St Matthew's C of E Primary School

YEAR 5
CALCULATION POLICY

YEAR 5
MAIN PRINCIPLES

Scan QR codes to be directed to the MNP website with further information and videos.

What is maths mastery?

Teaching maths for mastery is a transformational approach to maths teaching which stems from high performing Asian nations such as Singapore. When taught to master maths, children develop their mathematical fluency without resorting to rote learning and are able to solve non-routine maths problems without having to memorise procedures.

Concrete, pictorial, abstract (CPA)

Concrete, pictorial, abstract (CPA) is a highly effective approach to teaching that develops a deep and sustainable understanding of maths. Developed by American psychologist, Jerome Bruner, the CPA approach is essential to maths teaching in Singapore.

Number bonds

Number bonds are a way of showing how numbers can be combined or split up. They are used to reflect the 'part-part-whole' relationship of numbers.

Bar modelling

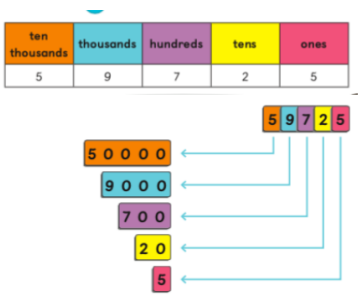
The bar model method is a strategy used by children to visualise mathematical concepts and solve problems. The method is a way to represent a situation in a word problem, usually using rectangles.

Fractions

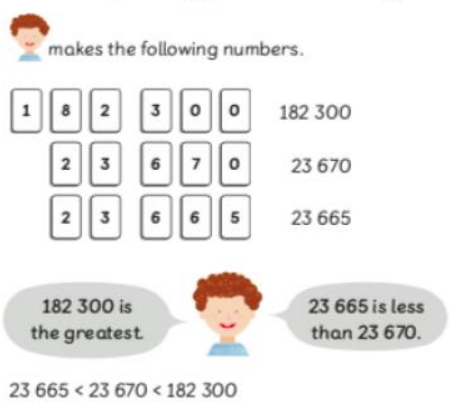
In Singapore, the understanding of fractions is rooted in the Concrete, Pictorial, Abstract (CPA) model, where children use paper squares and strips to learn the link between the concrete and the abstract. At the heart of understanding fractions is the ability to understand that we're giving an equal part a name.

YEAR 5
PLACE VALUE

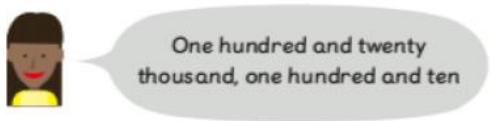
Value of digits – up to 1,000,000

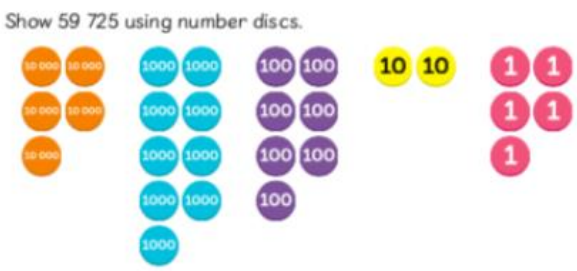


Comparing and ordering



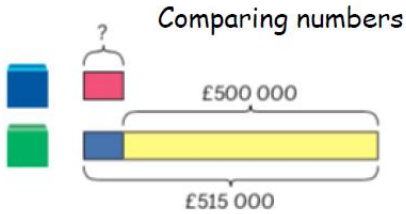
Place value counters



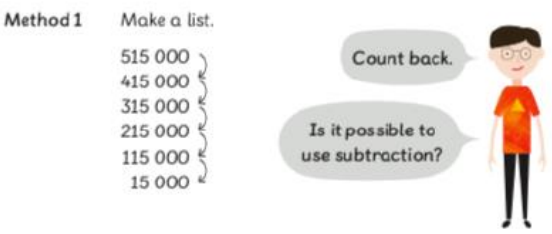


Find the price of each object.

