



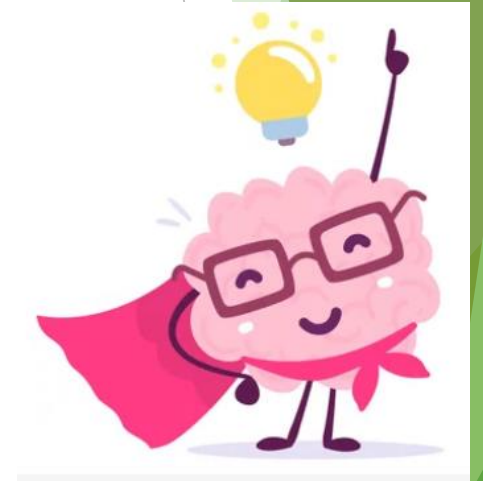
PARENTS MATHS WORKSHOP

Year 6



Aims of the Session:

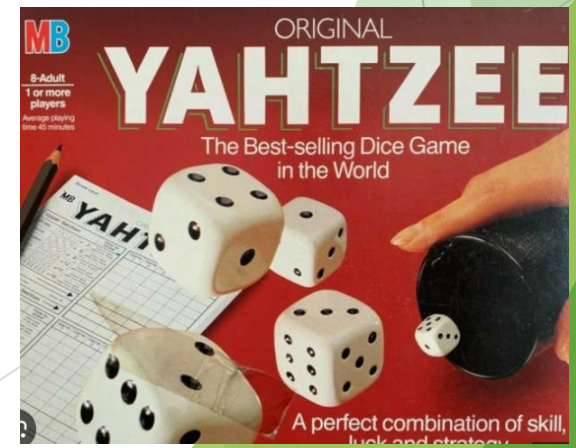
- Share with you some of the things your child will be learning in school
- Improve your confidence in helping your child with maths
- Explore some games and activities you can play with your child at home to help them develop fluency and become more automatic with number facts.



Why engage with your child's learning?

Research evidence suggests that when parents are engaged in their children's learning, outcomes for children can be improved.

Games you can play at home!



Measurement...

Telling the time!

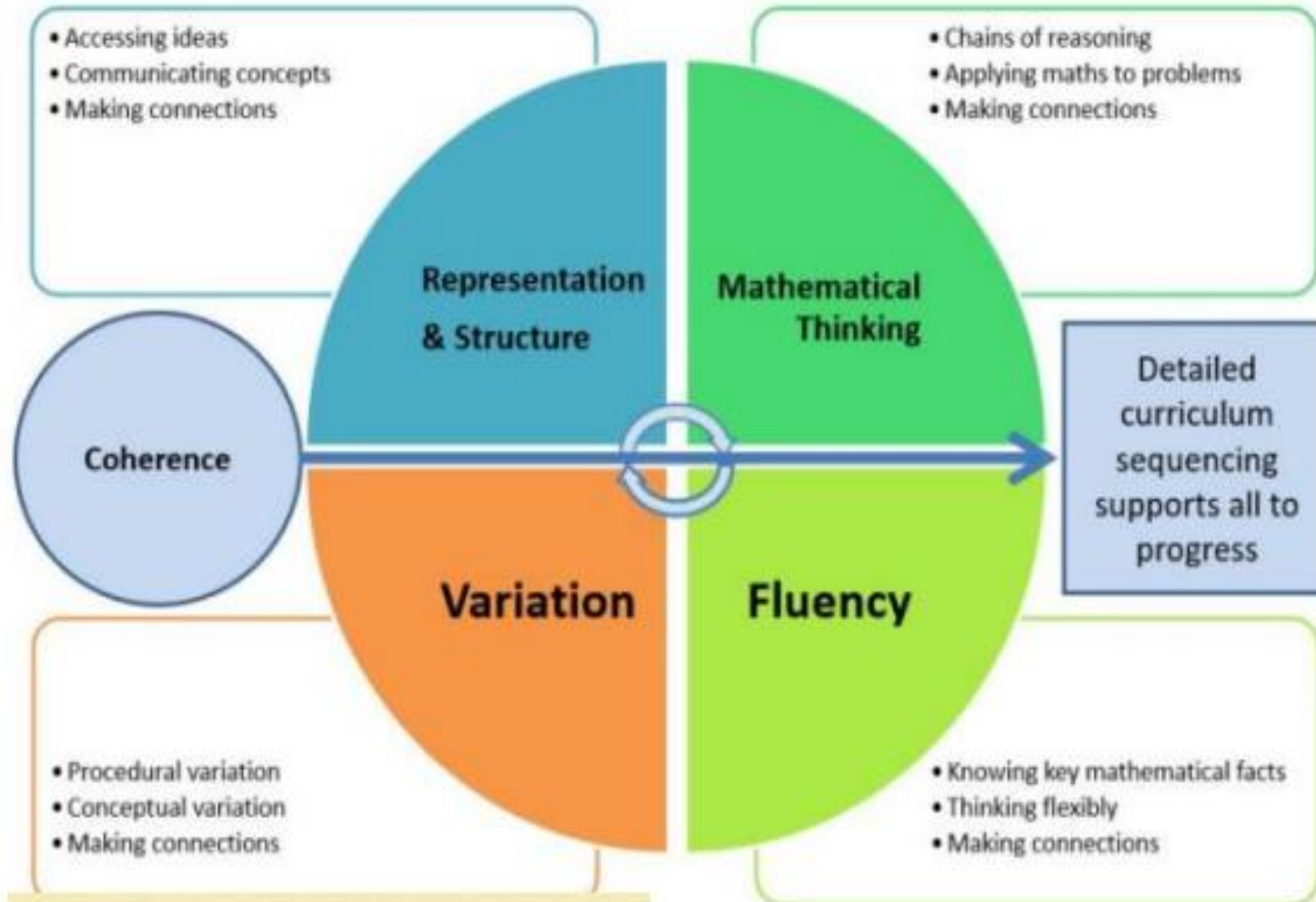


Measuring capacity, weighing ingredients, measuring lengths/ heights...



