____ 3<u>5</u>0 ____ 6<u>0</u>4 ____ Write these numbers in words. 342 ____ 557 ____ 938 ____ 870 ____ 150 ____	 Write these using numerals. six hundred and forty-two ____ one hundred and fifty-six ____ nine hundred and thirty-one ____ two hundred and sixty ____ three hundred and ten ____	Start with the number 542 Partition it in six different ways. ____ hundreds ____ tens ____ ones Start with the number 542 Partition it in six different ways. ____ hundreds ____ tens ____ ones Challenge It 1 There are some piles of Base Ten. There is a pile of five hundreds, a pile of five tens and a pile of eight ones.  Make all the possible numbers using an odd number of hundreds, no tens and an even number of ones. (You must use some ones each time!) Make all the possible 3-digit numbers using an even number of hundreds and an odd number of tens.		

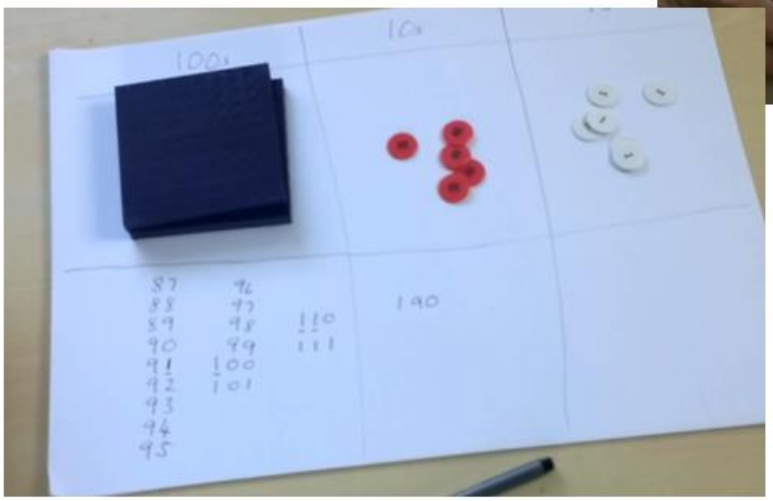
Staff CPD – Continued Professional Development

The subject knowledge expertise videos provided for each block of work should be watched by all adults working in the class – teachers and teaching assistants. The videos show you how to teach the ideas, what manipulatives and representations to use.

USING CAN DO MATHS TO SUPPORT THE TEACHING OF THE NATIONAL CURRICULUM REQUIREMENTS – SUBJECT KNOWLEDGE EXPERTISE VIDEO







Examples for teaching

Place Value – TBAT Identify the value of each digit in a two/three digit number

How would you teach this?

Watch an example of the video for Y3 – Unit 1

It is important that you watch this video before planning as it shows you how to model, the sorts of representations to use and the sorts of language to use with the children.

This video will act as good CPD for you as a teacher.

Recording work in books

Books are to be folded in half, with the task on one side and the children's responses on the other side. The colours used are consistent across school:

Red: Do it – what it is, what it also it.