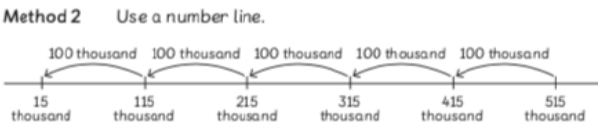
Comparing numbers



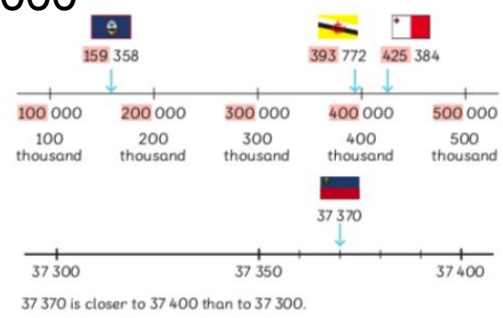
Number patterns



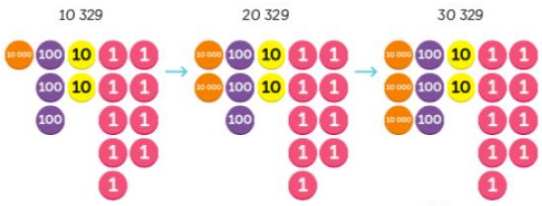
Number lines



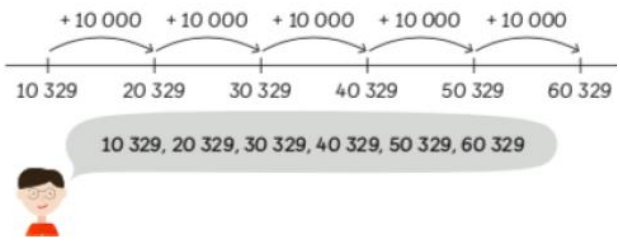
Rounding to the nearest 1000, 10,000, 100,000



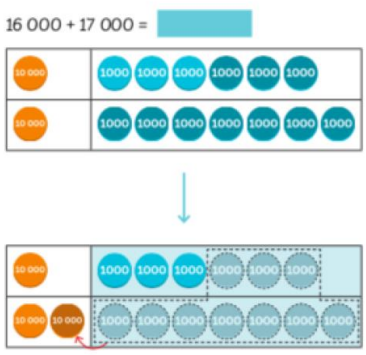
YEAR 5
ADDITION



Adding by counting on



Using place value counters to support column addition

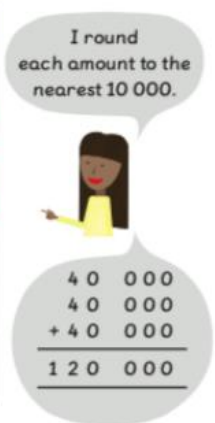


$$\begin{array}{r} 16\ 000 \\ +\ 17\ 000 \\ \hline \end{array}$$

$$\begin{array}{r} {\scriptstyle 1}\ \ \\ 16\ 000 \\ +\ 17\ 000 \\ \hline 3\ 000 \end{array}$$

$$\begin{array}{r} {\scriptstyle 1}\ \ \\ 16\ 000 \\ +\ 17\ 000 \\ \hline 33\ 000 \end{array}$$

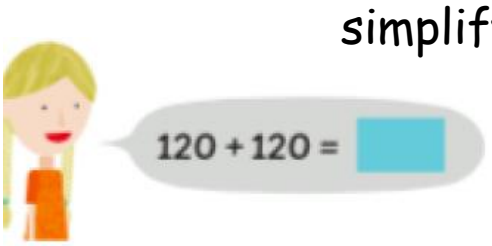
	A	B	C
1	Date	Trip	Fare
2	13 September	Airport to Hotel	150 000
3	14 September	Hotel to Office	40 000
4		Office to Hotel	45 000
5	15 September	Hotel to Office	43 000
6		Office to Hotel	42 000
7		Hotel to Restaurant	25 000
8		Restaurant to Hotel	21 000
9	16 September	Hotel to Office	46 000
10		Office to Airport	150 000
11			
12		Total for Taxi Fare	562 000



