Co-op Academy
Beckfield

Our Maths Approach

8th November 2023

Agenda

Maths curriculum & progression

Teaching approach

Assessment

How you can support

Questions

Maths Curriculum - Vision

- High-quality, rich curriculum that's engaging, challenging and enjoyable.
- Develop confident mathematicians who are not afraid to take risks and challenge themselves.
- Children are provided with tools they need to apply knowledge accurately, make connections, reason mathematically, solve problems and express themselves confidently and fluently using correct mathematical language.
- Children can see how mathematics is relevant to their world, and applicable to everyday life.
- We want to instil 'lifelong learning' and an understanding of the skills developed through mathematics are something that the children will need as they move through their school life and into the world of employment.

Maths Curriculum - EYFS Overview

	Autumn	Spring	Summer
EYFS	Match and Sort and compare Talk about measure and pattern Compare size, mass and capacity: Exploring patterns Representing 12 3: Comparing 1 2 3: Composition of 1,2,3: Circles and triangles Representing numbers to 5 One more and one less Shapes with 4 sides	Comparing numbers to 5: Composition of 4 and 5 Compare mass: Compare capacity 6 7 8: combining 2 groups and making pairs. Length, height and time. Building 9 & 10: Counting to 9 & 10, comparing numbers to 10 and bonds to 10 3D shapes and pattern	To 20 and beyond: building numbers beyond 10 and counting patterns beyond 10. Spatial reasoning, match, rotate and manipulate. Manipulate, compose and decompose. Find my pattern: doubling, sharing and grouping and even and odd. Spatial reasoning, visualise and build. Visualise, build and map

Maths Curriculum - KS1 Overview

	Autumn	Spring	Summer
Year 1	Place Value (within 10) Addition and Subtraction (within 10) Geometry (2D and 3D shapes)	Place Value (within 20) Addition and Subtraction (within 20) Place Value (within 50) Measurement (length and height) Measurement (mass and volume)	Multiplication and Division Fractions Geometry (position and direction) Place Value (within 100) Measurement (money) Measurement (time)
Year 2	Place Value Addition and Subtraction Shape	Money Multiplication and Division Length and Height Mass, Capacity and Temperature	Fractions Time Statistics Position and Direction

Maths Curriculum - KS2 Overview

	Autumn	Spring	Summer
Year 3	Place Value Addition and Subtraction Multiplication and Division	Multiplication and Division Length and Perimeter Fractions Mass and Capacity	Fractions Money Time Shape Statistics
Year 4	Place Value Addition and Subtraction Area Multiplication and Division	Multiplication and Division Length and perimeter Fractions Decimals	Decimals Money Time Shape Statistics Position and Direction
Year 5	Place Value Addition and Subtraction Multiplication Fractions	Multiplication Fractions Decimals and Percentages Perimeter and Area Statistics	Shape Position and Direction Decimals Negative numbers Converting units Volume
Year 6	Place Value Addition and Subtraction Multiplication and Division Fractions	Multiplication and Division Fractions Decimals and Percentages Perimeter and Area Statistics	Shape Position and Direction Decimals Negative Numbers Converting units Volume

Maths Curriculum - How do we achieve this?