100cm - 1 metre
1000m - 1km
1000ml - 1 litre
1000g - 1kg

Teaching for Mastery



In Year 6, we continue to build on previous knowledge.

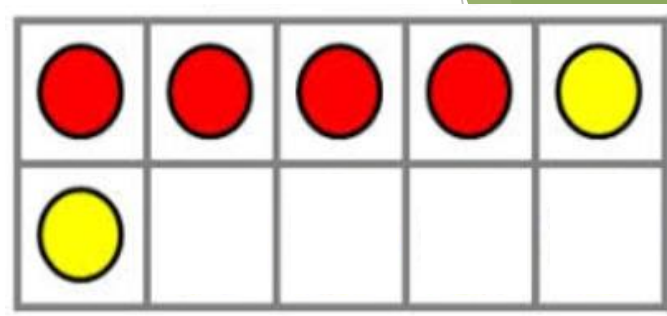
I know that 6 is made of 4 and 2 so I will also know...



$$40 + 20$$

$$400 + 200$$

$$2458 + 5216 = 7674$$



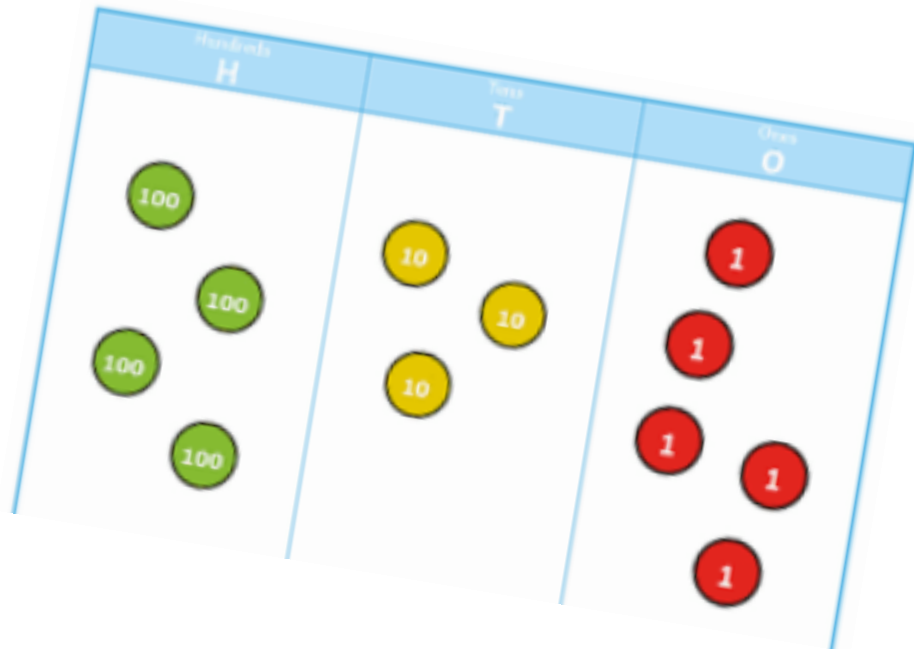
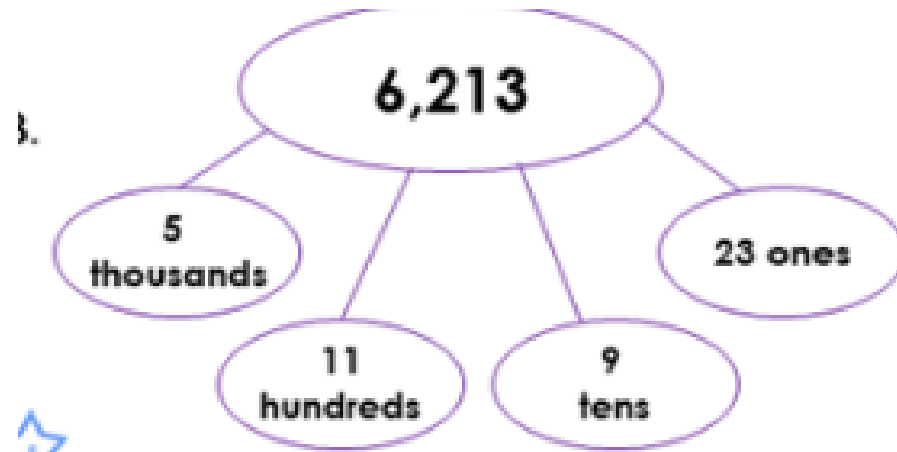
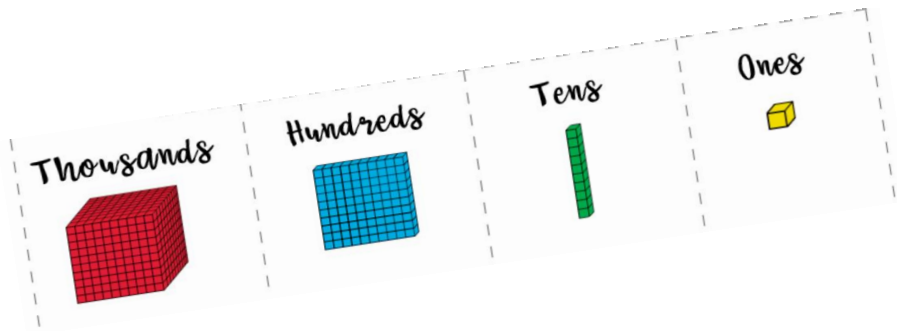
$$6 - 2$$

$$60 - 20$$

$$0.4 + 0.2$$

It is so important that the children are fluent in their number bonds to 10, 20 and 100.