Rounding to add by estimate

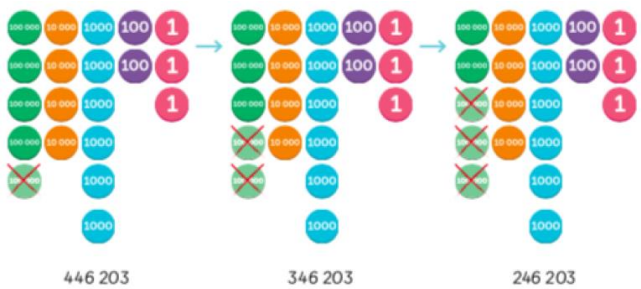
$$\begin{array}{r} 37\ 000 \\ +\ 12\ 000 \\ \hline \end{array}$$

Adding key facts to simplify

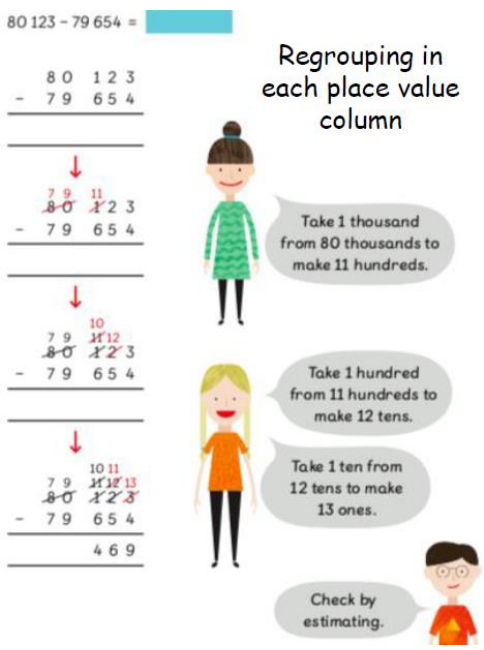


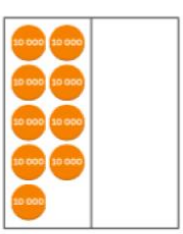
$$\begin{array}{r} 120\ 000 \\ +\ 120\ 000 \\ \hline \end{array}$$