Early Morning Work - Flashback 4

Daily maths lessons

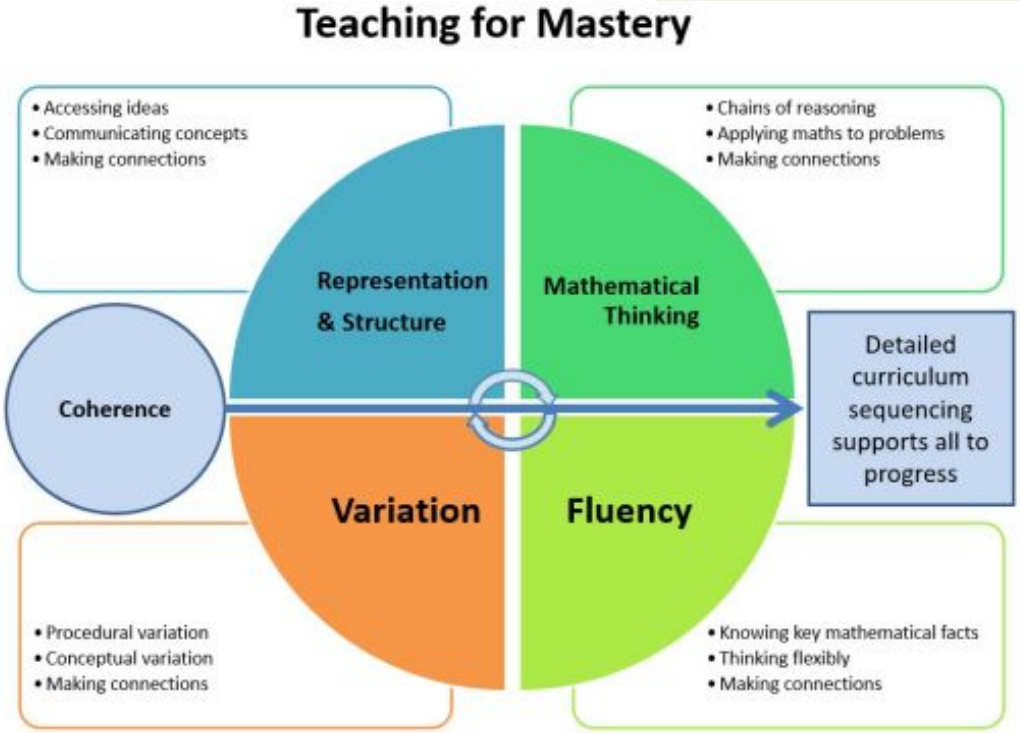
KIRFs

Times Tables

Weekly Arithmetic session

Maths Curriculum & Teaching Approach

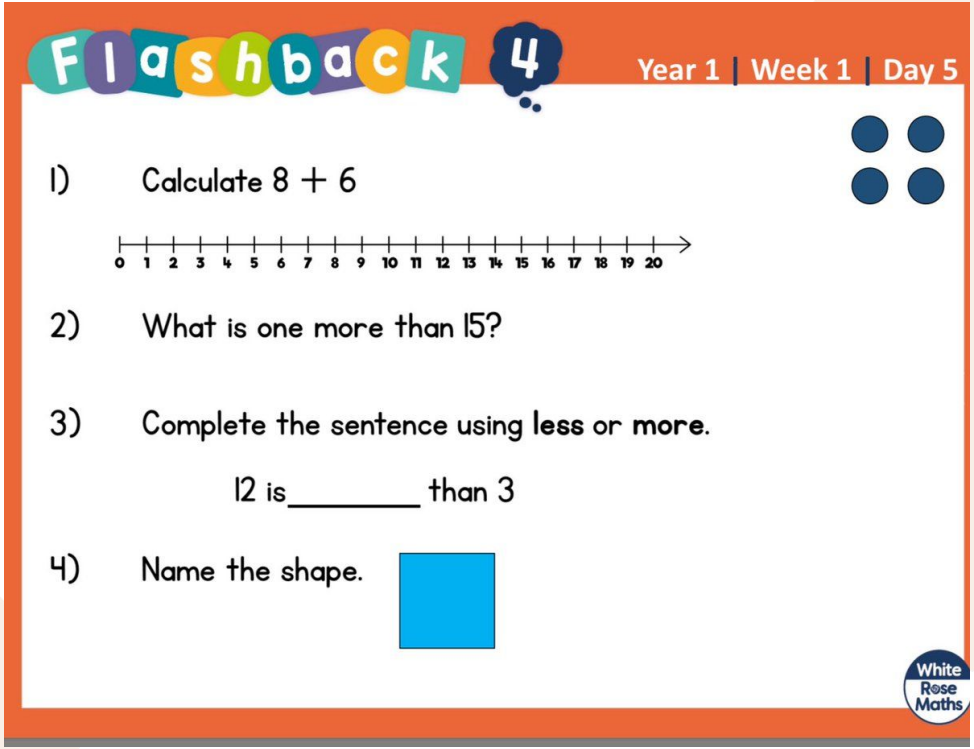
At Beckfield, we use White Rose Maths to help us embed a mastery based approach in our lessons.



