Maths Information Evening

Thursday 27th November 2024

The National Curriculum for mathematics

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

SUBJECT ON A PAGE: Maths

AT BRINKWORTH EARL DANBY'S SCHOOL WE BELIEVE THAT MATHS "IS NOT ABOUT NUMBERS, EQUATIONS, COMPUTATIONS, OR ALGORITHMS: IT IS ABOUT UNDERSTANDING", (WILLIAM PAUL THURSTON). WE BELIEVE MATHS IS VITAL FOR BUILDING CHILDREN'S ABILITY TO FUNCTION IN A NUMERATE WORLD.

Intent—we aim to...

- Give children a solid foundation in maths.
- Support all children to be interested in maths learning.
- Support all children to learn their times tables facts.
- Develop children's problem solving skills.
- Share some of the 'rea-life' reasons that we learn maths.
- Allow children to develop team work and cooperation skills
- Send children to secondary school prepared for the KS3 curriculum.

Implementation—How do we achieve our aims?

Consistent and systematic approach

We use a maths scheme called 'CanDo maths' which was designed and written by a local maths specialist. Each year group is taught separately, even if they are a mixed-age class. This means that every child receives the right 'diet' of maths. Lessons are planned in small steps, which allow for consolidation at every step. Each teacher uses this scheme and ensures that vocabulary and methods are used accurately and progressively to aid the children's understanding.

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Maths mastery has five big ideas, or elements, which we teach throughout the week: fluency, variation, mathematical thinking, representation & structure, and coherence.
Mastering maths means pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material.

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As well as a 40-50 minute lesson every day, we also have a 15-20 minute fluency session called Maths On Track. This includes revision of previously taught topics, times table and other number practice, and revisiting misconceptions.

Using manipulatives

Children learn maths well when it is taught in a way in which they can understand it. The phrase 'concrete-pictorial-abstract' is an important one when teaching maths. This means that first we teach using real objects, or counters and other manipulatives. Once the children can understand the maths concept in this way, we move on to pictorial representations of the maths, and finally the abstract (the written calculation). Every classroom is therefore equipped with a set of resources for the children to use to help in the early stages of learning a new concept, and we encourage the children to collect resources as they need them, much like they would choose a pencil with which to write.

Year 4 programme of study

Number – number and place value

Statutory requirements

Pupils should be taught to

- count in multiples of 6, 7, 9, 25 and 1000
- find 1000 more or less than a given number
- count backwards through zero to include negative numbers
- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- order and compare numbers beyond 1000
- identify, represent and estimate numbers using different representations
- round any number to the nearest 10, 100 or 1000
- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

Number – addition and subtraction

Statutory requirements

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Number – multiplication and division

Statutory requirements

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to 12 × 12
- 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
- recognise and use factor pairs and commutativity in mental calculations
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- 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.

Number – fractions (including decimals)

Statutory requirements

Pupils should be taught to:

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- 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
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- round decimals with one decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to two decimal places
- solve simple measure and money problems involving fractions and decimals to two decimal places.

Measurement

Statutory requirements

Pupils should be taught to:

- Convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence
- 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; weeks to days.

Geometry – properties of shapes

Statutory requirements

Pupils should be taught to:

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to two right angles by size
- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry.

Geometry – position and direction

Statutory requirements

Pupils should be taught to:

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon.

Statistics

Statutory requirements

Pupils should be taught to:

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

CanDoMaths

Our mission is simple... We are passionate about supporting you to develop a 'CanDo Attitude' to maths in your classroom.

We do this with a little help from Colin the 'CanDo' Caribou and his Friends...