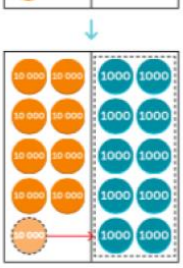
YEAR 5
SUBTRACTION

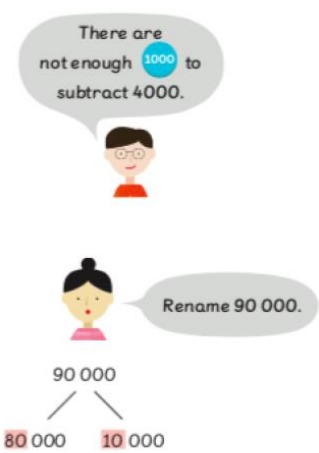


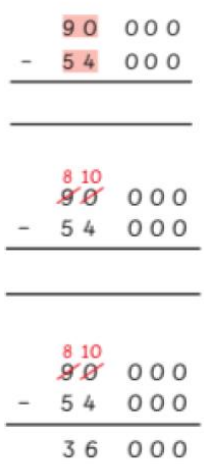
Subtracting by counting back









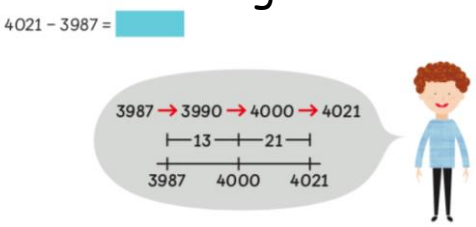


Bar Method

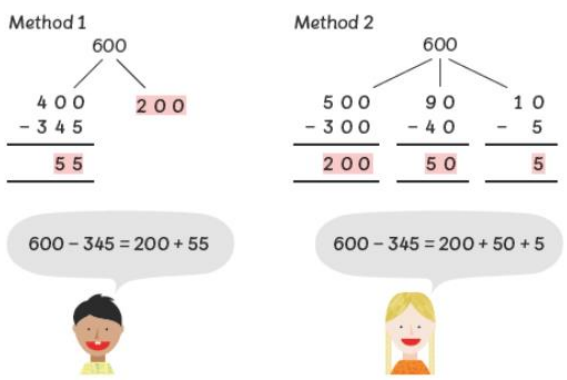
90,000	
54,000	36,000

Place value counters to visually support column subtraction

Learning mental strategies



Partitioning



YEAR 5
MULTIPLICATION

Finding multiples

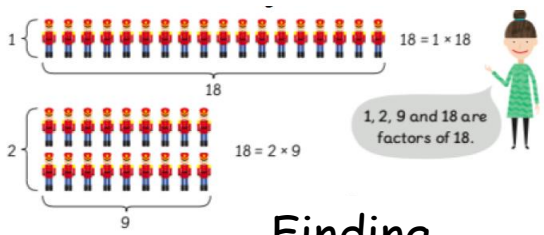
$1 \times 6 = 6$

$2 \times 6 = 12$

$3 \times 6 = 18$

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

Finding factors



Prime Numbers

number	factors
5	1 and 5
7	1 and 7
4	1, 2 and 4
9	1, 3 and 9
6	1, 2, 3 and 6
8	1, 2, 4 and 8

5 and 7 are prime numbers.

4, 9, 6 and 8 are not prime numbers.

Common Factors

Find the common factors of 48 and 64.

$48 = (1) \times 48$ $\quad 64 = (1) \times 64$

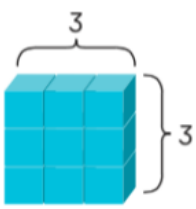
$48 = (2) \times 24$ $\quad 64 = (2) \times 32$

$48 = 3 \times (16)$ $\quad 64 = (4) \times (16)$

$48 = (4) \times 12$ $\quad 64 = (8) \times 8$

$48 = 6 \times (8)$

The common factors of 48 and 64 are 1, 2, 4, 8 and 16.



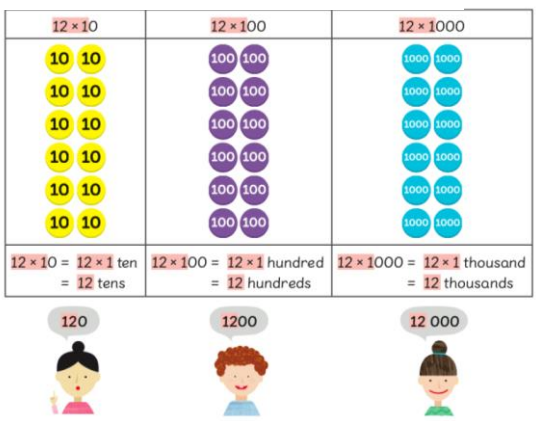
$9 = 3 \times 3 = 3^2$

Square and cube numbers

$27 = 3 \times 3 \times 3 = 3^3$

27 is a cube.