We use partitioning...

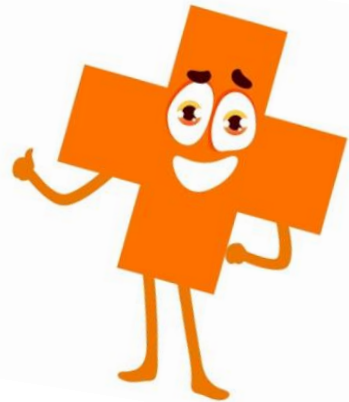


$$4.6$$

4 0.6

Handwritten diagram showing the number 4.6 with the digit 4 circled and the decimal part 0.6 circled, with lines connecting them to the original number.

Developing Fluency:



Year 6

Autumn	<ul style="list-style-type: none">* rounding any number to the nearest 10, 100 and 1000* metric conversions* multiplication and division facts 12x12* round decimals to the nearest whole number and to 1 or 2 decimal places
Spring	<ul style="list-style-type: none">* multiply and divide whole numbers and decimals by 10, 100, 1000* common multiples and factors of numbers* convert between fractions, decimals and percentages* prime numbers to 50* count up in cubed numbers <p>Count up and back in multiples of 20, 30, 40, 50, 60, 70, 80, 90, 250, 500</p> <ul style="list-style-type: none">* all four operations with fractions
Summer	Revision of everything!



CPA - approach to maths!

Concrete

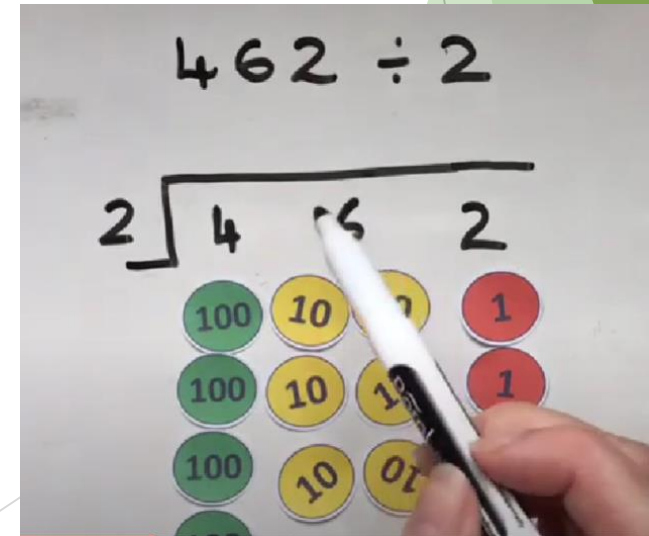
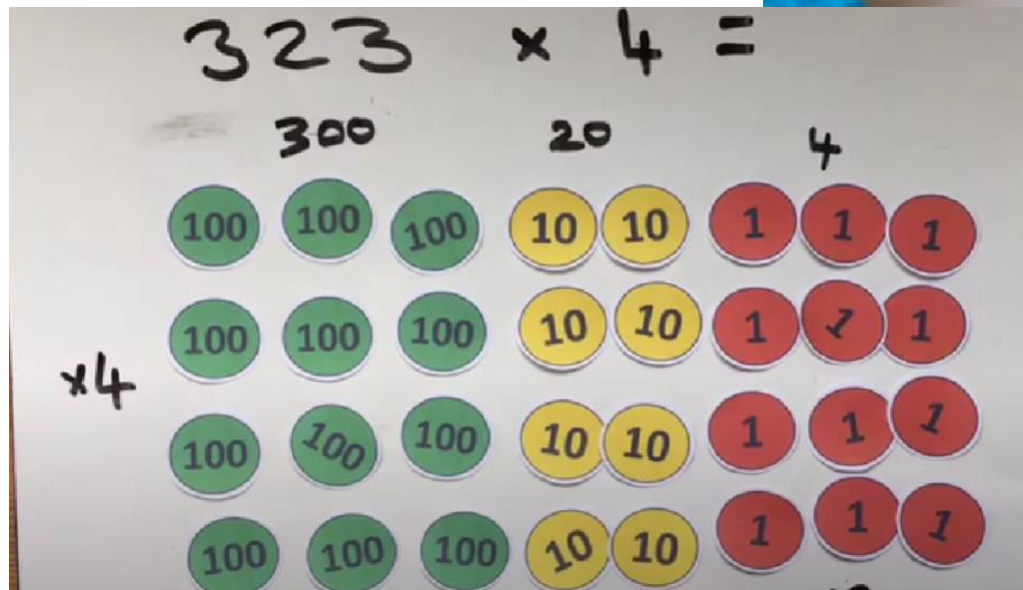
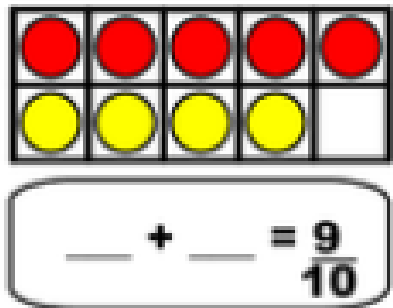
Pictorial

Abstract

CPA - approach to maths!