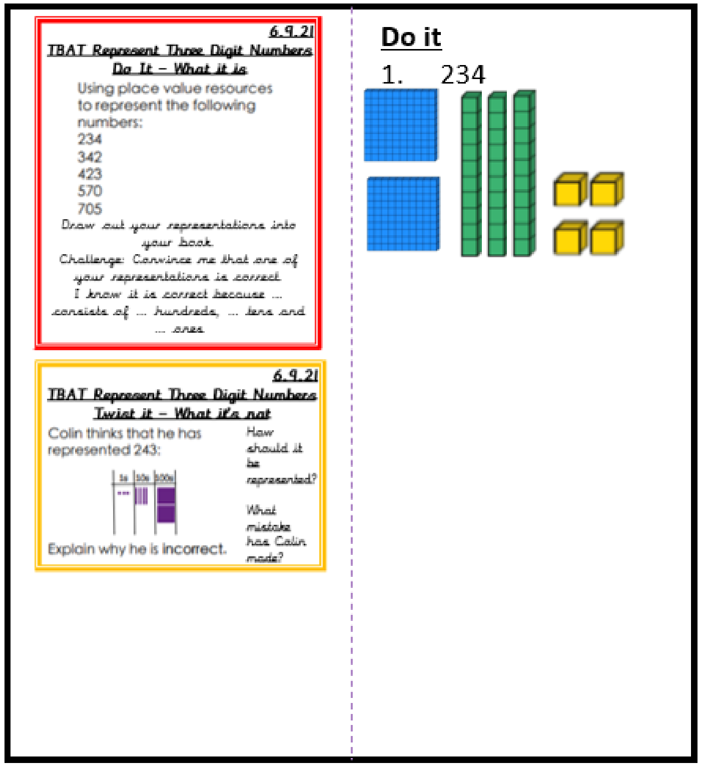
Orange: Twist it – what it's not

Green: Deepen it – problem solving

Purple: Challenge It

USING CAN DO MATHS TO SUPPORT THE TEACHING OF THE NATIONAL CURRICULUM REQUIREMENTS – CHILDREN'S WORKSHEETS

The power of the snipping tool!



Deliberate Practice

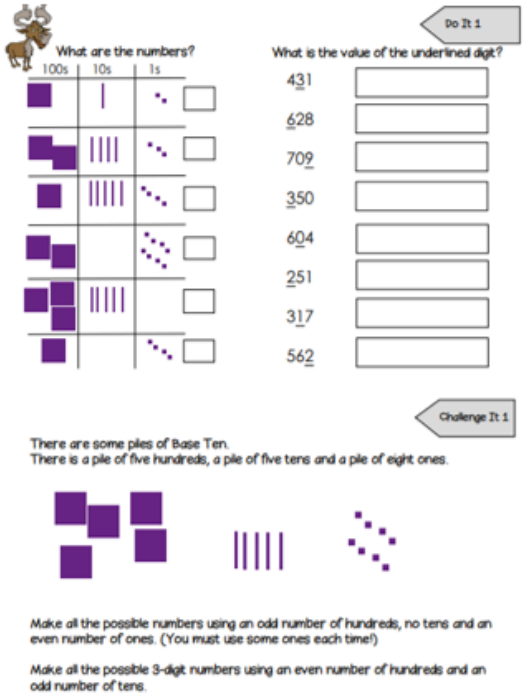
Deliberate practice allows children to practice things they have already been taught. This aids retention of new concepts.

USING CAN DO MATHS TO SUPPORT THE TEACHING OF THE NATIONAL CURRICULUM REQUIREMENTS – DELIBERATE PRACTICE ON FRIDAYS

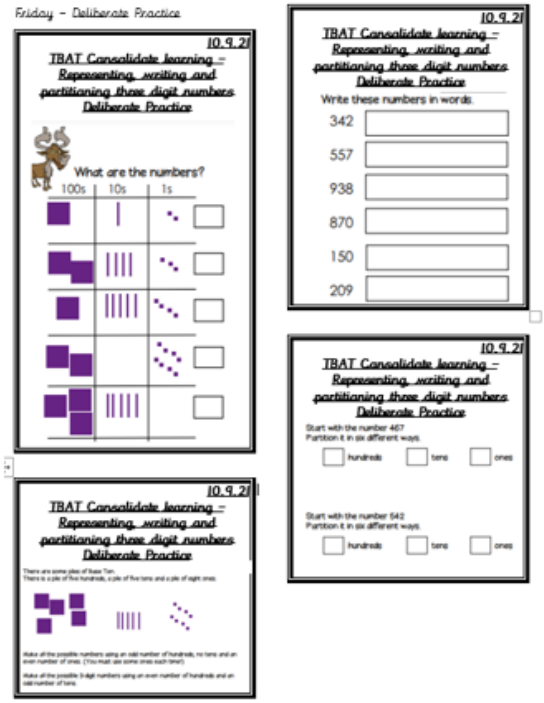
Contents

This pack of deliberate practice is designed to be used flexibly to secure the manageable steps of this unit.
The table below indicates which activities are linked to which mangeable steps.

	Do It	Challenge It	Play It
Represent 3-digit numbers	1	1	
Recognise the value of digits in 3-digit numbers	1		1
Partition 3-digit numbers in different ways		2	2
Read 3-digit numbers in words and write using numerals	2		
Read 3-digit numbers in numerals and write in words	2		
Read 3-digit numbers in words and write using numerals including zero as a place holder	2		
Read 3-digit numbers in numerals and write in words, including zero as a place holder	2		
Identify 3-digit numbers on a number line	3		
Represent 3-digit numbers on a number line	3		
Count in steps of 50 and 100 from zero		3	3
Count up in steps of 10 from any 2 or 3-digit number	4	4	4, 5
Count back in steps of 10 from any 3-digit number	4	4	4, 5
Count up in steps of 100 from any 2 or 3-digit number	5	5	5
Count back in steps of 100 from any 3-digit number	5	5	5
Find 10 more than a given number	6, 10	6	
Find 10 less than a given number	6, 10	6, 10	



This is your lesson for a Friday to do before Jigsaw – you consolidate the learning from the week/past couple of weeks to help children's retention. This is recorded in books.



