Hillstone Primary School

YEAR 4

CALCULATION GUIDANCE

Maths at Hillstone

Aim

Our aim is to equip all pupils with the skills and confidence to solve a range of problems through fluency with numbers and mathematical reasoning. Children are encouraged to see the mathematics that surrounds them every day and enjoy developing vital life skills in this subject.

Carefully planned activities encourage children to work mentally, observe patterns, make predictions and discuss relationships. Mathematics skills are also used in other subjects such as science, computing and art.

Mastering Maths at Hillstone

At Hillstone Primary, we have adopted a mastery approach in order to deliver the three aims of the National Curriculum, fluency, reasoning and problem solving. Underpinning this pedagogy is a belief that all children can achieve in maths. We believe in promoting a sustained and deep understanding by employing a variety of mastery strategies, with teaching for conceptual understanding at the heart of everything we do. We aim to create independent mathematicians who are well equipped to apply their learning to the wider world. Our approach aims to provide all children with full access to the curriculum, enabling them to develop independence, confidence and competence – 'mastery' in mathematics in order to be independent mathematicians who are well equipped to apply their learning to the wider world.

The mathematical journey that children undertake at Hillstone Primary 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Key features of our curriculum include:

- High expectations for every child
- Greater depth of topics
- Real life number sense and place value
- Application of skills learn to solve problem
- Calculating with confidence– understand why it works

We place emphasis on the cumulative mastery of essential knowledge and skills in mathematics. It embeds a deeper understanding of maths by utilising a concrete, pictorial, abstract approach so that pupils understand what they are doing rather than just learning to repeat routines without grasping what is happening.

YEAR 4
PLACE VALUE

Base ten or dienes blocks:

Thousands/Hundreds/Tens/Ones

2 thousands + 3 hundreds + 4 tens + 5 ones

Value of digits:

2 thousands + 3 hundreds + 4 tens + 5 ones

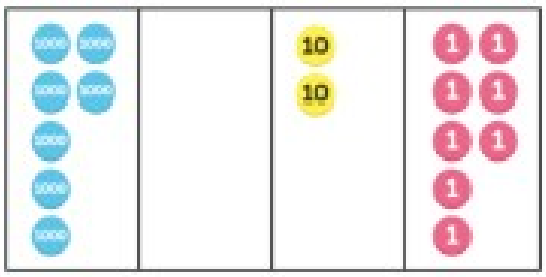
thousands	hundreds	tens	ones
2	3	4	5

2345 = 2 thousands + 3 hundreds + 4 tens + 5 ones
2427 = 2000 + 300 + 40 + 5
The digit 2 stands for 2 thousand or 2000.
The digit 3 stands for 3 hundreds or 300.
The digit 4 stands for 4 tens or 40.
The digit 5 stands for 5 ones or 5.

We write 2345 as two thousand, three hundred and forty-five.

Place value counters:

7 thousands + 0 hundreds + 2 tens + 8 ones =7028



Number patterns:

What number is 1 more than 1485?

1485 + 1 = 1486

What number is 10 more than 1485?

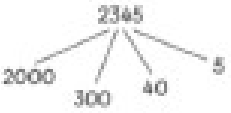
1485 + 10 = 1495

What number is 100 less than 1485?

1485 - 100 = 1395

Partitioning:

2345 = 2000 + 300 + 40 + 5



We write 2345 as two thousand, three hundred and forty-five.

Place value cards:

Separating the numbers like this is called **partitioning.**

Comparing numbers:

352 is more than 241
352 is greater than 241
352 > 241

Comparing numbers:

thousands	hundreds	tens	ones
2	5	0	0

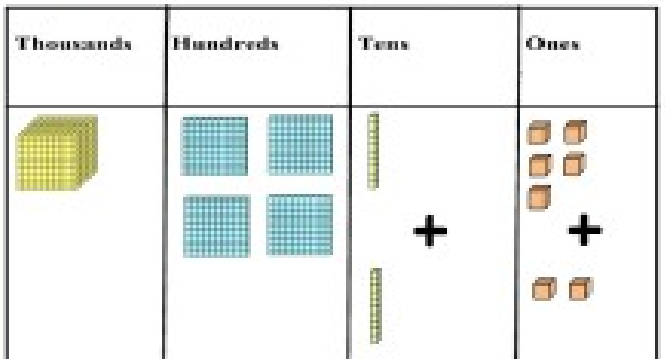
thousands	hundreds	tens	ones
5	8	0	0

2500 is less than 5800
2500 < 5800

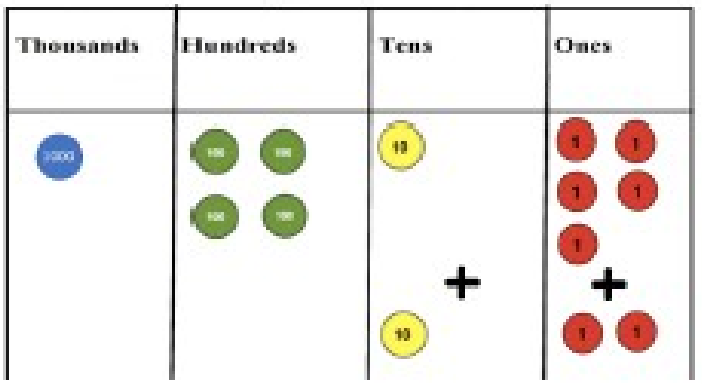
2500 is less than 5800
2500 < 5800

YEAR 4
ADDITION

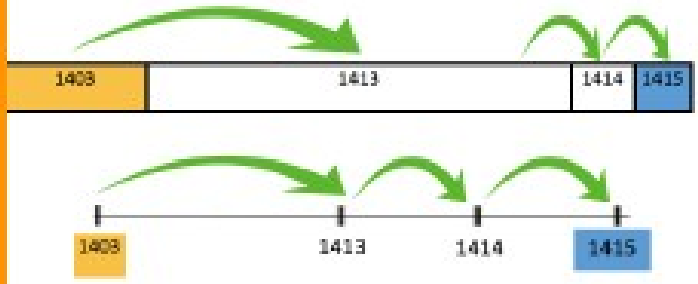
Base 10 method:



Counters method:



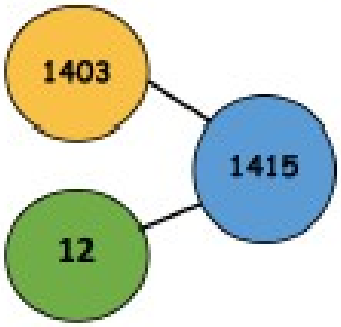
Number line method:



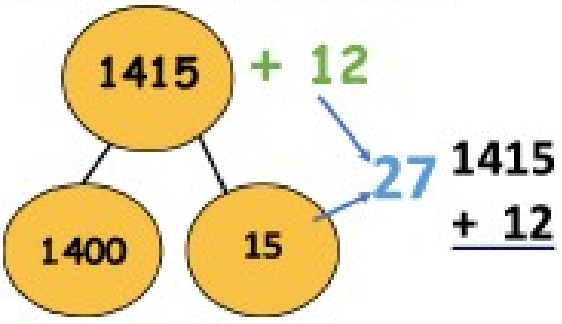
Abstract calculations:

Commutative	Inverse
1415 + 12 = 1427	1427 - 12 = 1415
12 + 1415 = 1427	1427 - 1415 = 12

Number bond method:



Number bond method:



Bar model:

Column addition:

Without renaming:

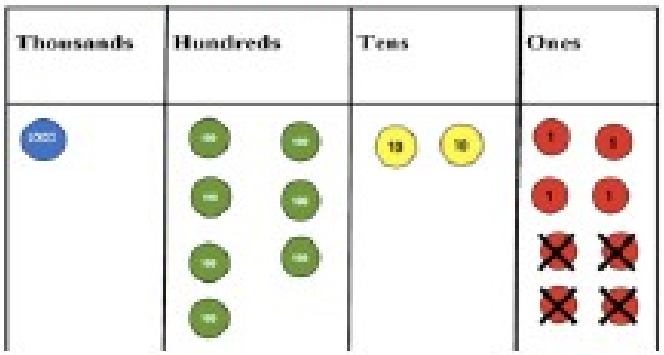
$$\begin{array}{r} 1\,4\,1\,5 \\ +\quad\;\; 1\,2 \\ \hline 1\,4\,2\,7 \end{array}$$

With renaming:

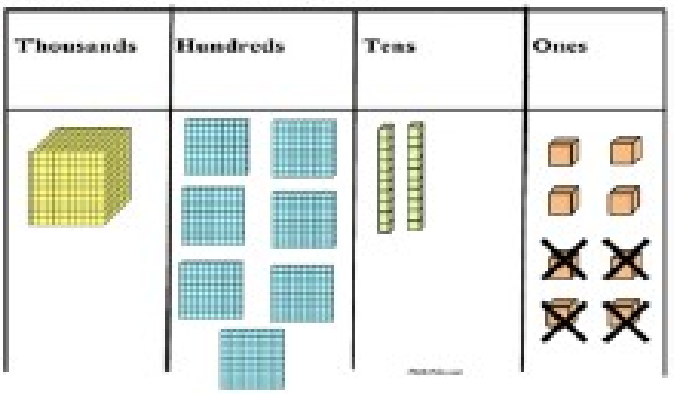
$$\begin{array}{r} {\scriptstyle 1\;\;1\;\;\;\;} \\ 1\,4\,1\,5 \\ +\quad\;\; 9\,6 \\ \hline 1\,5\,1\,1 \end{array}$$