Concrete



Tenths and Hundredths Place Value Grid



Hundreds

Tens

Ones

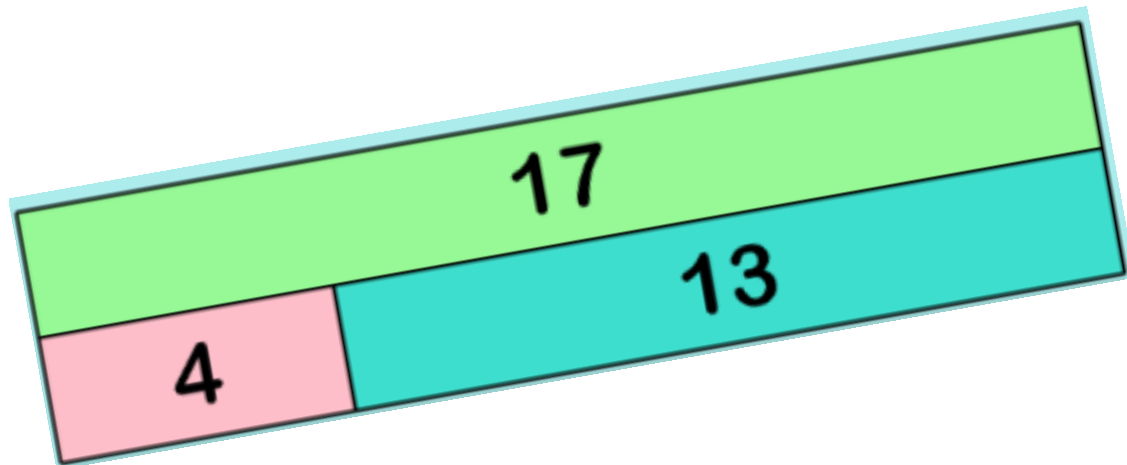


Tenths

Hundredths

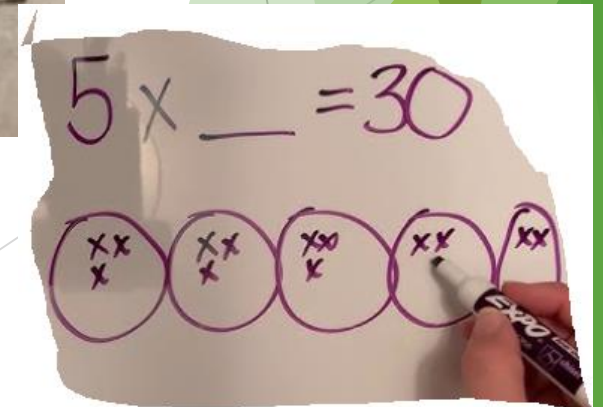
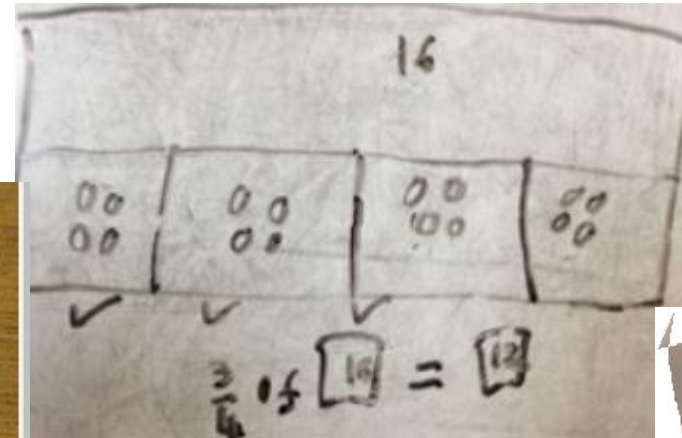
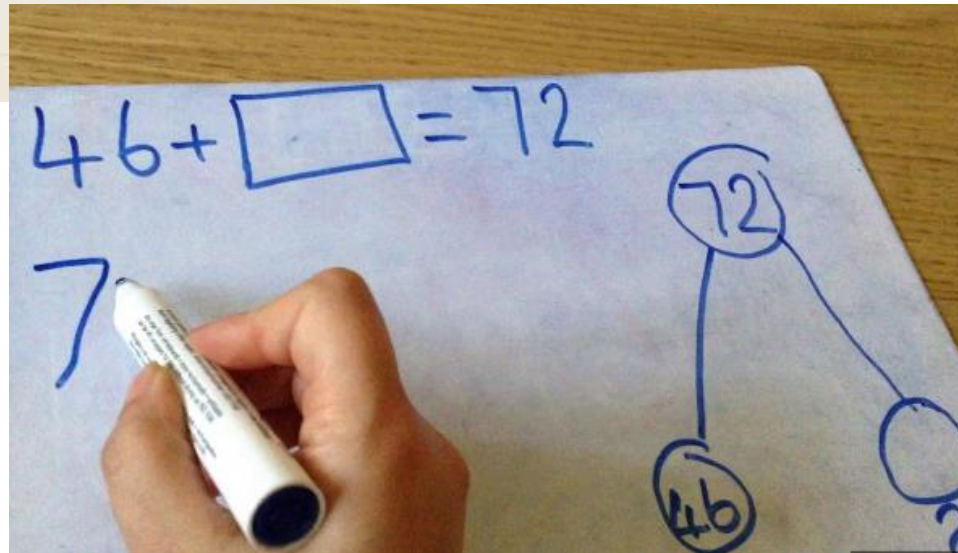
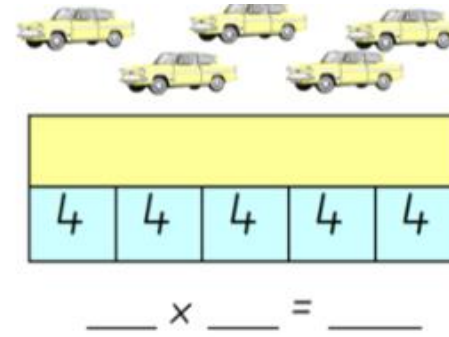
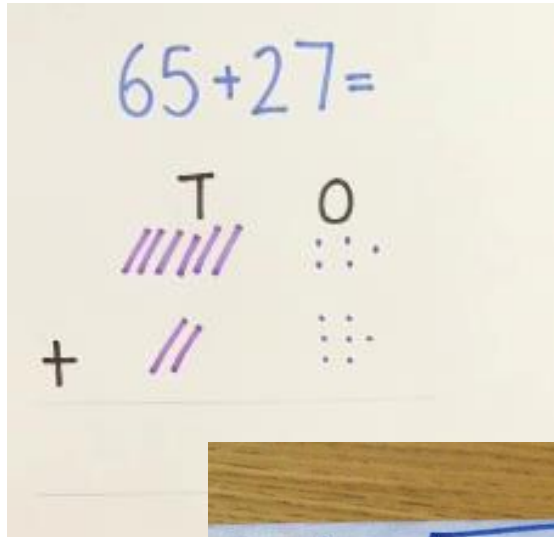
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X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144



CPA - approach to maths!