Teaching for Understanding

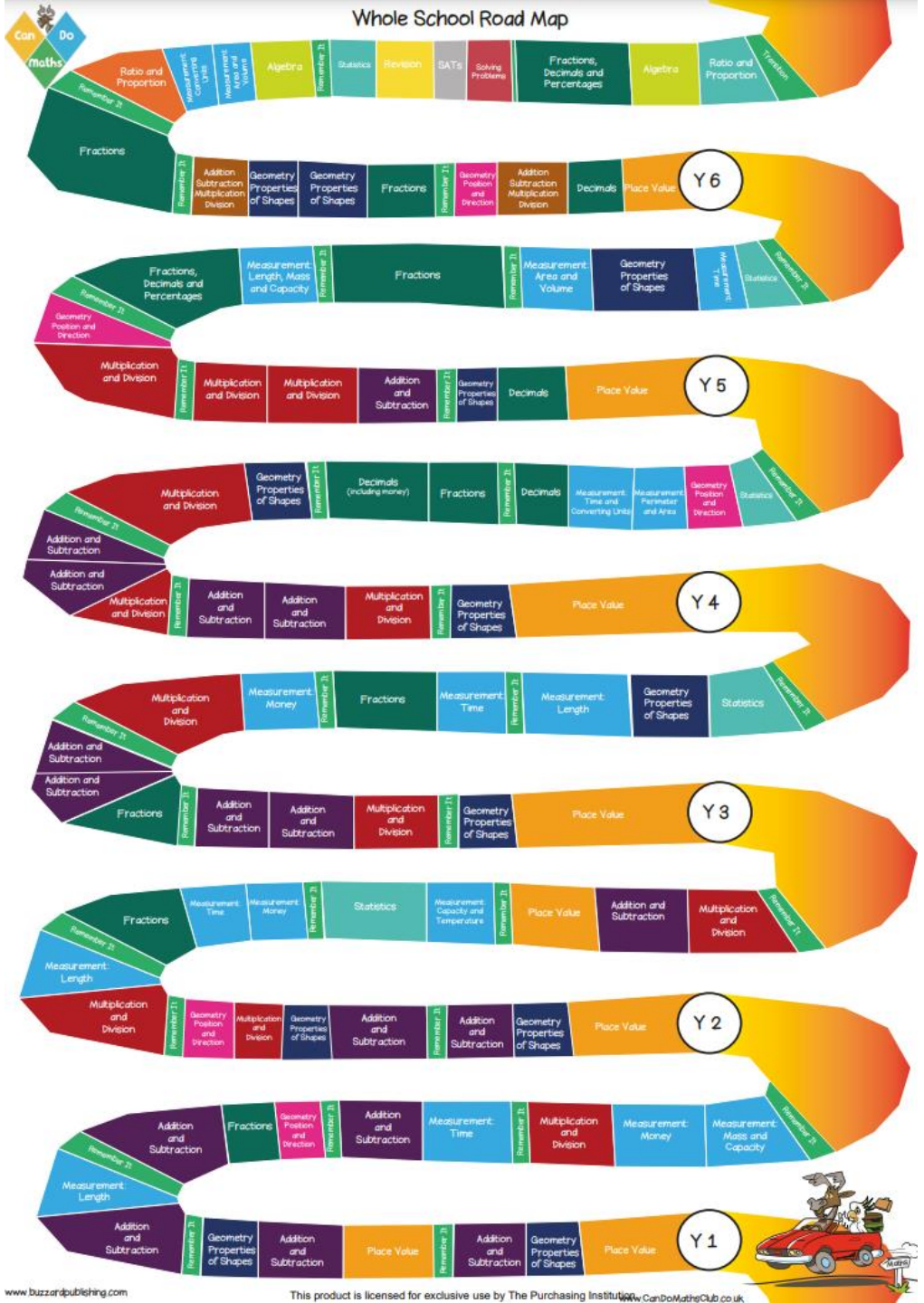
Teaching that focuses on developing secure and deep understanding, including the use of practical resources and iconic representations supports the learning and memorisation of mathematical concepts. The teaching of 'rules' and 'tricks' with no understanding and the use of only ‘standard’ examples contribute 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 'CanDoMaths’ approach including the use of 'yet’ and knowing that making mistakes is an essential part of learning.

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.