Teaching approach

Flashback Four

Daily review to strengthen previous learning and lead to fluent recall



Teaching approach

KIRFs
(Key Instant Recall Facts)

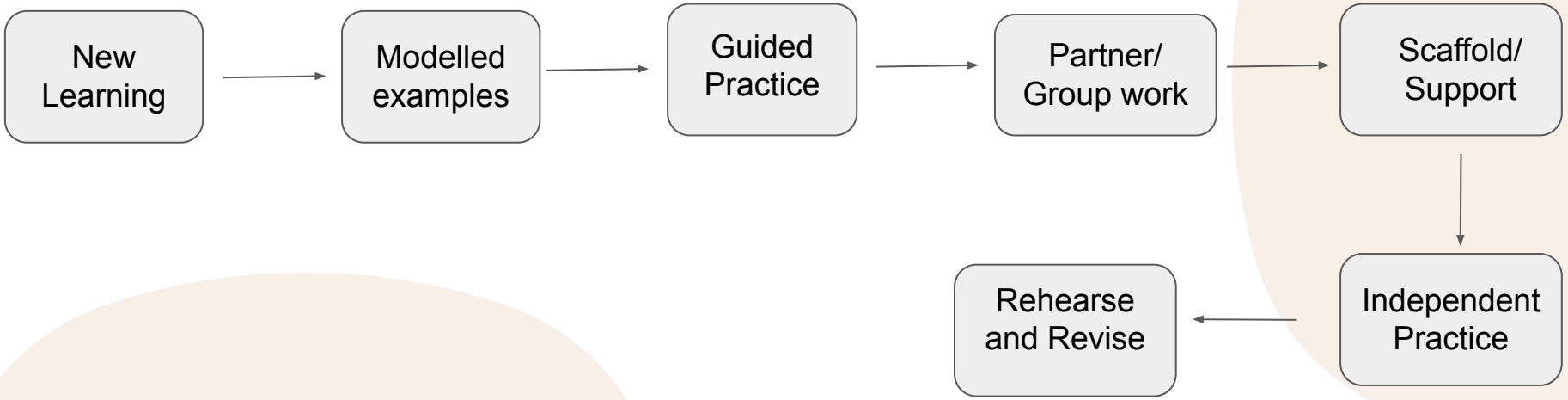
Daily review to strengthen previous learning and lead to fluent, instant recall

OVERVIEW OF KIRFs (Key Instant Recall Facts) TERM-BY TERM

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
AUTUMN TERM 1	Know all the number bonds up to 5.	Know all number bonds up to 20.	Know all number bonds to 20.	Know number bonds to 100.	I know decimal number bonds to 1 and 10.	Consolidate multiplication and division facts for all times tables.
AUTUMN TERM 2	Number bonds to 6.	Know the multiplication and division facts for the 2 times tables.	Know the multiplication and division facts for the 3 times tables.	Know multiplication and division facts for the 6x table.	Know square numbers to 12 x 12.	Be able to multiply and divide whole and decimal (3dp) numbers by 10/100/1000
SPRING TERM 1	Know doubles and halves of numbers to 10.	Know doubles and halves of numbers to 20.	Know facts about duration of time.	Know multiplication and division facts for the 9x and 11x table.	I can recall metric conversions.	Know common factors of pairs of numbers
SPRING TERM 2	Number bonds to 10.	Know multiplication and division facts for 10x table.	Know the multiplication and division facts for the 4 times tables.	Know the decimal equivalents of fractions ½, ¼, ¾.	I can identify prime numbers up to 20.	Know to convert between decimals, fractions and percentages.
SUMMER TERM 1	I can tell the time.	I can tell the time.	I can tell time.	Know multiplication and division facts for the 7x times table.	I can recall square numbers up to 12 squared and their square roots.	Know prime numbers up to 50.
SUMMER TERM 2	Know number bonds for each number to 10.	Know multiplication and division facts for 5x table.	Know multiplication and division facts for 8x table.	I can multiply and divide single-digit numbers by 10 and 100.	I can find factor pairs of a number.	Consolidation of the above.