Pictorial



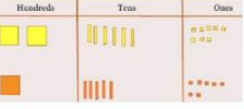
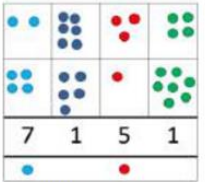
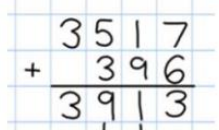

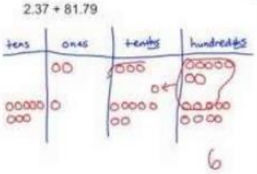


CPA - approach to maths!

Abstract

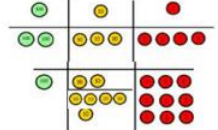
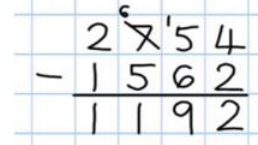
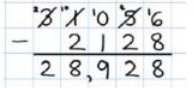
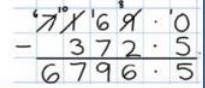
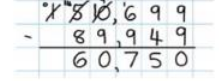
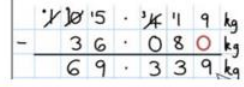
$$209.8 + 24.28 =$$

How we teach formal methods?

Addition & Subtraction:

Objective & Strategy	Concrete	Pictorial	Abstract
Y4—add numbers with up to 4 digits	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand. 	 Draw representations using pv grid.	 Continue from previous work to carry hundreds as well as tens. Relate to money and measures.
Y5—add numbers with more than 4 digits. Add decimals with 2 decimal places, including money.	As year 4  Introduce decimal place value counters and model exchange for addition.		$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \\ 11 \end{array}$ 
Y6—add several numbers of increasing complexity Including adding money, measure and decimals with different numbers of decimal points.	As Y5	As Y5	$\begin{array}{r} 81,059 \\ 3,668 \\ 15,301 \\ + 2,0551 \\ \hline 120,579 \end{array}$  Insert zeros for place holders.

Y4-6
ADDITION

Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones Year 4 subtract with up to 4 digits. <i>Introduce decimal subtraction through context of money</i>	234 - 179  Model process of exchange using Numicon, base ten and then move to PV counters.	Children to draw pv counters and show their exchange—see Y3	 Use the phrase 'take and make' for exchange
Year 5- Subtract with at least 4 digits, including money and measures. <i>Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal</i>	As Year 4	Children to draw pv counters and show their exchange—see Y3	 Use zeros for place-holders. 
Year 6—Subtract with increasingly large and more complex numbers and decimal values.			 

Y4-6
SUBTRACTION

Can you make an exchange?

How we teach formal methods?

Division & Multiplication:

Objective & Strategy	Concrete	Pictorial	Abstract																																																																					
Column multiplication	<p>Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. $321 \times 2 = 642$</p> <table border="1"> <tr> <td>Hundreds</td> <td>Tens</td> <td>Ones</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> <p>It is important at this stage that they always multiply the ones first.</p> <p>The corresponding long multiplication is modelled alongside</p>	Hundreds	Tens	Ones														$\begin{array}{r} 327 \\ \times 4 \\ \hline 28 \quad (7 \times 4) \\ 80 \quad (20 \times 4) \\ 1200 \quad (300 \times 4) \\ \hline 1308 \end{array}$ <p>This may lead to a compact method.</p> $\begin{array}{r} 327 \\ \times 4 \\ \hline 1308 \end{array}$																																																						
Hundreds	Tens	Ones																																																																						
Column multiplication	<p>Manipulatives may still be used with the corresponding long multiplication modelled alongside.</p>		<p>Expanded bracket method or short method.</p> <table border="1"> <tr><td>1</td><td>8</td><td></td><td></td><td></td><td></td></tr> <tr><td>x</td><td>1</td><td>3</td><td></td><td></td><td></td></tr> <tr><td></td><td>2</td><td>4</td><td>(8x3)</td><td></td><td></td></tr> <tr><td></td><td>3</td><td>0</td><td>(10x3)</td><td></td><td></td></tr> <tr><td></td><td>8</td><td>0</td><td>(8x10)</td><td></td><td></td></tr> <tr><td></td><td>1</td><td>0</td><td>(10x10)</td><td></td><td></td></tr> <tr><td></td><td>2</td><td>3</td><td>4</td><td></td><td></td></tr> </table> <table border="1"> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>x</td><td></td><td>1</td><td>6</td><td></td></tr> <tr><td></td><td>7</td><td>4</td><td>0</td><td>4</td></tr> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>0</td></tr> <tr><td></td><td>1</td><td>9</td><td>7</td><td>4</td><td>4</td></tr> </table>	1	8					x	1	3					2	4	(8x3)				3	0	(10x3)				8	0	(8x10)				1	0	(10x10)				2	3	4				1	2	3	4	x		1	6			7	4	0	4		1	2	3	4	0		1	9	7	4	4
1	8																																																																							
x	1	3																																																																						
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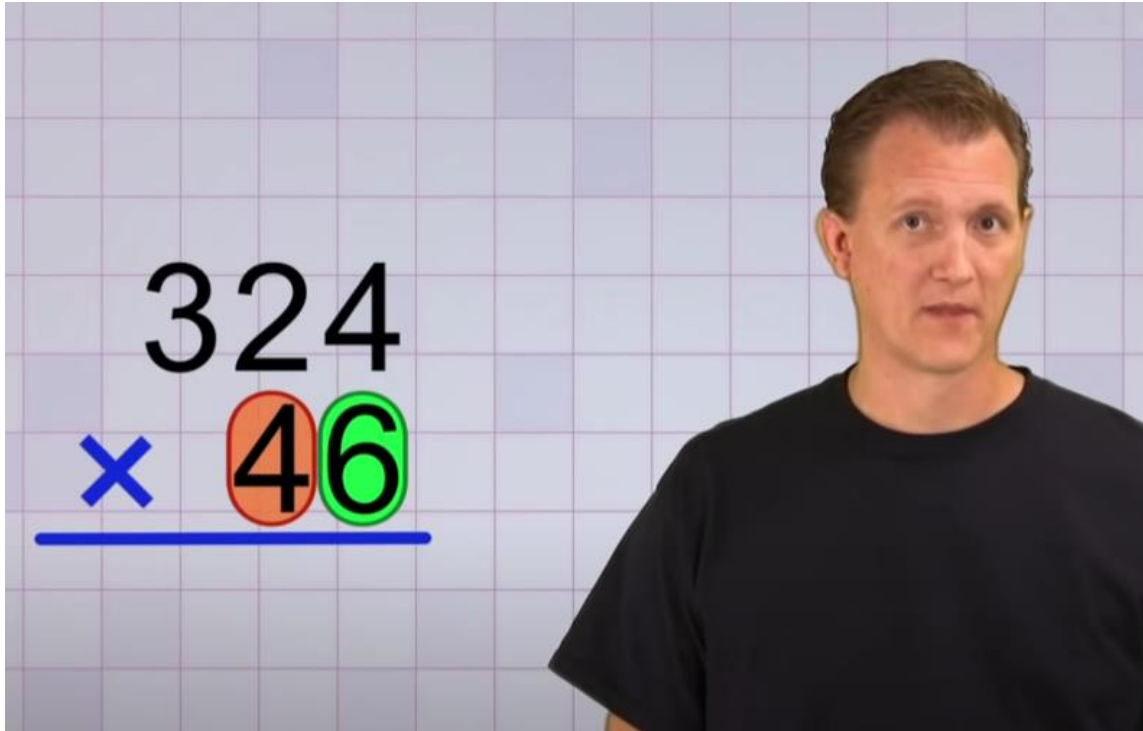
Y5-6
MULTIPLICATION

Objective & Strategy	Concrete	Pictorial	Abstract				
Divide at least 3 digit numbers by 1 digit.	<p>96 ÷ 3</p> <table border="1"> <tr> <td>Tens</td> <td>Units</td> </tr> <tr> <td>3</td> <td>2</td> </tr> </table> <p>Use place value counters to divide using the bus stop method alongside</p> <p>42 ÷ 3 =</p> <p>Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.</p> <p>We exchange this ten for ten ones and then share the ones equally among the groups.</p> <p>We look how much in 1 group so the answer is 14.</p>	Tens	Units	3	2	<p>Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</p> <p>Encourage them to move towards counting in multiples to divide more efficiently.</p>	<p>Begin with divisions that divide equally with no remainder.</p> $\begin{array}{r} 218 \\ 3 \overline{) 654} \\ \underline{6} \\ 0 \\ \underline{0} \\ 0 \\ \underline{0} \\ 0 \end{array}$ <p>Move onto divisions with a remainder.</p> $\begin{array}{r} 86 \text{ r } 2 \\ 3 \overline{) 258} \\ \underline{24} \\ 18 \\ \underline{18} \\ 0 \end{array}$ <p>Finally move into decimal places to divide the total accurately.</p> $\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \\ \underline{35} \\ 16 \\ \underline{14} \\ 21 \\ \underline{21} \\ 0 \end{array}$ $\begin{array}{r} 0663 \text{ r } 5 \\ 8 \overline{) 53509} \\ \underline{40} \\ 13 \\ \underline{12} \\ 10 \\ \underline{8} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 9 \end{array}$
Tens	Units						
3	2						

Y4-6
DIVISION

How large can the remainder be?

Using formal methods...



Video clips on YouTube -
Math Antics!

[https://www.youtube.com/
watch?v=RVYwunbpMHA](https://www.youtube.com/watch?v=RVYwunbpMHA)

Encourage the children to
teach you!!! Develop their
reasoning skills!

Arithmetic & Reasoning...

$7.8 + 6.953 =$

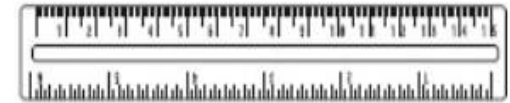
$\frac{1}{3} + \frac{2}{6} + \frac{5}{18} =$

$$\begin{array}{r} 508 \\ \times 74 \\ \hline \end{array}$$

Show your method	
	<input type="text"/>

2 marks

Adam buys 4 pens and a ruler and pays £4.75 altogether.



Jack buys 2 pens and pays £1.98 altogether.

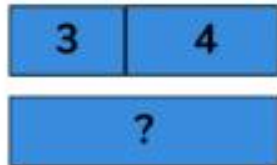


How much does a **ruler** cost?

Bar modelling...