Whole School Road Map
Can Do Maths
Ratio and Proportion
Measurement: Converting Units
Measurement: Area and Volume
Algebra
Statistics
Revision
SATs
Solving Problems
Fractions, Decimals and Percentages
Algebra
Ratio and Proportion
Fractions
Y6
Addition Subtraction Multiplication Division
Geometry Properties of Shapes
Geometry Properties of Shapes
Fractions
Geometry Position and Direction
Addition Subtraction Multiplication Division
Decimals
Place Value
Fractions, Decimals and Percentages
Measurement: Length, Mass and Capacity
Fractions
Measurement: Area and Volume
Geometry Properties of Shapes
Measurement: Time
Statistics
Geometry Position and Direction
Multiplication and Division
Y5
Multiplication and Division
Multiplication and Division
Addition and Subtraction
Geometry Properties of Shapes
Decimals
Place Value
Multiplication and Division
Geometry Properties of Shapes
Decimals (including money)
Fractions
Decimals
Measurement: Time and Converting Units
Measurement: Perimeter and Area
Geometry Position and Direction
Statistics
Addition and Subtraction
Addition and Subtraction
Multiplication and Division
Y4
Addition and Subtraction
Addition and Subtraction
Multiplication and Division
Geometry Properties of Shapes
Place Value
Multiplication and Division
Measurement: Money
Fractions
Measurement: Time
Measurement: Length
Geometry Properties of Shapes
Statistics
Addition and Subtraction
Addition and Subtraction
Fractions
Addition and Subtraction
Addition and Subtraction
Multiplication and Division
Geometry Properties of Shapes
Place Value
Y3
Fractions
Measurement: Time
Measurement: Money
Statistics
Measurement: Capacity and Temperature
Place Value
Addition and Subtraction
Multiplication and Division
Measurement: Length
Multiplication and Division
Geometry Position and Direction
Multiplication and Division
Geometry Properties of Shapes
Addition and Subtraction
Addition and Subtraction
Geometry Properties of Shapes
Place Value
Y2
Addition and Subtraction
Fractions
Geometry Position and Direction
Addition and Subtraction
Measurement: Time
Multiplication and Division
Measurement: Money
Measurement: Mass and Capacity
Measurement: Length
Addition and Subtraction
Geometry Properties of Shapes
Addition and Subtraction
Place Value
Addition and Subtraction
Geometry Properties of Shapes
Place Value
Y1
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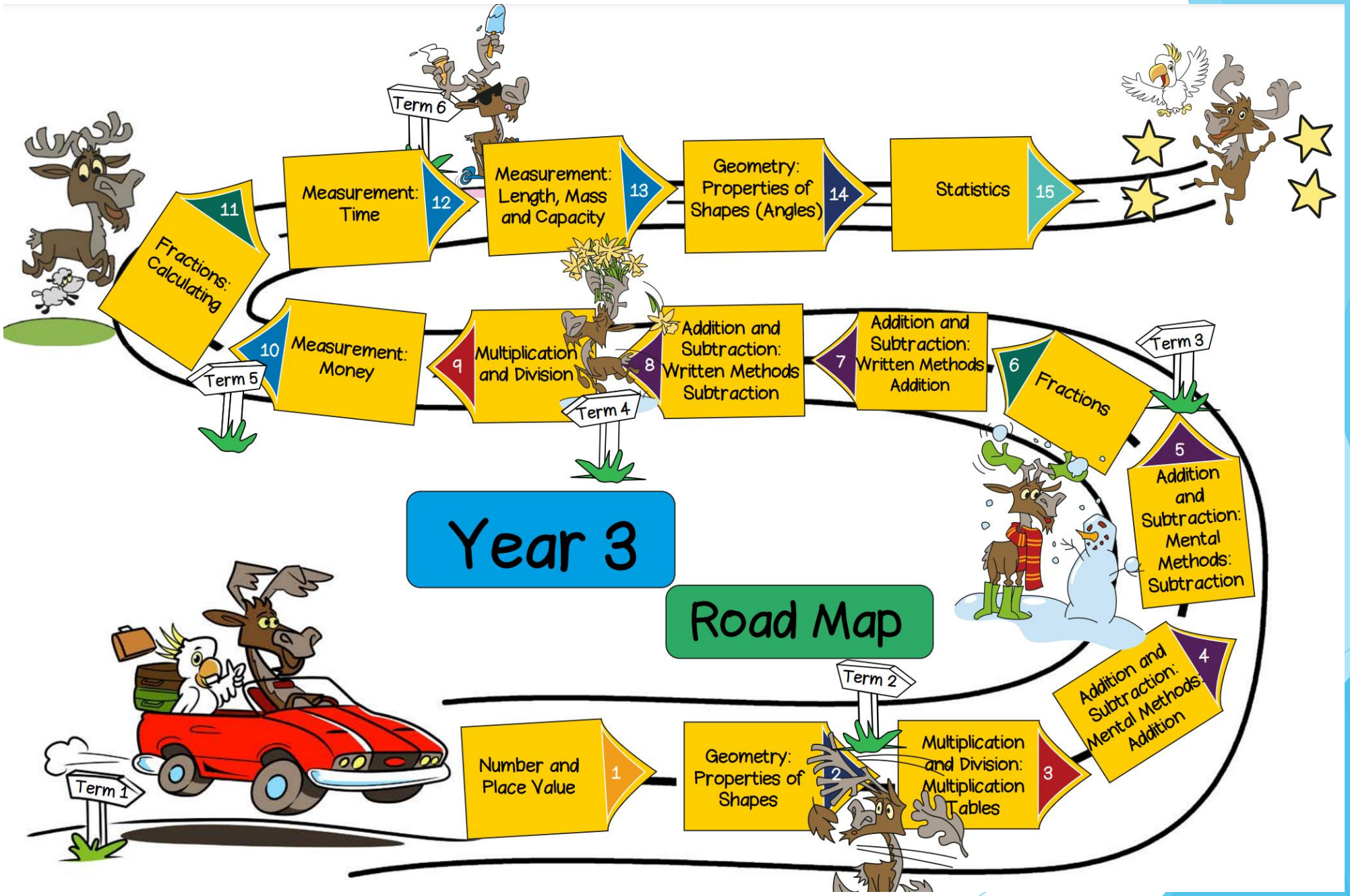