Efficient, accurate recall of key number facts and procedures is essential for fluency, freeing pupils' minds to think deeply about concepts and problems, but fluency demands more than this. It requires pupils to have the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to choose appropriate methods and strategies to solve problems (NCETM, 2017)

Teaching approach - Lessons



All lessons are designed with **Maths Mastery** in mind and steps throughout a lesson are small to ensure that all pupils understand the key concepts before they are exposed to new ones.

Teaching approach - Lessons

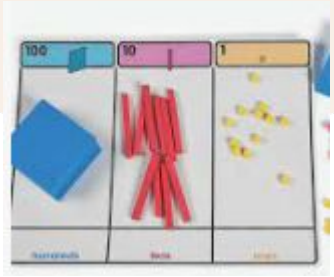
Through all stages of our maths lessons, teachers include opportunities for:

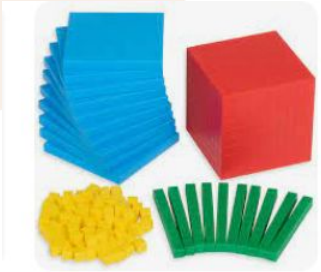
- Concrete resources
- Pictorial representations
- ‘Abstract’ mathematical practice
- Fluency
- Problem solving

Research shows that when children are introduced to a new concept, working with concrete physical resources and pictorial representations leads to a better understanding of abstract concepts.