ADDITION

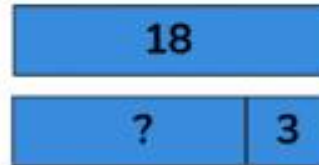
$$3 + 4 = ?$$



$$3 + 4 = 7$$

SUBTRACTION

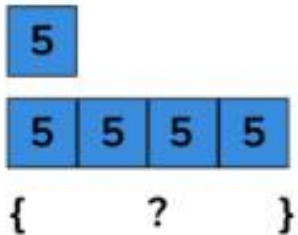
$$18 - 3 = ?$$



$$18 - 3 = 15$$

MULTIPLICATION

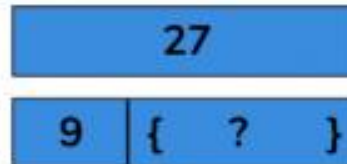
$$4 \times 5 = ?$$



$$4 \times 5 = 20$$

DIVISION

$$27 \div 9 = ?$$



$$27 \div 9 = 3$$

The manager of a flower shop orders 4 boxes of red roses.

There are 50 roses in each box.

The manager makes bunches with 6 roses in each bunch.

What is the **greatest** number of bunches that can be made?

Let's play some games with the children!



Telling the Time!

Start	Miss a turn			End
Miss a turn				Miss a turn
	Miss a turn			
			Miss a turn	

Time Bandits

Start

How many hours are there in 120 minutes?

How many minutes are there in 180 seconds?

How many months are there in 2 years?

How many days are there in 48 hours?

Miss a turn.

How many days are there in 3 weeks?

How many minutes are there in 4 hours?

Cover any answer with one of your counters.

How many seconds are there in 5 minutes?

Roll again.

How many years are there in 48 months?

How many weeks are there in 56 days?

Move forward 2 spaces.

How many months in $1\frac{1}{2}$ years?

Move back 3 spaces.

How to Play

- You will need dice, playing counters to move around the board and counters to cover the answers.
- Roll the dice and move the correct number of spaces.
- Answer the question on the square you land on or follow the instructions. Find the answer to the question on one of the circles.
- Cover the answer with a counter.
- If the answer has already been covered, miss a turn.
- The winner is the player who covers the most answers.

1200, 10, 7, 24, 42, 2, 240, 168, 18, 300, 480, 21, 240

NOVEMBER, OCTOBER

How many years are there in 60 months? Move forward 2 spaces.

How many minutes are there in 600 seconds?

How many weeks are there in 49 days?

How many hours are there in 7 days?

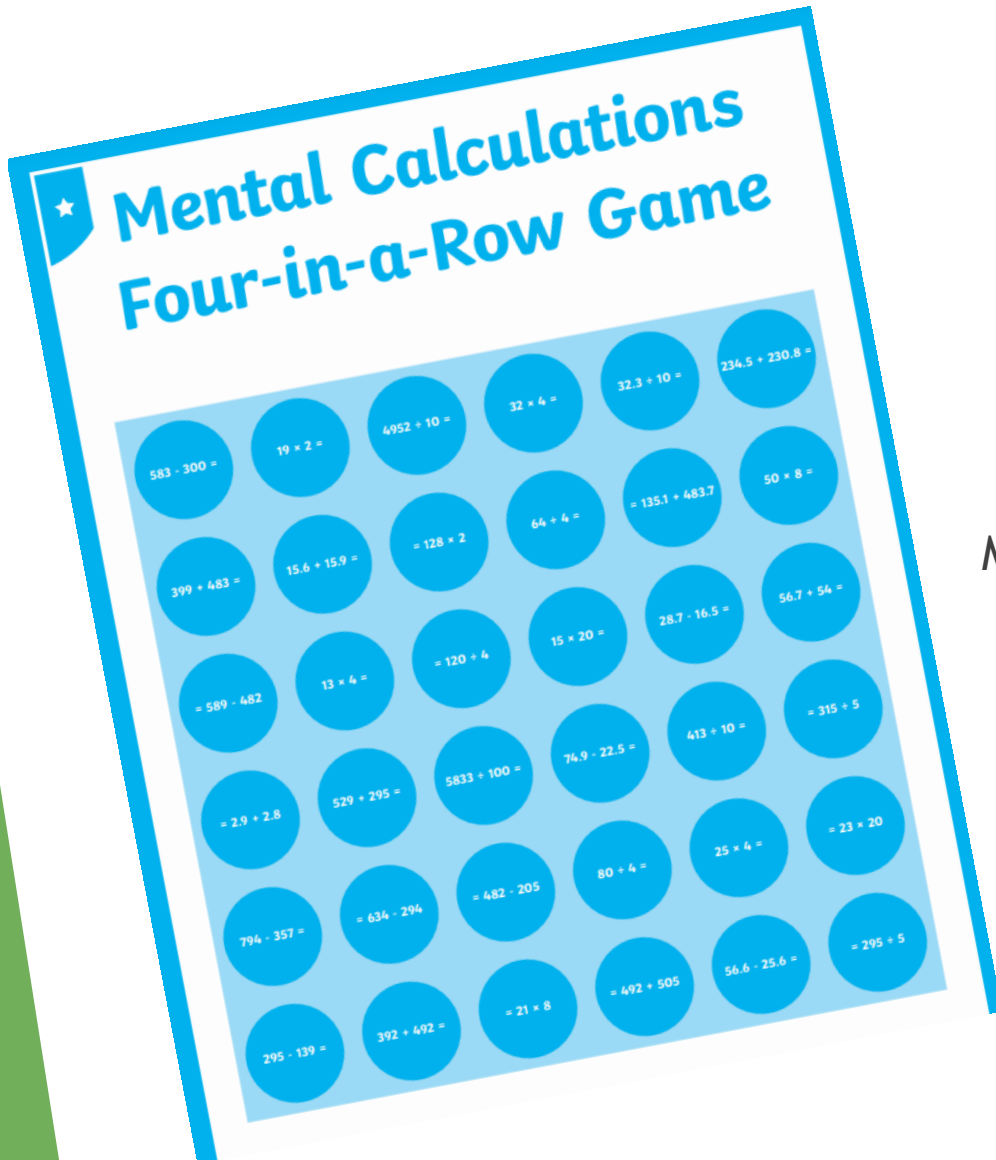
How many seconds are there in 20 minutes?