Deliberate practice and KeePuppI documents should be shared with your TAs as they can use them for pre-teaching or keep up intervention – this will save finding resources.

The importance of intervention

Intervention is an essential part of teaching and learning, and is vital in ensuring all children keep up, and do not have to catch up.

Pre-teaching and same day intervention prove to be invaluable.

KEEP UP NOT CATCH UP

EVERY CHILD CAN LEARN

Deliberate Practice documents and KeePuppI documents should be shared with your TAs – this is because these resources can be used for intervention.

Every week, please email your TA in advance of the week's learning: A Lesson plan, worksheets, Deliberate practice document and KeepUppI documents

On your provision maps, please keep a slot each day for 'Keep up not catch up' and 'Pre-teach' maths intervention.

This can be to address gaps from the morning's work so all children are ready to move on together in the morning.

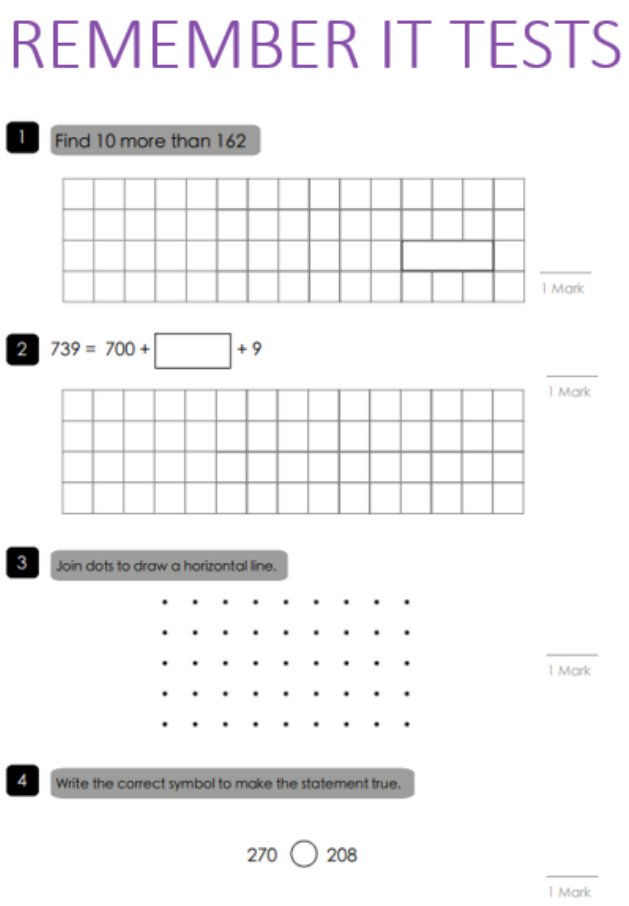
This can also be to pre-teach new content so children are confident before the next lesson.

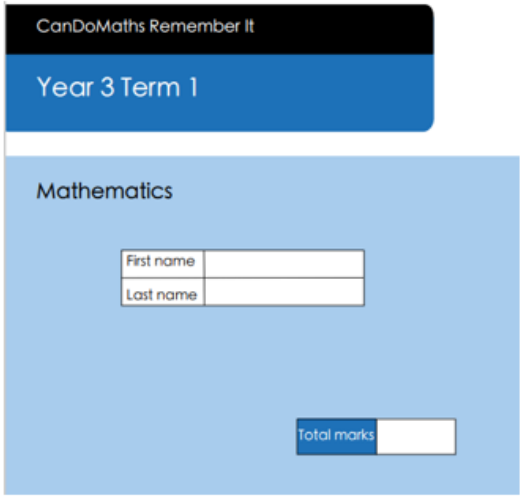
This is essential to ensuring this approach works for all children.

Intervention work will be completed in maths books for pre-teach and keep up so it helps children in lessons too ☺

Assessment

Assessment methods include: marking and feedback, questioning, low stakes quizzing, colouring objectives on Target Tracker and the use of half-termly Remember It Tests.