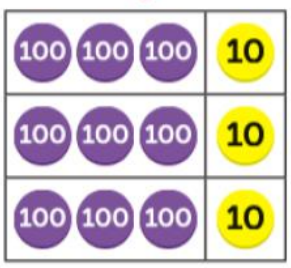
Multiplying by 10, 100, 1000



YEAR 5
DIVISION

Using place value Counters

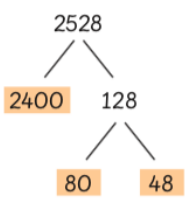
930 ÷ 3

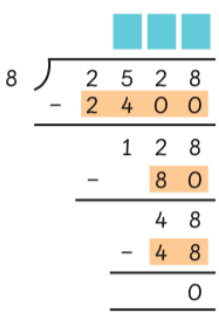


Bar Method

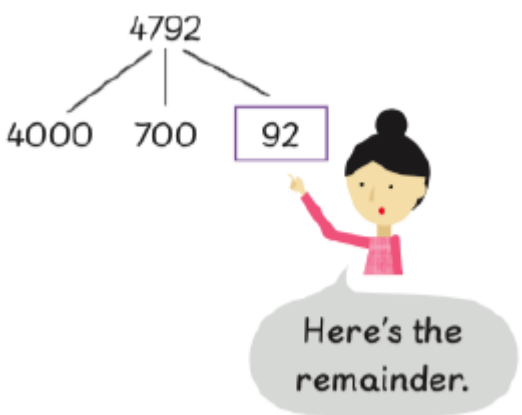
Dividing using long division

2528 ml ÷ 8 = ▭

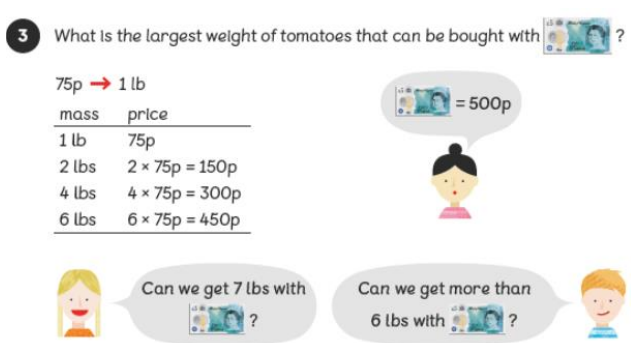




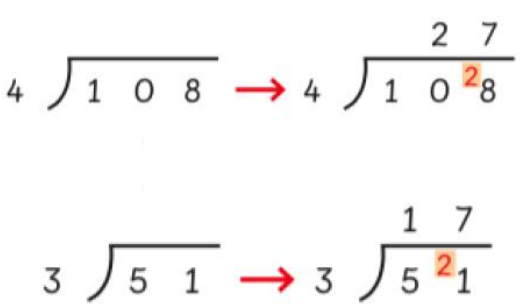
Partitioning



Using known facts

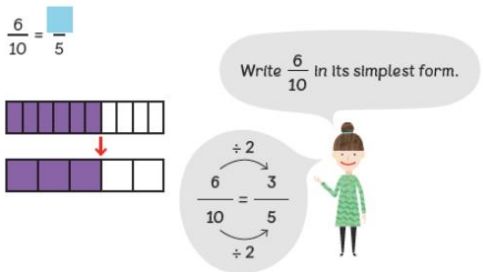


Short Division

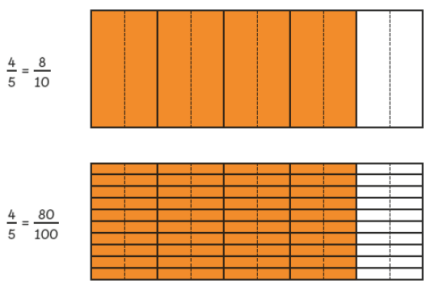


YEAR 5
FRACTIONS

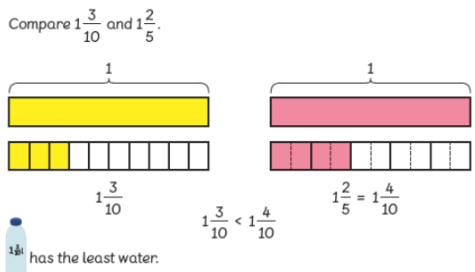
Simplifying Fractions



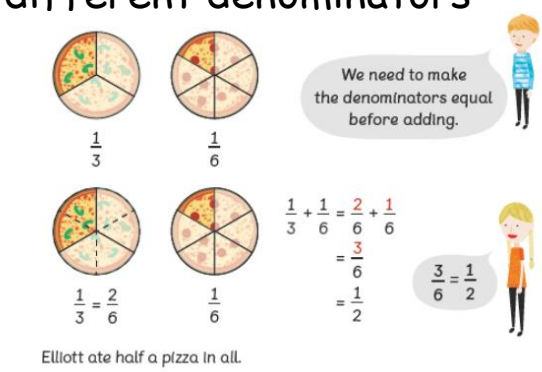
Equivalent Fractions



Comparing and ordering fractions

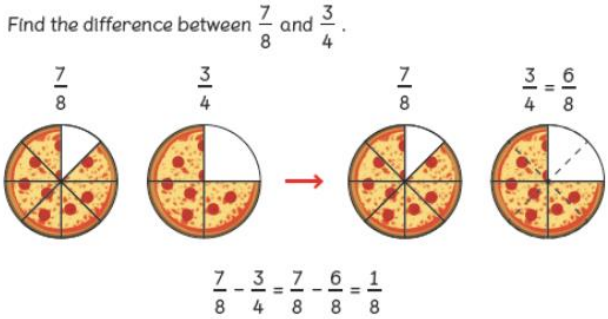


Adding fractions with different denominators

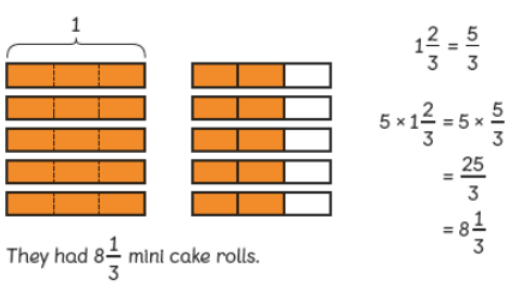


Elliott ate half a pizza in all.