Year 3
Road Map
Term 1
Number and Place Value 1
Geometry: Properties of Shapes 2
Term 2
Multiplication and Division: Multiplication Tables 3
Addition and Subtraction: Mental Methods: Addition 4
Addition and Subtraction: Mental Methods: Subtraction 5
Term 3
Fractions 6
Addition and Subtraction: Written Methods Addition 7
Addition and Subtraction: Written Methods Subtraction 8
Term 4
Multiplication and Division 9
Measurement: Money 10
Term 5
Fractions: Calculating 11
Measurement: Time 12
Measurement: Length, Mass and Capacity 13
Term 6
Geometry: Properties of Shapes (Angles) 14
Statistics 15

Year 3

Unit 3

Multiplication and Division: Multiplication Tables

Build the 8x table and count in steps of 8 and multiples of 8 from zero

Recall and use multiplication facts for the 8 times table

Recall and use division facts for the 8 times table

Recall and use division facts for the 4 times table

Recall and use multiplication facts for the 4 times table

Build the 4x table and count in steps of 4 and multiples of 4 from zero

Recall and use division facts for the 3 times table

Recall and use multiplication facts for the 3 times table

Build the 3x table

Term 2

Two maths sessions a day:

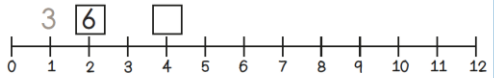
Main lesson, new learning, manageable steps

MOT meeting (Maths On Track), practising previously-learnt skills, deliberate practice, times table practice, scoop groups

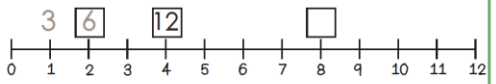
The main lesson

- Manageable steps, repetitive lesson structure
- Engage, I do, We do, You do together, You do, Review

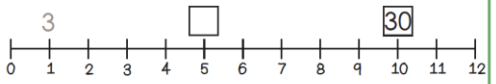
If I know 3 × 2 = 6 then ...

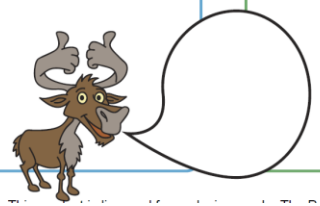


If I know 3 × 4 = 12 then ...



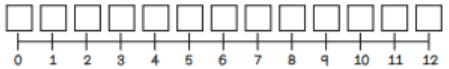
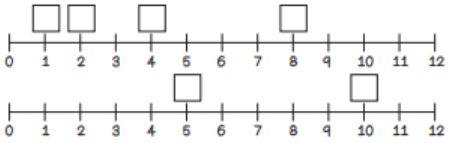
If I know 3 × 10 = 30 then ...