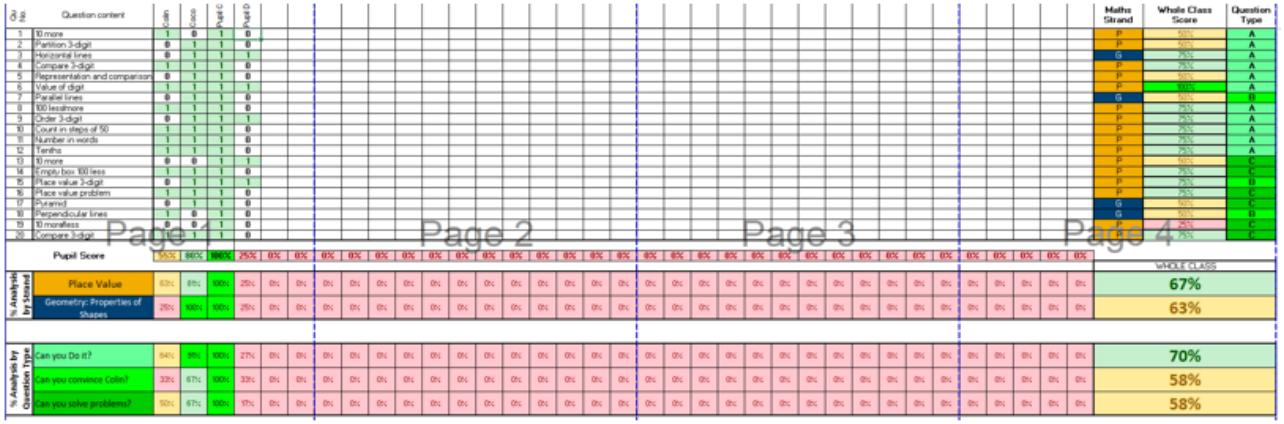


Every half term, at the end of term, the children will complete a **Remember It** test. This will assess what they have learnt over the term.

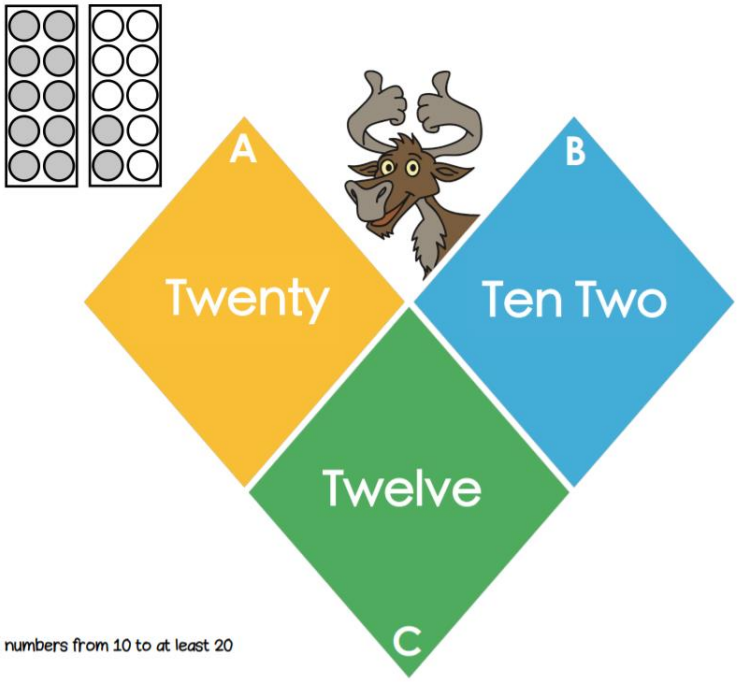
The results are then inputted onto an excel spreadsheet to help you identify gaps.

The spreadsheet creates the analysis for you.