Roll the dice again.

How many days are there in 6 weeks?

How many minutes are there in 8 hours?

Developing mental strategies...



Tenths and Hundredths Place Value Grid 				
Hundreds	Tens	Ones	Tenths	Hundredths

Multiplying and dividing by 10, 100 and 1000 (including decimals)

Knowing 1, 10, 100, 1000 more or less than any given number!

Developing multiplication knowledge

- Counting up
- Songs and using fingers
- chanting
- Referring to grids/ charts
- Dividing and multiplying by 10 and 100.

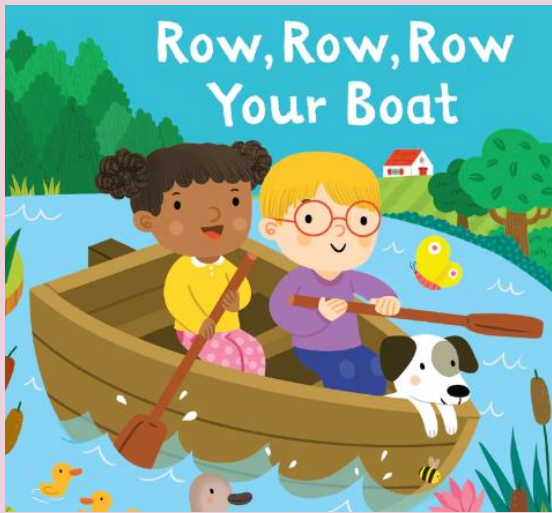
X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

1 x	2 x	3 x	4 x	5 x	6 x
1 x 1 = 1	2 x 1 = 2	3 x 1 = 3	4 x 1 = 4	5 x 1 = 5	6 x 1 = 6
1 x 2 = 2	2 x 2 = 4	3 x 2 = 6	4 x 2 = 8	5 x 2 = 10	6 x 2 = 12
1 x 3 = 3	2 x 3 = 6	3 x 3 = 9	4 x 3 = 12	5 x 3 = 15	6 x 3 = 18
1 x 4 = 4	2 x 4 = 8	3 x 4 = 12	4 x 4 = 16	5 x 4 = 20	6 x 4 = 24
1 x 5 = 5	2 x 5 = 10	3 x 5 = 15	4 x 5 = 20	5 x 5 = 25	6 x 5 = 30
1 x 6 = 6	2 x 6 = 12	3 x 6 = 18	4 x 6 = 24	5 x 6 = 30	6 x 6 = 36
1 x 7 = 7	2 x 7 = 14	3 x 7 = 21	4 x 7 = 28	5 x 7 = 35	6 x 7 = 42
1 x 8 = 8	2 x 8 = 16	3 x 8 = 24	4 x 8 = 32	5 x 8 = 40	6 x 8 = 48
1 x 9 = 9	2 x 9 = 18	3 x 9 = 27	4 x 9 = 36	5 x 9 = 45	6 x 9 = 54
1 x 10 = 10	2 x 10 = 20	3 x 10 = 30	4 x 10 = 40	5 x 10 = 50	6 x 10 = 60
1 x 11 = 11	2 x 11 = 22	3 x 11 = 33	4 x 11 = 44	5 x 11 = 55	6 x 11 = 66
1 x 12 = 12	2 x 12 = 24	3 x 12 = 36	4 x 12 = 48	5 x 12 = 60	6 x 12 = 72

7 x	8 x	9 x	10 x	11 x	12 x
7 x 1 = 7	8 x 1 = 8	9 x 1 = 9	10 x 1 = 10	11 x 1 = 11	12 x 1 = 12
7 x 2 = 14	8 x 2 = 16	9 x 2 = 18	10 x 2 = 20	11 x 2 = 22	12 x 2 = 24
7 x 3 = 21	8 x 3 = 24	9 x 3 = 27	10 x 3 = 30	11 x 3 = 33	12 x 3 = 36
7 x 4 = 28	8 x 4 = 32	9 x 4 = 36	10 x 4 = 40	11 x 4 = 44	12 x 4 = 48
7 x 5 = 35	8 x 5 = 40	9 x 5 = 45	10 x 5 = 50	11 x 5 = 55	12 x 5 = 60
7 x 6 = 42	8 x 6 = 48	9 x 6 = 54	10 x 6 = 60	11 x 6 = 66	12 x 6 = 72
7 x 7 = 49	8 x 7 = 56	9 x 7 = 63	10 x 7 = 70	11 x 7 = 77	12 x 7 = 84
7 x 8 = 56	8 x 8 = 64	9 x 8 = 72	10 x 8 = 80	11 x 8 = 88	12 x 8 = 96
7 x 9 = 63	8 x 9 = 72	9 x 9 = 81	10 x 9 = 90	11 x 9 = 99	12 x 9 = 108
7 x 10 = 70	8 x 10 = 80	9 x 10 = 90	10 x 10 = 100	11 x 10 = 110	12 x 10 = 120
7 x 11 = 77	8 x 11 = 88	9 x 11 = 99	10 x 11 = 110	11 x 11 = 121	12 x 11 = 132
7 x 12 = 84	8 x 12 = 96	9 x 12 = 108	10 x 12 = 120	11 x 12 = 132	12 x 12 = 144

Using well known songs...

3x



4x



8x



Doodle Maths - great for retrieval!



doodlemaths

TTRS



THANK YOU