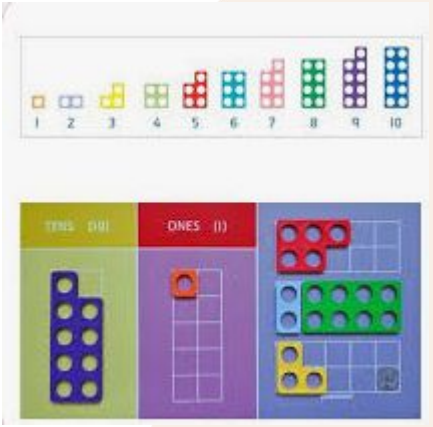
Teaching approach - Concrete resources

Base-Ten



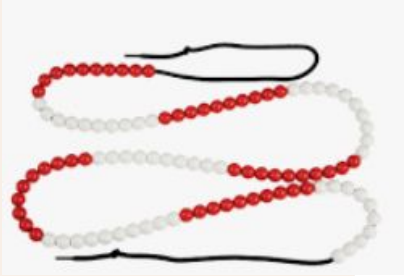


Arrow Cards



Counters

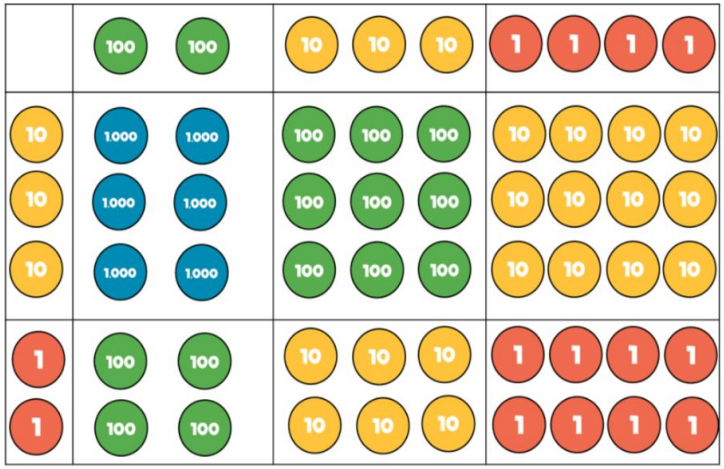
Bead Strings

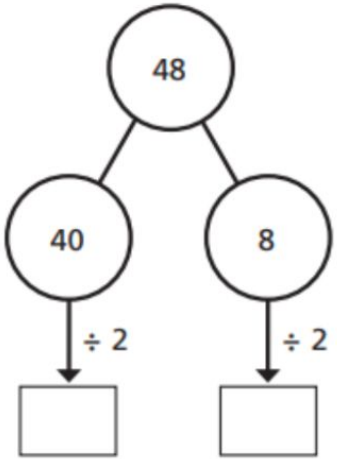


Rekenrek

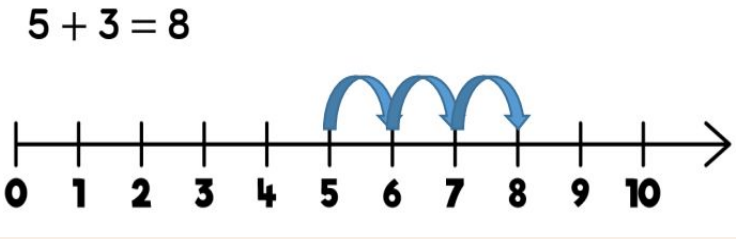
Numicon

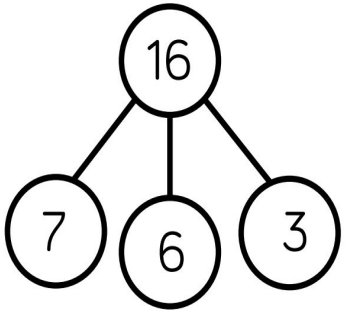
Teaching approach - Pictorial representations

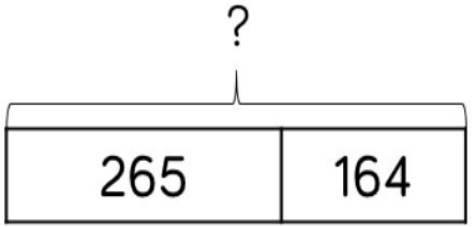




1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50







Teaching approach - Abstract

TTh	Th	H	T	O
	2	7	3	9
×			2	8
2	1	9	1	2
2	5	3	7	
1 5	4	7	8	0
1		1		
7	6	6	9	2
		1		

One bag holds 5 apples.
How many apples do 4 bags hold?

		2	1	4
	4	8	5	$^{1}6$

	H	T	O	
		3	4	
×			5	
	1	7	0	
	1	2		

	H	T	O
		2	2
×		3	1
		2	2
	6	6	0
	6	8	2

$$\begin{array}{r} {}^{3}\cancel{4}^{1}357 \\ -\ 2735 \\ \hline 1622 \end{array}$$

	1	3	7	8
+	2	1	4	8
	3	5	2	6
	1	1		

Calculation Policy

Assessment

Formative assessment:

- Teachers use Assessment for Learning throughout their lessons to support children and move learning forward
- Termly mathematics assessments

Statutory assessments:

- EYFS
- Year 4
- Year 6

Assessment - EYFS

Number ELG

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns ELG

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Assessment - Multiplication Check (Year 4)

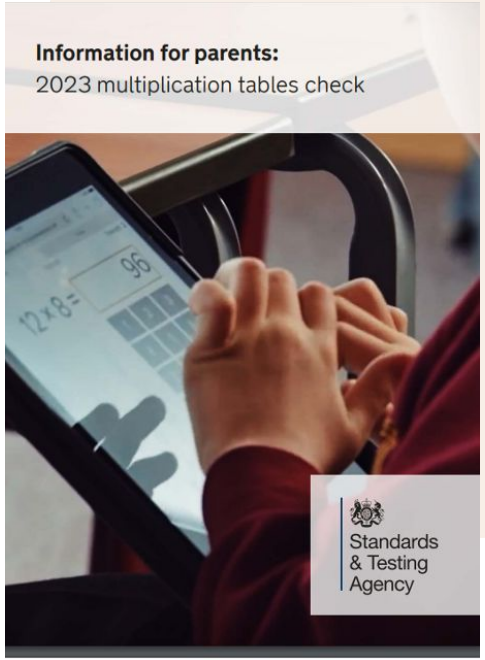
Purpose: determines whether pupils can fluently recall their times tables, which is essential for future success in mathematics

The check is completed on-screen using a computer and computer keyboard.