We will discuss this in triangulation meetings once a half term ☺

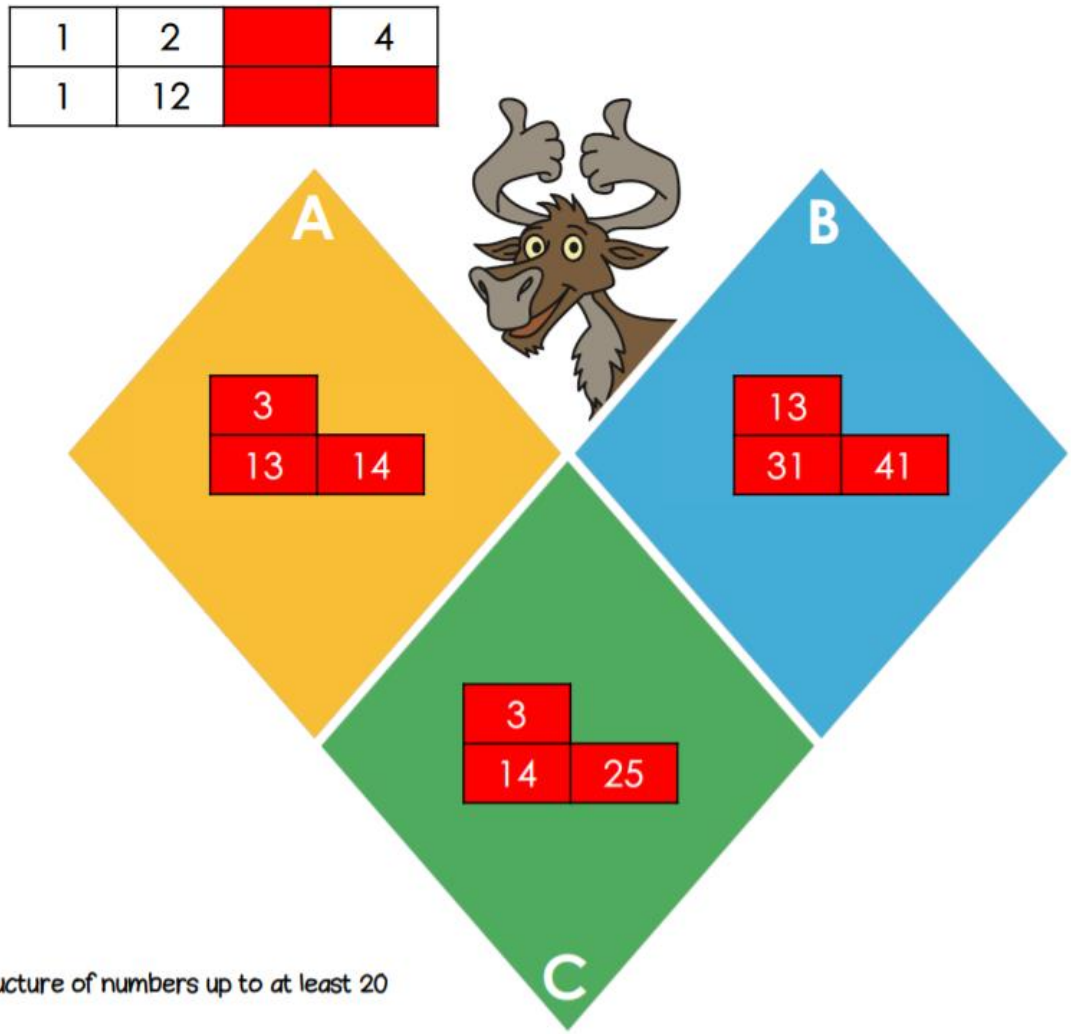


Low Stakes Quizzes



Represent numbers from 10 to at least 20

These can be used throughout the school day, at the end of a block of work, during intervention or at the beginning/end of a maths lesson.



Explore the structure of numbers up to at least 20

Characteristics of Effective Teaching and Learning

In Maths, we would expect to see...

Lesson Design	Will see...	Won't see...
Hook/Anchor Task An anchor task/hook is frequently used to **engage** the pupils in their learning. Pupils are given time to explore problems. **Why?** • Creates clear purpose for learning • Provides a climate where questioning and mistakes are celebrated • Gives the learning context	**Teacher** • A purpose to the learning – presenting a problem/question/context • Process driven • Climate of questioning and mistakes – sometimes agreeing with the incorrect answer and letting the children challenge the teacher • Assessing the needs of learners • Giving time for children to explore **Children** • Engaged and curious • Talking (own and paired) and asking questions • Dominating discussion • Making links • Using of practical resources	**Teacher** • Always reaching an answer • Teacher directing and dominating • Differentiation of task • Modelling the activity • Marking **Children** • Long periods of silence • Doing different tasks/questions • Distracted
Teach It Concrete and pictorial representations are chosen carefully to help build **procedural** and **conceptual** understanding together. **Why?** • Clear learning established • Efficient approach • All children having the opportunity to understand the concept	**Teacher** • Thinking aloud and modelling the decision making process, including use of resources, representations and vocabulary • Sensible number choice • Manageable steps • Intentional questioning • Generalising (If I know...then I know) or tackling misconceptions • Differentiation by support or challenge • Evolving stem sentences • Taking all children (and other adults) on the learning journey • Assessing, based on children's responses **Children** • Engaged and involved • Paired discussion • Using manipulatives • Exploring	**Teacher** • Just telling the children • Explaining the independent tasks • Diverting to other learning • Differentiating by content **Children** • Rote copying • Lots of written practice • In 'ability' groups