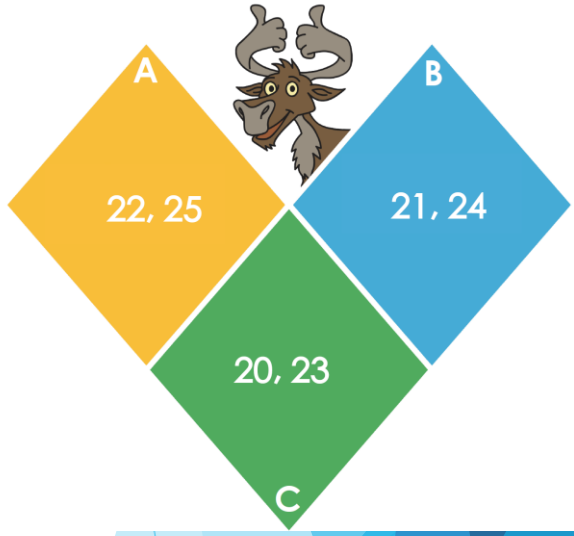


3.3.1

Depth of Understanding

	Build the 3x table
What it is What it is also	Build the 3× table by: - counting in steps of 3  - use doubling and halving 
What it is not	Coco thinks she is building the 3× table: 0, 3, 6, 9, 13, 16, 19, ... Explain why she is incorrect.
What problems can I solve?	Always/ Sometimes/ Never True The sum of the digits of any multiple of 3 is 3, 6 or 9

12, 15, 18, ... , ...



Build the 3x table

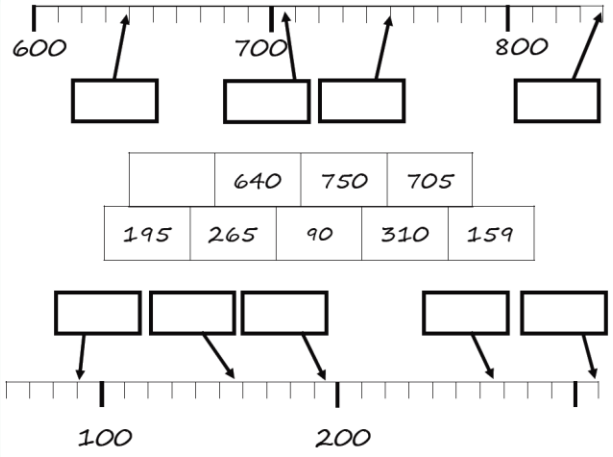
The MOT

- A 20 minute session, flexibly planned
- Based on the children's needs, what they have previously learnt to practice (deliberate practice)
- Ability to have 'scoop groups' as needed, to support learners or challenge learners
- We use our expert knowledge of the children's understanding to plan these sessions

Example MOTs

1	ArithmeKit 3	Compare and order numbers up to 1000 and position them on a number line

Match the numbers in the middle to the empty boxes on the number line:



What's missing?

Create your own matching pairs problem.

List all the possible 3-digit numbers you can using one six, one four and one zero each time:

Put them in order.

What do you notice?

Now swap the zero for a two.

What do you notice?

Now swap the six for a two.

What do you notice?

4	ArithmeKit 3	Add numbers by partitioning and recombining

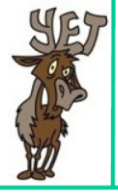
Coco thinks when you add two 3-digit numbers, you can get a 1 in the ones column.

Do you agree with Coco?

Do you disagree with Coco?

Using practical resources and partitioning convince Colin that

267 + 354 = 621



Put a digit in each box to make the statements true:

3 2 6 + 2 6 □ = □□7

4□6 + 2 4 □ = □8 3

2 1 □ + 3 □□ = 5□3

Is there only one way to solve this problem?

Use the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 once each, to make all the statements true.

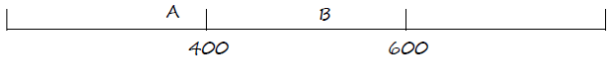
Create your own missing digit problem.

Place Value

1 a) Order these 3-digit numbers from **smallest to largest**:

584 485 845 548

b) What are the possible value of numbers A and B shown on the number line below?



Number A: _____

Number B: _____

2 a) Find 100 more than:

i) 346 ii) 417 iii) 707

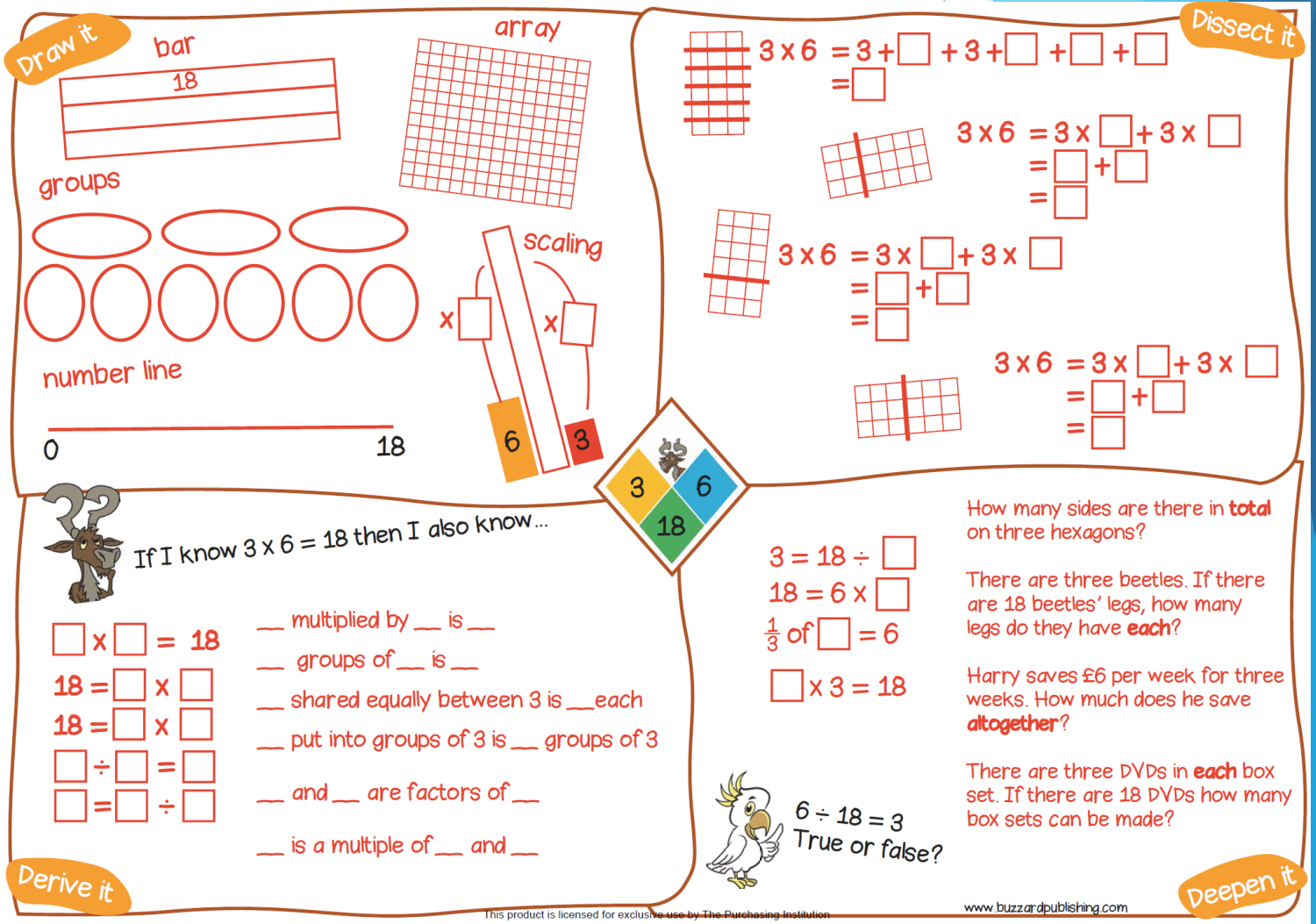
b) Find 10 less than:

ii) 346 ii) 417 iii) 707

3 Partition 256 in three different ways:

a) 256 =

b) 256 =



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Multiplication Facts Workout

Workout A

$4 \times 6 = \square$	$6 \times 8 = \square$	$\square = 4 \times 13$	$\square = 4 \times 18$
$3 \times 9 = \square$	$3 \times 8 = \square$	$\square = 17 \times 8$	$\square = 19 \times 8$
$8 \times 4 = \square$	$8 \times 9 = \square$	$\square = 3 \times 18$	$\square = 3 \times 17$
$4 \times 9 = \square$	$4 \times 12 = \square$	$\square = 13 \times 3$	$\square = 15 \times 8$

Or it could look like a list of calculations on the board

EYFS – slightly different, but also the same!

- High expectations – 50 not 20
- Two-week blocks
- Looking at nos to 10 in great detail – what it is, what it's not, how to make it, the importance of checking by moving objects
- Most important skill – subitising

- Shape – 2d and 3d shapes – flat and fat shapes
- Seeing them in the environment
- Mostly based on CanDo and the Development Matters document
- Retrieval practice, revisit things we already know

How to we keep track of progress?