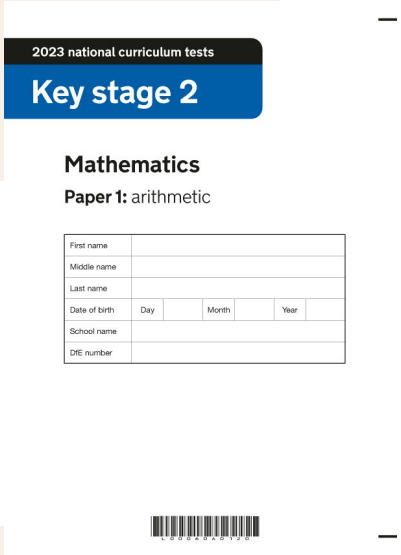
There are:

- 25 questions
- 6 seconds to answer each question – *this is to prove children can recall information rather than working out the answers*

The test takes approximately 5 minutes to complete and is administered in small groups over a two-week period in June.



Assessment - Year 6 SATS


2023 national curriculum tests

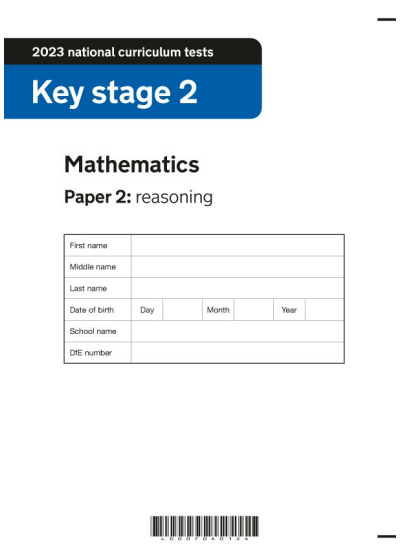
Key stage 2

Mathematics

Paper 1: arithmetic

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						

Paper 1: Arithmetic
36 questions
30 minutes
40 marks


2023 national curriculum tests

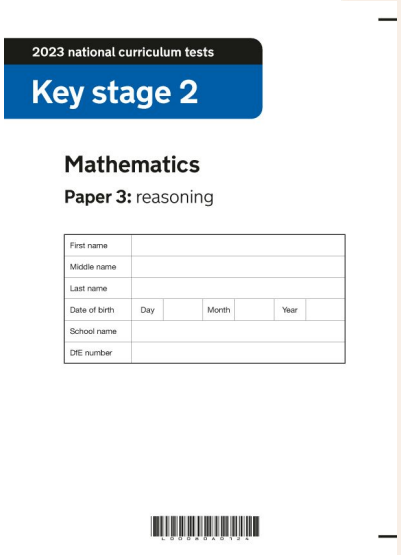
Key stage 2

Mathematics

Paper 2: reasoning

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						

Paper 2: Reasoning
20-25 questions
40 minutes
35 marks


2023 national curriculum tests

Key stage 2

Mathematics

Paper 3: reasoning

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						

Paper 3: Reasoning
20-25 questions
40 minutes
35 marks

How you can support

Year group:	Fluency practise:
EYFS	Count to 10, Number bonds to 10
Year 1	Count to 100, Number bonds to 20
Year 2	2, 5 and 10 times tables
Year 3	3, 4 and 8 times tables
Year 4	All times tables (multiplication and division) up to 12 x 12
Year 5	Count forwards and backwards up to 1,000,000 in any power of 10 (10, 100, 1000, 10,000, 100,000) from any number
Year 6	All of the above - fluency will help more complex problem solving

Times Table Rockstars

Questions