Practise It Children **practise** their new learning (and methods) with support as needed from a peer or adult. **Why?** • To check readiness and to build confidence • Assess depth of understanding • Opportunities for all to explain and use resources/representations • Establish and experience what a good one looks like	**Teacher** • Questioning to assess (do I need to do another example? Are they ready to be independent?) • Differentiated questioning • Model learning aloud, e.g. being A/B partners (clarity of role) • Modelling stem sentence **Children** • Discussing with peers/TAs/teacher • Reasoning – explaining, describing • Practising the new learning, e.g. A-B mixed pairs with clear roles • Using stem sentences • Using resources, models/images & representations • Books/whiteboard for notes or recording • Talking	**Teacher** • Teaching step-by-step • Differentiation by task **Children** • Lots of practice • Children sitting back • Fixed partners
Lesson Design	**Will see...**	**Won't see...**
Do It Children **experience success** by having a go at a few straightforward examples independently, including **what it is** and **what it is also**. **Why?** • Showing the learning • Experiencing success • Ask yourself: Can they do it?	**Teacher** • Still assessing (including marking and identifying any misconceptions) • Supporting children • Challenging – use of language etc. • Responding to what I see (if things not going well etc.) • Careful number choice to support noticing/challenge gradually • Supporting generalisation • 'What it is' and 'What it is also' examples **Children** • Working independently and succeeding • Using stem sentence to think things through • Usually at least 3 examples but not more than 6 • Representation using resources	**Teacher** • Not a random activity (e.g. thoughtless photocopying) • Trying to catch children out **Children** • Lots of practice • Not accessing the learning

Secure It 'What it is not' (a key misconception) is used to **secure understanding** of what the learning is. Children have a go independently and a class discussion explores it further. All pupils are expected to develop at least a secure understanding of each small key learning point. **Why?** • Secure understanding and build confidence • Develop children's ability to explain by convincing • Address misconceptions as a key part of the learning	**Teacher** • Assessing progress • In many lessons, all children access 'Secure It' • Modelling language, including reasoning, maybe providing a framework to support explanations • Supporting children to clarify explanations **Children** • Working independently • Exploring 'what it is not; misconception e.g. 'It can't be…because' 'Colin is wrong because…' • Using representations (resources, vocabulary & stem sentences)	**Teacher** • Just a problem to solve • A different concept to your small steps in learning • 'Do It' in a different way • Giving the explanation **Children** • Doing more of the same
Deepen It Opportunities to solve problems **applying** the key learning. **Why?** • Develop confidence • Apply learning • Make links in learning • Stretch and challenge **What? E.g.** Missing numbers, all possibilities, creating own, truths & lie, this is the answer, sometimes, always, never, changing context,	**Teacher** • Continuing to support children, intervening as necessary – not too soon! • Scaffolding the learning • Supporting correct use of vocabulary • Questioning to extend and challenge further • May link to the hook **Children** • Grappling with the problem & having a go • Working independently • Recognising generalisations by thinking, discussing, proving, applying etc. • Enjoying the challenge • Developing resilience	**Teacher** • Routinely stopping the class and teaching the children how to solve the problem • Being in charge of the learning • Random photocopied sheets • Other learning **Children** • Doing more of the same
Review It A short **summary** of key learning **Why?** • Confirm learning • Self-assessment/ Celebrate success • Link to other learning	**Teacher** • Confirming the learning and checking understanding • Revisit hook/anchor if needed • Identifying through assessment **Children** • Coming together to feel successful • Use of stem sentence • Confirm with partner • Making connections and articulating 'why'	**Teacher** • Not another teaching opportunity **Children** • Marking • Completing tasks