YEAR 4
SUBTRACTION

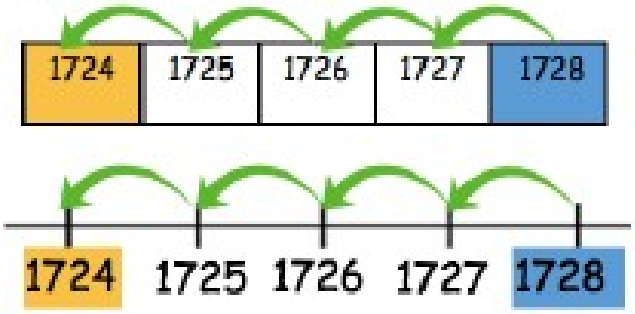
Counters method:



Base 10 method:



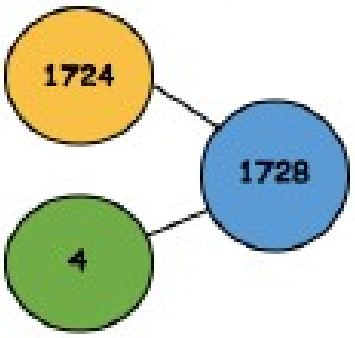
Number line method:



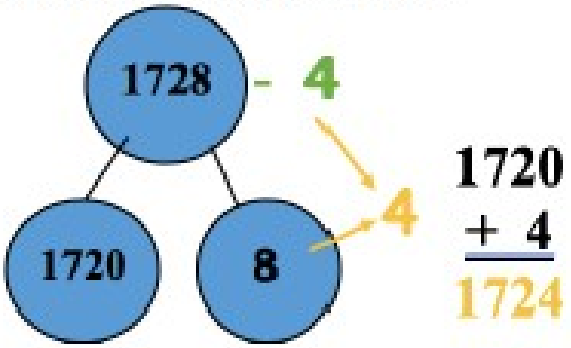
Abstract calculations:

Commutative	Inverse
1728 - 4 = 1724	1724 + 4 = 1728
1728 - 1724 = 4	4 + 1724 = 1728

Number bond method:



Number bond method:



Bar model:

Column subtraction:

Without renaming:

$$\begin{array}{r} 1728 \\ -\quad 4 \\ \hline 1724 \end{array}$$

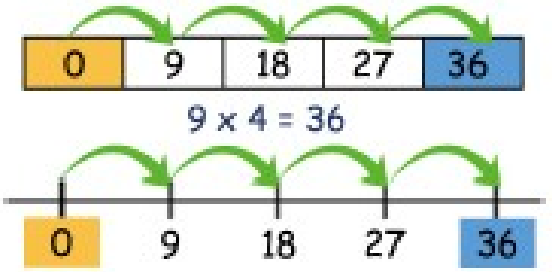
With renaming:

$$\begin{array}{r} {\scriptstyle 6\ 11\ 18} \\ 1\not{7}\not{2}\not{8} \\ -\ 349 \\ \hline 379 \end{array}$$

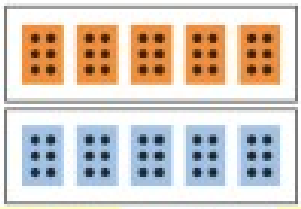
YEAR 4
MULTIPLICATION

Bar model:

Number line method:

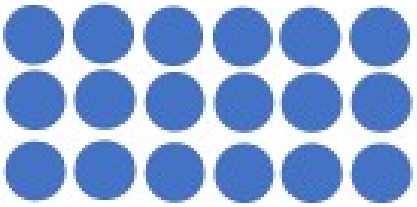


Multiply 3 numbers:



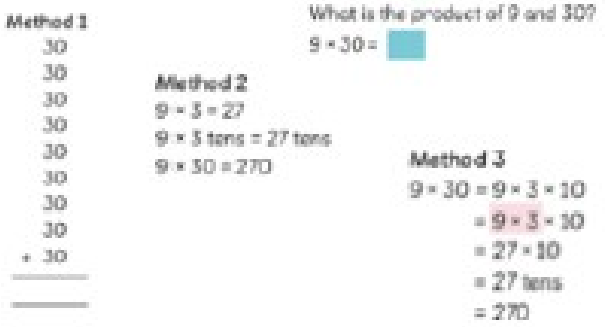
2 x 5 x 6 = 10 x 6 = 60

Array method:

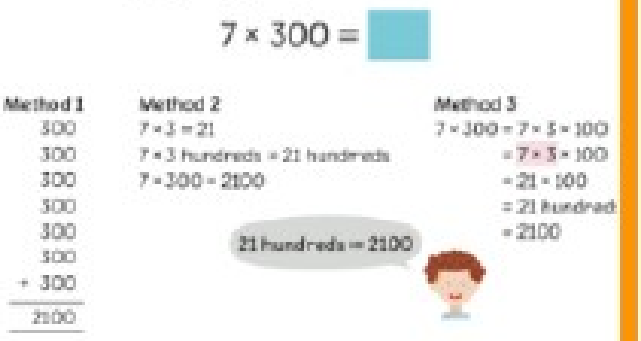


6 x 3 = 18 OR 3 x 6 = 18

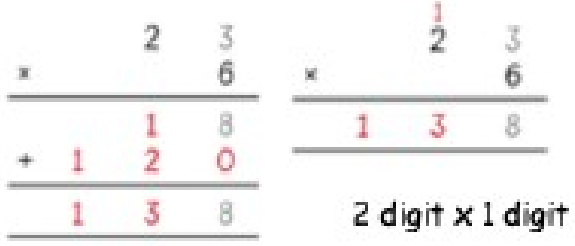
Multiplying by 10:



Multiplying by 100:



Bridged and short multiplication:



2 digit x 1 digit

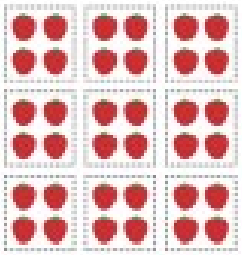
Bridged and short multiplication:

3 digit x 1 digit

YEAR 4
DIVISION

Division by grouping:

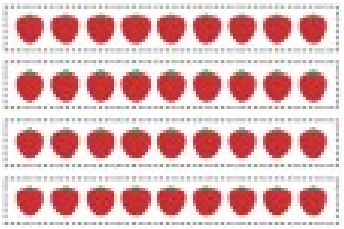
Placing into 9 equal groups



36 ÷ 9 = 4

Each group has 4 strawberries.

Placing in groups of 9

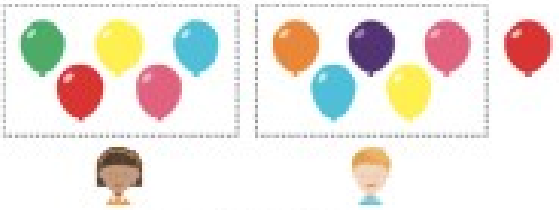


36 ÷ 9 = 4

There are 4 groups.

Grouping with remainders:

There were 11 balloons.



11 ÷ 2 = 5 remainder 1

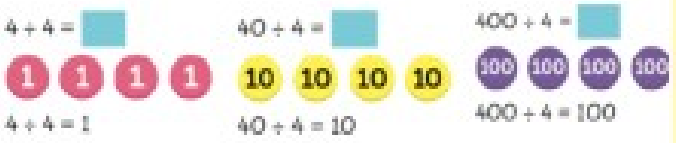
The quotient is 5 and the remainder is 1.
Each friend got 5 balloons.
There was 1 balloon left over.

Divide using multiplication:

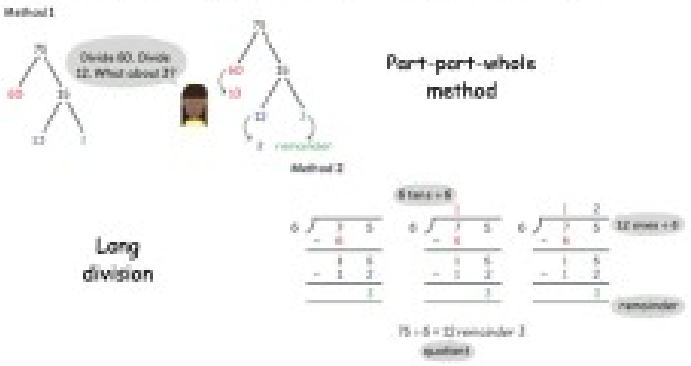
$$24 \div 3 = \underline{8}$$

$$3 \times \underline{8} = 24$$

Dividing by 1, 10 and 100:



Divide with remainders:



Divide without remainders: