Maths at St Monica's

Maths Meeting

Fully Recommended by the DfE!

POWER MATHS

The whole-class mastery approach that works for every child

Created in partnership with White Rose Maths | Pearson

At the heart of
Power Maths
is the belief that all children can achieve. It's built on an exciting growth mindset and problem-solving approach.

Key aims of *Power Maths*

Keeping the whole class progressing together

Providing rich problem solving to challenge and engage every child

Practical assessment to reveal misconceptions and inform speedy interventions

Nurturing a growth mindset and building children's confidence in maths

Pearson

In a nutshell …

- An exciting **whole-class mastery approach** for Year 1 to Year 6
- Written by **mastery experts** and inspired by best practice from around the world
- Fully **recommended by the Department for Education**
- Created specifically for **UK classrooms**
- Makes maths an adventure and helps build a culture of **excitement and confidence**!

Pearson

What is mastery?

"Mastering maths means acquiring a deep, long-term, secure and adaptable understanding of the subject" – NCETM

We achieve this by …

Carefully sequenced, small step learning

Representation that expose mathematical structures

Developing mathematical thinking

Building fluency

Growth mindset

Fixed mindset	Growth mindset
"I'm not good at maths – I've never been good at maths"	"I'm finding maths hard now, but I can improve with time and effort"
"I give up – I can't make this any better"	"I can improve if I keep trying"
"If I fail I am a failure"	"Most successful people fail along the way"
"I can't do this – I keep making mistakes"	"Mistakes help me learn"

Meet the growth-mindset characters!

Flo

Flo is flexible and creative. She often with new methods to solve problems.

Dexter

Dexter is determined. When he makes a mistake he learns from it and tries again.

Can we do it differently?

Let’s try again!

Pearson

Meet the growth-mindset characters!

Astrid

Astrid is brave and confident. She is not afraid to make mistakes.

Ash

Ash is curious and inquisitive. He loves to explore new concepts

See the lesson structure

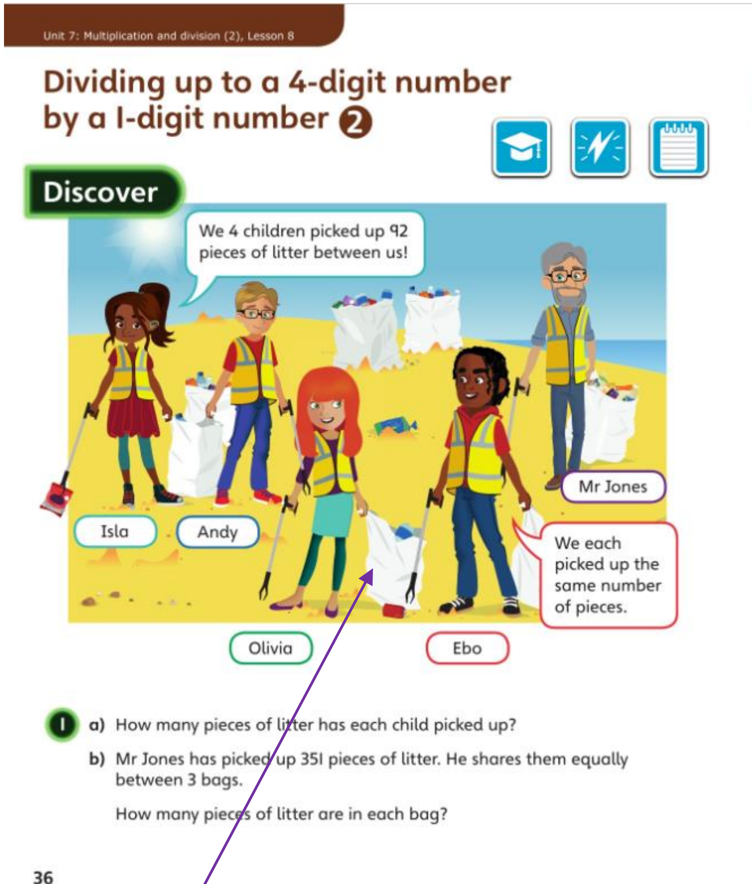
POWER UP! ▶ DISCOVER & SHARE ▶ THINK TOGETHER ▶ PRACTICE ▶ REFLECT

Same Day Intervention

Pearson

Discover and Share

Concrete-Pictorial-Abstract approach



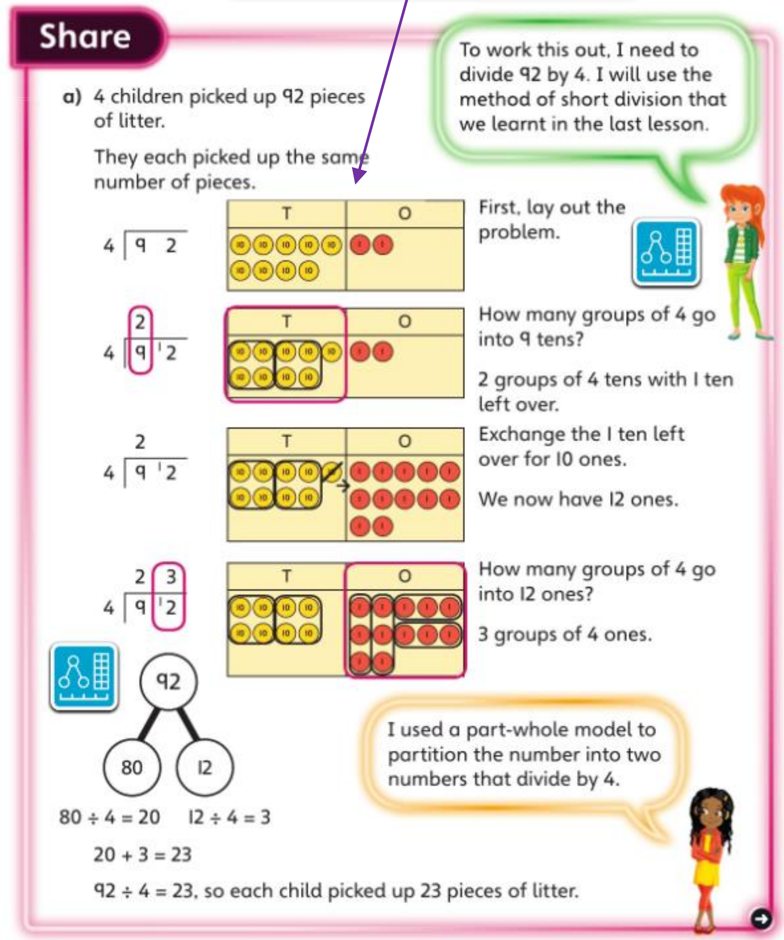
Dividing up to a 4-digit number by a 1-digit number 2

Discover

1 a) How many pieces of litter has each child picked up?

b) Mr Jones has picked up 351 pieces of litter. He shares them equally between 3 bags.

How many pieces of litter are in each bag?


Share

a) 4 children picked up 92 pieces of litter.

They each picked up the same number of pieces.

$80 \div 4 = 20$ $12 \div 4 = 3$

$20 + 3 = 23$

$92 \div 4 = 23$, so each child picked up 23 pieces of litter.

Engaging scenarios

Pearson

Think together

b) Mr Jones shares 351 pieces of litter equally between 3 bags.

There is 1 group of 3 hundreds.

There is 1 group of 3 tens and 2 tens left over.

Exchange the 2 tens for 20 ones. You now have 21 ones

There are 7 groups of 3 ones in 21.

351 ÷ 3 = 117

There are 117 pieces of litter in each bag.

Think together

1 The children have a flask containing 575 ml of juice.

They share the juice equally among themselves and Mr Jones.

How much juice does each person get?

575 ÷ 5 = ☐

Each person gets ☐ ml of juice.

2 Complete these short divisions.

a) 726 ÷ 6 = ☐

b) 522 ÷ 3 = ☐

CHALLENGE

3 a) Look at these division problems.

There are 312 eggs. How many boxes of 6 eggs can be made?	Divide 1,980 by 2	485 ÷ 5

What is different about these divisions compared with the ones you have been doing so far?

I think there is something different in the first step of each division.

b) Max tries to work out the third division problem. What mistake has Max made?

Friendly, supportive characters help children develop a growth mindset.

Practice

Questions are presented in a logical sequence.

→ Textbook 5B p36

Dividing up to a 4-digit number by a 1-digit number 2

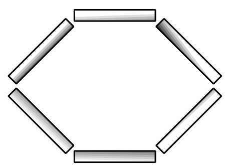
1 Mo is dividing 78 by 3. Complete his working.

3 ⟌ 7 8

T	O
10 10 10 10 10 10 10	1 1 1 1 1 1 1 1

78 ÷ 3 = ☐

2 Olivia is making hexagons with straws, like this:



Olivia has 96 straws. How many hexagons can she make?

6 ⟌ 9 6

T	O
10 10 10 10 10 10 10 10 10	1 1 1 1 1 1

Oliva can make ☐ hexagons.

3 Work out these divisions.

a) 642 ÷ 6 = ☐ **b)** 725 ÷ 5 = ☐ **c)** 5,016 ÷ 3 = ☐

6 ⟌ 6 4 2   5 ⟌ 7 2 5   3 ⟌ 5 0 1 6

Unit 7: Multiplication and division (2), Lesson 8

4 Calculate the answers to these divisions.

a) 7,924 ÷ 7 = ☐ **b)** 711 ÷ 3 = ☐ **c)** 916 ÷ 4 = ☐

7 ⟌ 7 9 2 4

5 What division does this bar model model represent?

Write the calculation and then solve it.

2,454					

6 Isla has made a number and then divided her number by 4 using short division.

What mistake has Isla made?

  0 8 7 9
4 ⟌ 1 ^{3}5 ^{3}1 ^{3}6

Th	H	T	O
1000	100 100 100 100 100	10	1 1 1 1 1 1

7 Fill in the missing numbers in these short divisions.

a)
  2
4 ⟌ ^{1}7 2

b)
  2 2
3 ⟌ 8 7 3

c)
  6
5 ⟌ ^{1} ^{3}0

Calculations are connected so that children think about the underlying concepts.

POWER MATHS

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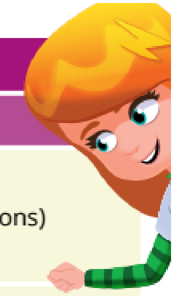
Year 3 Overview

Week	Term		
	Autumn	Spring	Summer
1	**Unit 1: Place value within 1,000** (13 lessons)	**Unit 6: Multiplication and division (3)** (13 lessons)	**Unit 11: Fractions (2)** (8 lessons)
2			
3			**Unit 12: Money** (5 lessons)
4	**Unit 2: Addition and subtraction (1)** (10 lessons)	**Unit 7: Length and perimeter** (11 lessons)	**Unit 13: Time** (12 lessons)
5			
6	**Unit 3: Addition and subtraction (2)** (13 lessons)		
7		**Unit 8: Fractions (1)** (10 lessons)	**Unit 14: Angles and properties of shapes** (9 lessons)
8			
9	**Unit 4: Multiplication and division (1)** (5 lessons)	**Unit 9: Mass** (7 lessons)	**Unit 15: Statistics** (7 lessons)
10	**Unit 5: Multiplication and division (2)** (13 lessons)		
11		**Unit 10: Capacity** (6 lessons)	
12			

Year 4 Overview



Week	Term		
	Autumn	Spring	Summer
1	**Unit 1: Place value – 4-digit numbers (1)** (8 lessons)	**Unit 6: Multiplication and division (2)** (16 lessons)	**Unit 11: Decimals (2)** (7 lessons)
2			
3	**Unit 2: Place value – 4-digit numbers (2)** (8 lessons)		**Unit 12: Money** (6 lessons)
4		**Unit 7: Perimeter** (6 lessons)	
5	**Unit 3: Addition and subtraction** (16 lessons)		**Unit 13: Time** (5 lessons)
6		**Unit 8: Fractions (1)** (9 lessons)	**Unit 14: Geometry – angles and 2D shapes** (8 lessons)
7			
8		**Unit 9: Fractions (2)** (8 lessons)	**Unit 15: Statistics** (6 lessons)
9	**Unit 4: Area** (5 lessons)		
10	**Unit 5: Multiplication and division (1)** (12 lessons)	**Unit 10: Decimals (1)** (12 lessons)	**Unit 16: Position and direction** (6 lessons)
11			
12			

Year 5 Overview

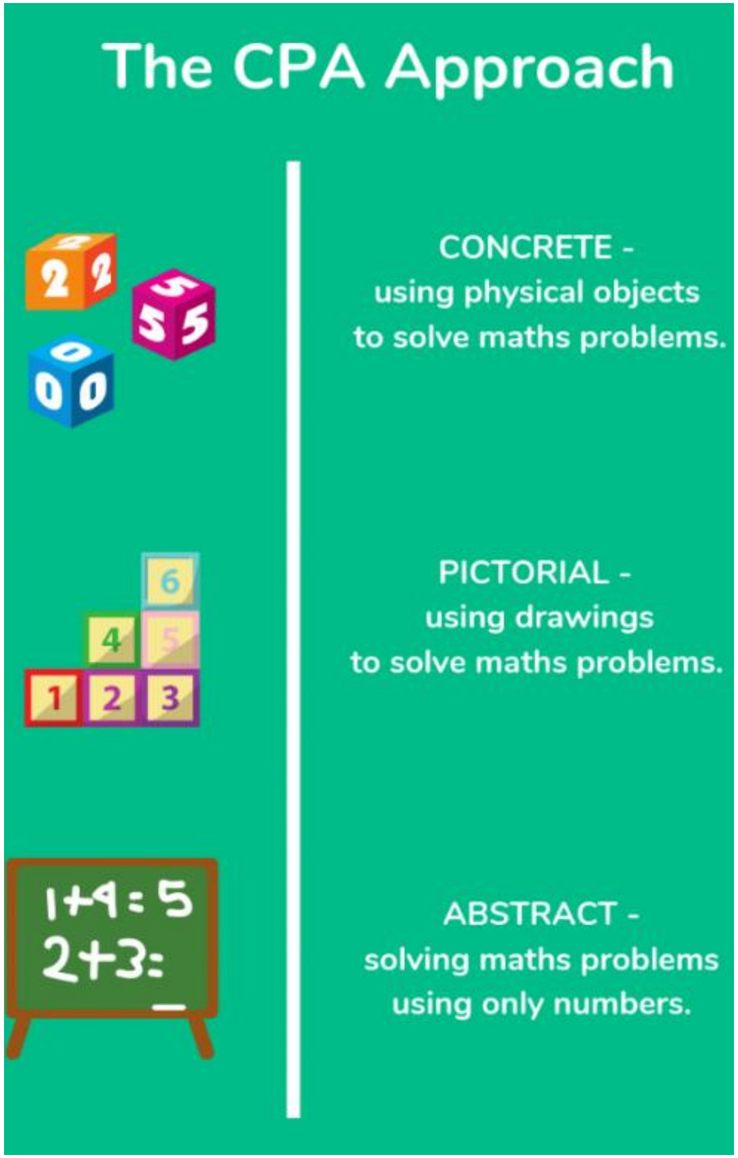
Week	Term		
	Autumn	**Spring**	**Summer**
1	**Unit 1: Place value within 1,000,000 (1)** (8 lessons)	**Unit 7: Multiplication and division (2)** (10 lessons)	**Unit 12: Geometry – properties of shapes** (12 lessons)
2			
3	**Unit 2: Place value within 1,000,000 (2)** (6 lessons)	**Unit 8: Fractions (3)** (7 lessons)	**Unit 13: Geometry – position and direction** (6 lessons)
4			
5	**Unit 3: Addition and subtraction** (12 lessons)	**Unit 9: Decimals and percentages** (15 lessons)	**Unit 14: Decimals** (15 lessons)
6			
7	**Unit 4: Multiplication and division (1)** (10 lessons)		
8		**Unit 10: Measure – perimeter and area** (8 lessons)	**Unit 15: Negative numbers** (4 lessons)
9	**Unit 5: Fractions (1)** (8 lessons)		**Unit 16: Measure – converting units** (10 lessons)
10		**Unit 11: Graphs and tables** (6 lessons)	
11	**Unit 6: Fractions (2)** (11 lessons)		**Unit 17: Measure – volume and capacity** (3 lessons)
12			

Year 6 Overview

<table>
<tr><th rowspan="2">Week</th><th colspan="3">Term</th></tr>
<tr><th>Autumn</th><th>Spring</th><th>Summer</th></tr>
<tr><td>1</td><td rowspan="2">Unit 1: Place value within 10,000,000 (8 lessons)</td><td rowspan="2">Unit 7: Ratio and proportion (9 lessons)</td><td rowspan="2">Unit 12: Statistics (11 lessons)</td></tr>
<tr><td>2</td></tr>
<tr><td>3</td><td rowspan="2">Unit 2: Four operations (1) (8 lessons)</td><td rowspan="2">Unit 8: Algebra (11 lessons)</td><td rowspan="2">Unit 13: Geometry – properties of shape (12 lessons)</td></tr>
<tr><td>4</td></tr>
<tr><td>5</td><td rowspan="3">Unit 3: Four operations (2) (12 lessons)</td><td rowspan="2">Unit 9: Decimals (9 lessons)</td><td>Unit 14: Position and direction (5 lessons)</td></tr>
<tr><td>6</td><td rowspan="2">Unit 15: Problem solving (14 lessons)</td></tr>
<tr><td>7</td><td rowspan="2">Unit 10: Percentages (8 lessons)</td></tr>
<tr><td>8</td><td rowspan="2">Unit 4: Fractions (1) (9 lessons)</td><td rowspan="5">CONSOLIDATION AND SATS PREP</td></tr>
<tr><td>9</td><td rowspan="2">Unit 11: Measure – perimeter, area and volume (11 lessons)</td></tr>
<tr><td>10</td><td rowspan="2">Unit 5: Fractions (2) (9 lessons)</td></tr>
<tr><td>11</td><td rowspan="2"></td></tr>
<tr><td>12</td><td>Unit 6: Imperial and metric (5 lessons)</td></tr>
</table>

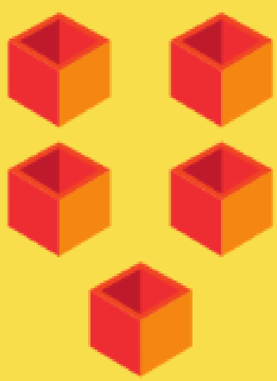
Concrete- Pictorial- Abstract

- **What is the Concrete Pictorial Abstract in Maths?**
- The Concrete Pictorial Abstract (CPA) approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics.
- Pupils are introduced to a new mathematical concept through the use of **concrete** resources (e.g. fruit, Dienes blocks etc). When they are comfortable solving problems with physical aids, they are given problems with pictures – usually **pictorial representations** of the concrete objects they were using.
- Then they are asked to solve problems where they only have the **abstract** i.e. numbers or other symbols. Building these steps across a lesson can help pupils better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.



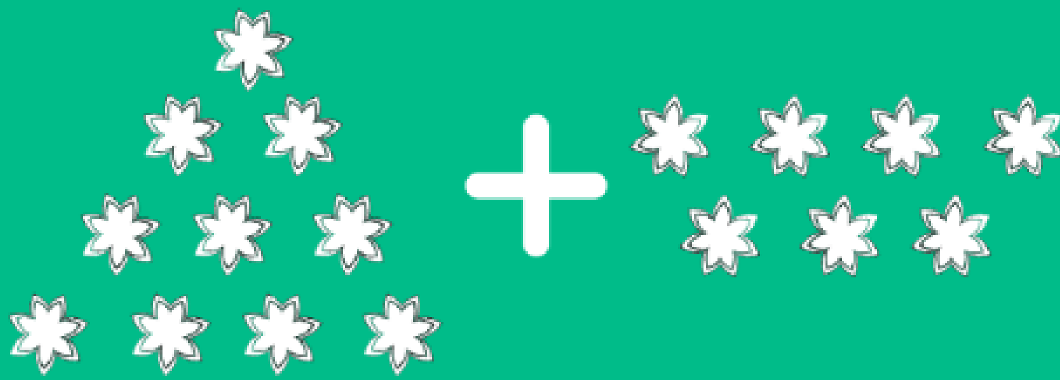
CONCRETE

Children might begin by handling real objects...



...then using physical representations of them.

PICTORIAL



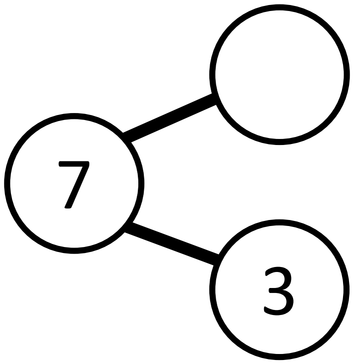
Drawings act as a bridge between the concrete objects children have been using and the abstract symbols they must learn to use.

Finally, children learn to use abstract symbols to solve problems.

$$10 + 7 = 17$$

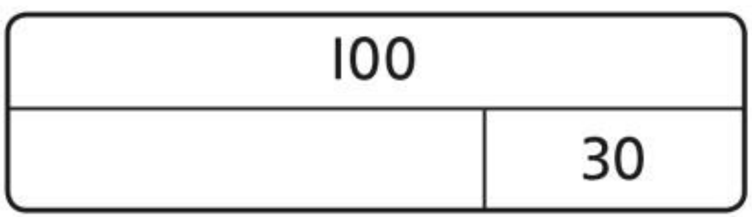
Models and representations

Part-whole models



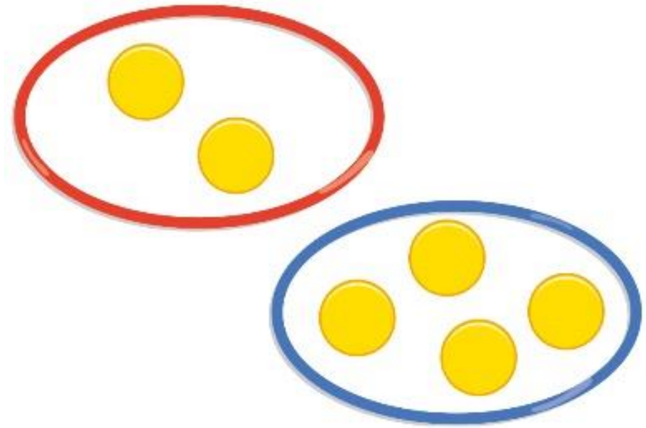
Shows how numbers can be split into parts. Helps show the connection between addition and subtraction.

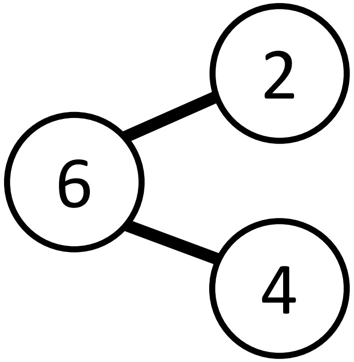
Bar models



Helps show the maths problem as a picture.

Models and representations





$2 + 4 = 6$

St Monica's School Website

Maths at St Monica's

Home >> Curriculum >> Curriculum >> Maths at St Monica's

Maths Long Term Plan

Maths Progression and End Points

Maths Policy

Maths Policy

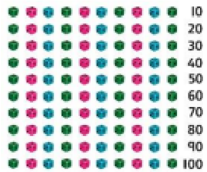
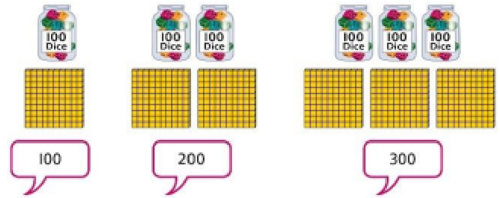
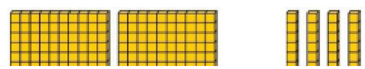
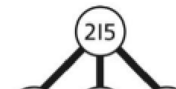
Calculation Policies

Key Learning in Maths

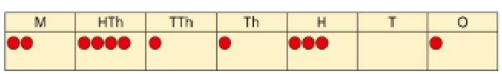
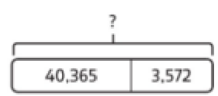
Yearly Overviews

Maths Help

Year 3

	Concrete	Pictorial	Abstract
Year 3 Addition			
Understanding 100s	Understand the cardinality of 100, and the link with 10 tens. Use cubes to place into groups of 10 tens. 	Unitise 100 and count in steps of 100. 	Represent steps of 100 on a number line and a number track and count up to 1,000 and back to 0. 
Understanding place value to 1,000	Unitise 100s, 10s and 1s to build 3-digit numbers. 	Use equipment to represent numbers to 1,000. 	Represent the parts of numbers to 1,000 using a part-whole model. 

Year 6

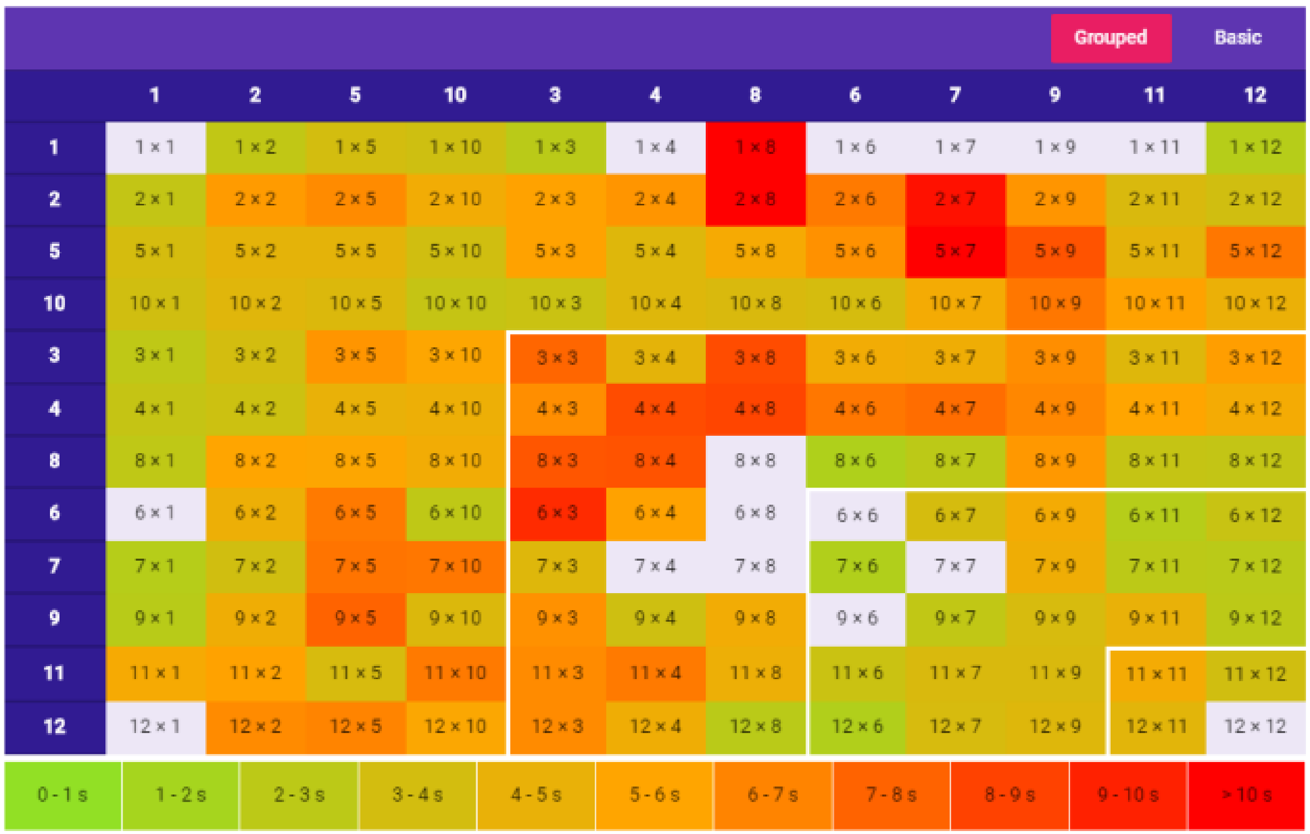
	Concrete	Pictorial	Abstract
Year 6 Addition			
Comparing and selecting efficient methods	Represent 7-digit numbers on a place value grid and use this to support thinking and mental methods. 	Discuss similarities and differences between methods, and choose efficient methods based on the specific calculation. Compare written and mental methods alongside place value representations.  TTh Th H T O 4 0 3 6 5 + 3 5 7 2 Use bar model and number line representations to model addition in problem-solving and measure contexts. 	Use column addition where mental methods are not efficient. Recognise common errors with column addition. *32,145 + 4,302 = ?* TTh Th H T O 3 2 1 4 5 + 4 3 0 2 3 6 4 4 7 TTh Th H T O 3 2 1 4 5 + 4 3 0 2 7 5 1 6 5 *Which method has been completed accurately?* *What mistake has been made?* Column methods are also used for decimal additions where mental methods are not efficient. H T O · Tth Hth 1 4 0 · 0 9

Times Table Rock Stars

Times Table Rock Stars

Stats

If you click on your avatar icon in the top right of the screen and then click My Stats, a heatmap like the one below will load. It shows how successful your child is at each of the facts.



Times Table Rock Stars

Year 1: make connections between arrays, number patterns, and counting in 2s, 5s and 10s.

Year 2: count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward

recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables

Year 3: count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number

recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

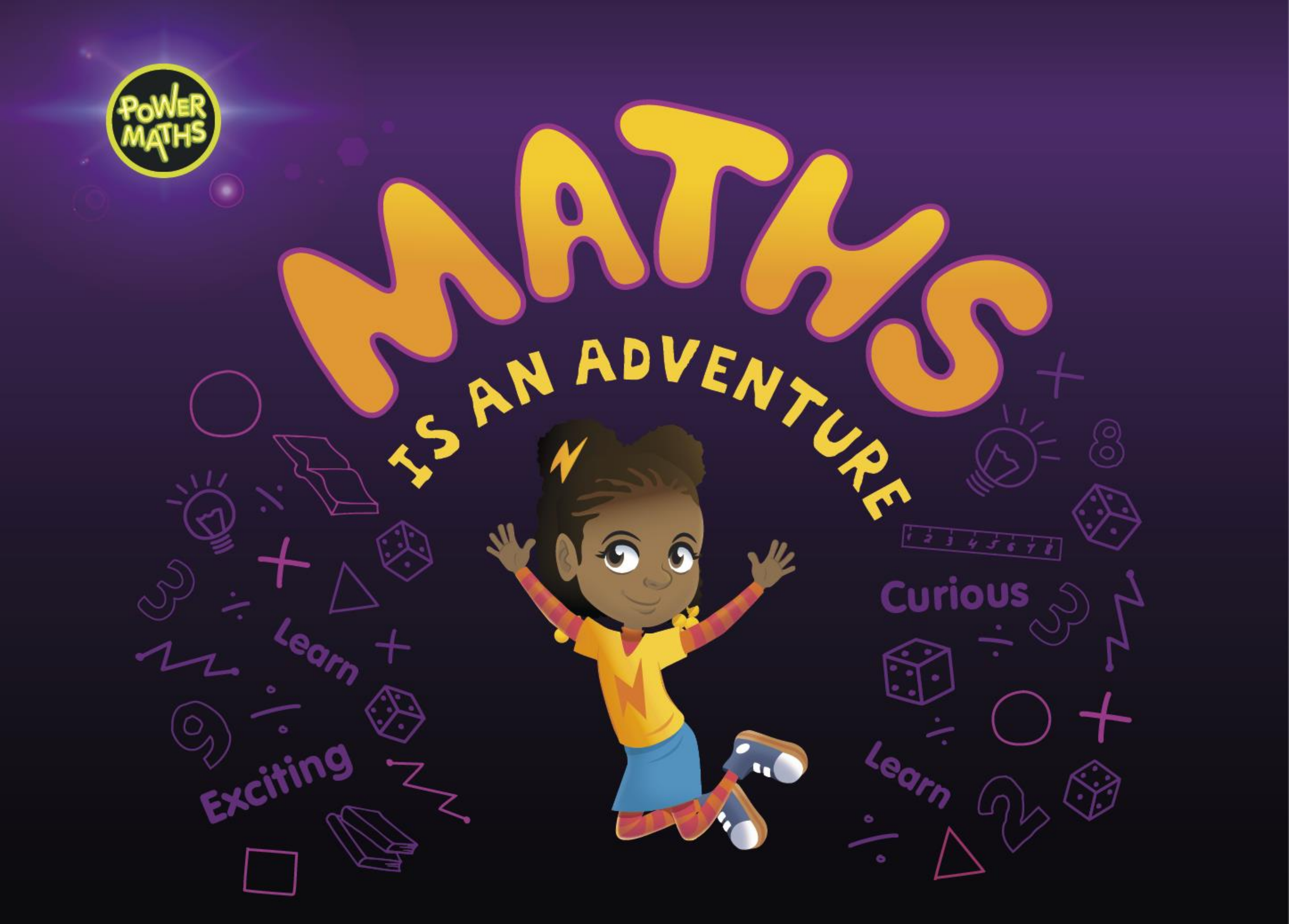
Year 4: count in multiples of 6, 7, 9, 25 and 1,000

recall multiplication and division facts for multiplication tables up to 12 × 12

Year 5 & Year 6: Consolidation

Websites to Support

- https://www.stmonicasschoolflixton.org.uk/maths-at-st-monicas/
- https://nrich.maths.org/11343
- https://www.mathshed.com/en-gb/
- https://ttrockstars.com/


POWER MATHS
MATHS
IS AN ADVENTURE
Learn
Exciting
Curious
Learn
1 2 3 4 5 6 7 8

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