Subtracting fractions with different denominators



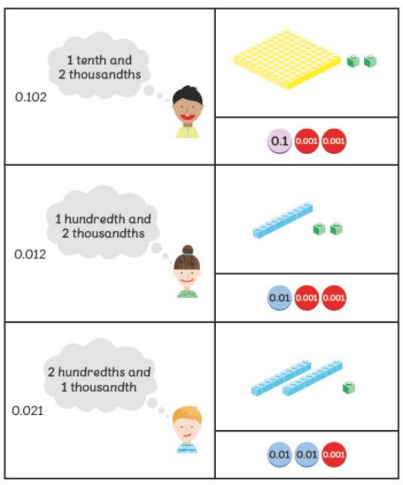
Multiplying Fractions



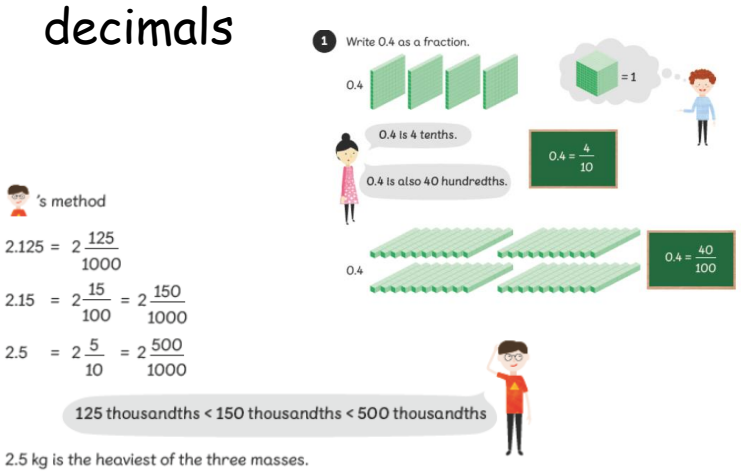
They had $8\frac{1}{3}$ mini cake rolls.

YEAR 5
DECIMALS

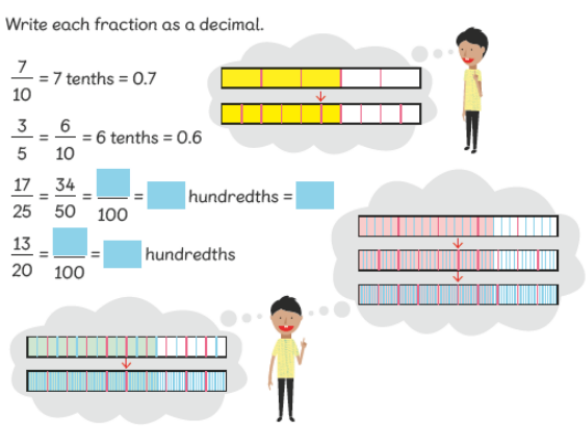
Place value counters up to thousandths



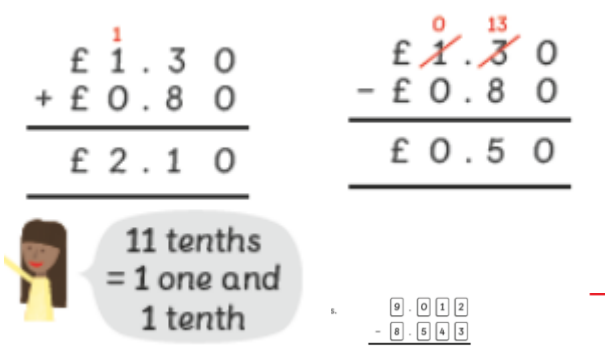
Comparing and ordering decimals



Write Fractions as decimals



Adding and subtracting decimals



Rounding Decimals