CanDoMaths RememberIt

Year 6 Term 1

We complete termly ‘remember its’.
These allow teachers to see what the children have remembered at the end of a term.
These feed into our KPIs/MOTs.

How to we keep track of progress?

CanDoMaths Ready To Progress

Year 6 Paper 1

We also complete three ‘ready to progress’ tests each year. These help teachers track progress over a longer period of time.

This will then feed in to intervention support and future planning.

Year 4 What about the MTC checker (multiplication checker)?

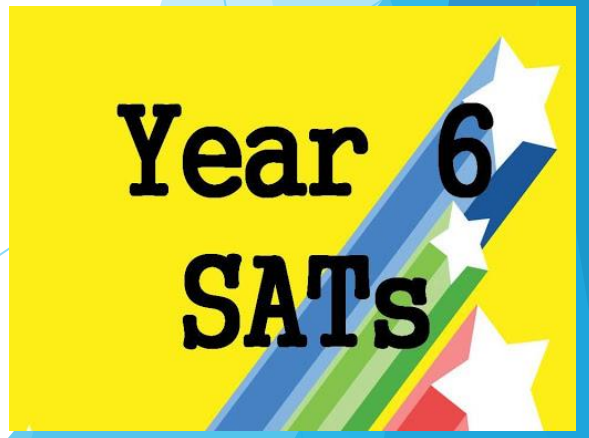
In year 4 children take a statutory multiplication test that takes place in June. This happens in June. It is completed online.

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

Year 6 - What about the year 6 SATs.

In May the year 6 sit there SATs. These take place in term 5.

These are the last tests the children sit in Brinkworth Earl Danby's. They are worth having a look at so you can see the standard which each child is expected to reach.



CanDoMaths Key Performance Indicators

	Year R KPIs		
1	Recite the number sequence,		
2	Count to and from different numbers, forwards		
3	Count to and from different numbers, backwards		
4	Count objects accurately		
5	Subitise		
6	Select a numeral to represent a quantity in a group		
7	Find the group that has more or less		
8	Compare two numbers saying which is larger or smaller		
9	Order numbers		
10	Identify something longer or shorter than something else		
11	Continue or create a repeating pattern		
12	Identify similarities and differences between 3D shapes		
13	Combine two quantities to add		
14	Count on to add		
15	Find one more		
16	Take away and say what is left		
17	Find one less		
18	Partition numbers into two parts		
19	Partition numbers into more than two parts		
20	Say how many are hidden in a known number of items		
21	Find something heavier or lighter than something else		
22	Use positional language		
23	Identify similarities and differences between 2D shapes		
24	Order events		

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Implementation (Continued)

Times tables and other facts

There are some key facts that we want the children to know before they leave our school. These include number bonds and times tables. If children have these facts learned, that they can recall quickly, then it frees up their working memory to be able to focus on the main skill they are learning. Knowledge of these facts also supports the development of children's self esteem and pride in their work. We ensure that children have learnt all of their times tables before the MTC test in Year 4.

Parental engagement

We have an annual parent information evening so that we can share our maths curriculum or other key information with parents. We put our Termly Learning Plans onto our website so that parents can see what we are teaching that term. Our termly pick and mix homework often has a maths element. Parents are always welcome to chat with teachers about their child's learning.

Technology

Technology is a vital part of teaching in the modern world. We use technology in different ways in our maths teaching. The interactive whiteboards are a useful tool to demonstrate concepts and to model/scaffold methods. We also encourage children to practise their times tables and other skills on various programmes using the laptops and class computers.

Maths across the whole curriculum

A good understanding of maths is so important that we make sure the it is used across the curriculum, from working out how long ago an event was in history, to collecting and analysing data in science, and many other ways.

Maths interventions

If children are not making the progress that we would expect in their maths learning journey, then we put support in place to allow them to catch up. This could be targeted interventions, pre-teaching, working with an adult for each lesson, or other support as needed.

Impact—How will we know we achieved our aims?

- Children will enjoy maths and see its value in the real world.
- They will know their basic number facts and be able to recall them quickly.
- The majority of children will reach at least the expected standard at end of key stage tests.
- They will be able to use efficient methods for the four operations independently.
- They will be able to solve problems by thinking around a question and choosing an appropriate method.
- The majority of children will score more than 22 out of 25 in the MTC.
- They will be ready for the Year 7 maths curriculum.

Any questions…