Hillstone Primary School

YEAR 2
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.
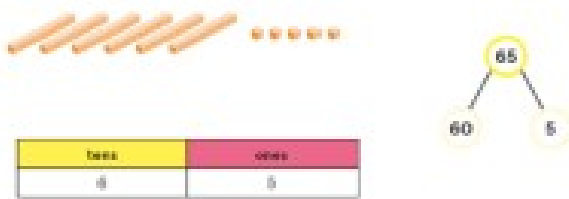
YEAR 2
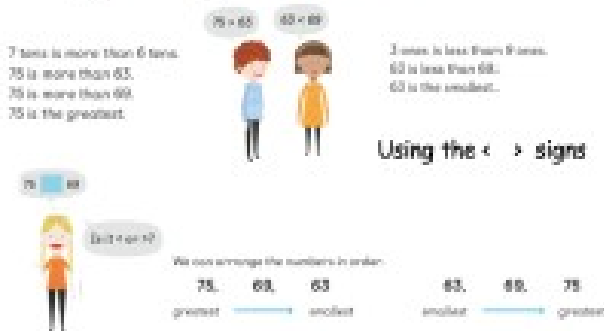# PLACE VALUE

Counting in tens to 100:
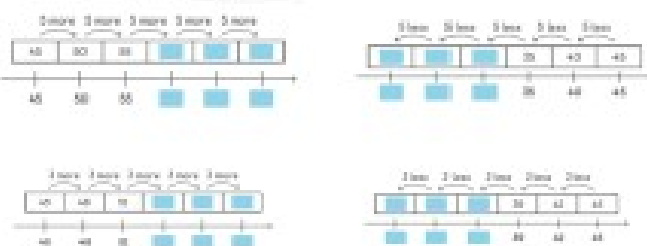
We can count on....

We can count back....

Counting in tens and ones:

We can represent two-digit numbers in these ways:
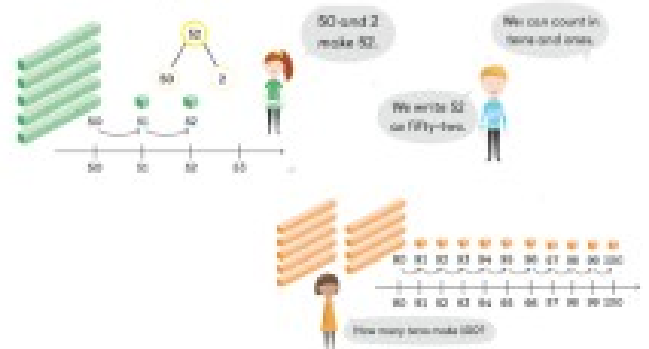
We can make numbers using different number bonds:

Comparing numbers:

7 tens is more than 6 tens.
75 is more than 65.
75 is more than 69.
75 is the greatest.

3 ones is less than 9 ones.
63 is less than 69.
63 is the smallest.

Using the < > signs

We can extend number patterns:

We can find the missing numbers in patterns:
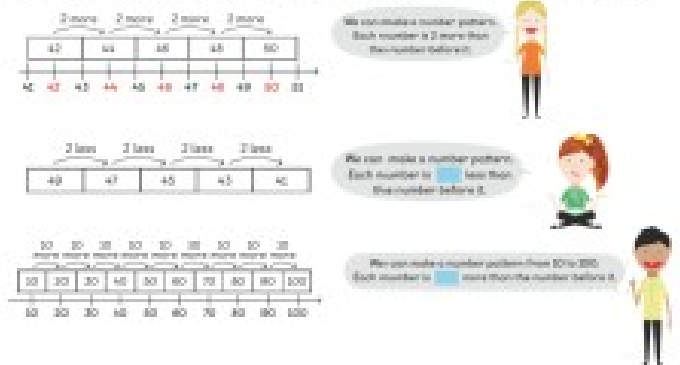
YEAR 2
ADDITION

Counters method:
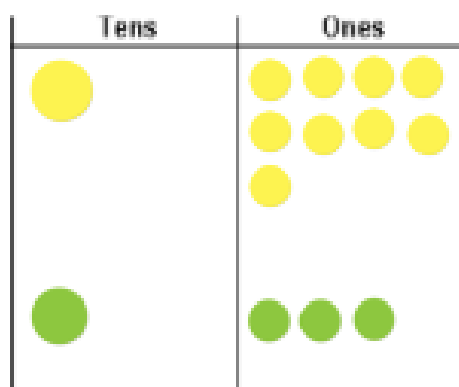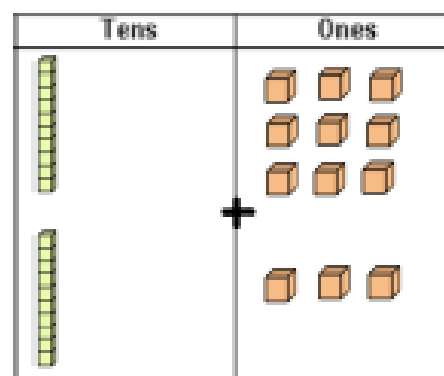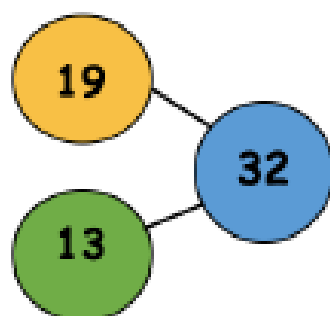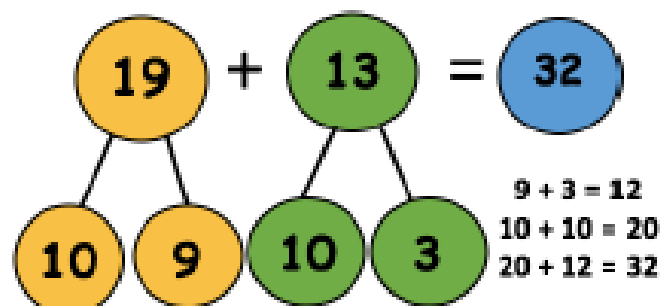
Tens	Ones

Base 10 method:

Tens	Ones

Number bond method:

19
13
32

Number bond method:

19 + 13 = 32

10 9   10 3

9 + 3 = 12
10 + 10 = 20
20 + 12 = 32

Number line method:

19	29	30	31	32

+10 +1 +1 +1

19   29   30   31   32

+10 +1 +1 +1

Bar model:

32	
19	13

Column addition:

Without renaming: With renaming: Expanded method:

```
  18              19              19
+ 11            + 13            +13
  29              32              12
                  1              20
                                 32
```
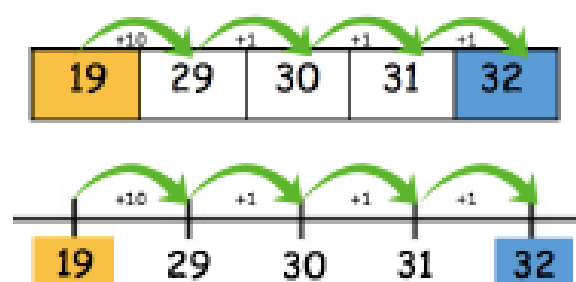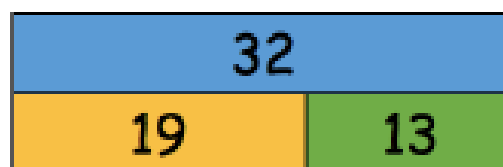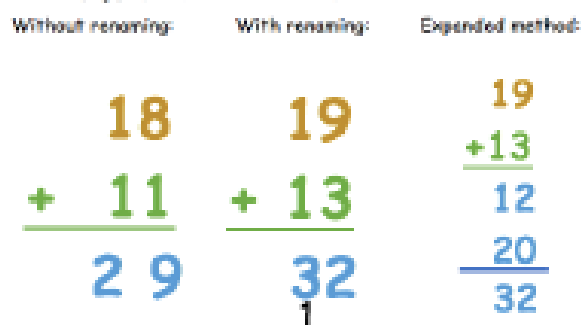
Abstract calculations:

Commutative	Inverse
19 + 13 = 32	32 – 13 = 19
13 + 19 = 32	32 – 19 = 13

4

Counters method:

Tens	Ones

Base 10 method:

Tens	Ones

Bar model:

28

25	3

Number line method:

25 26 27 28

25 26 27 28

Number bond method:

25

3

28

Number bond method:

28 − 3 = 25

20   8

8 - 3 = 5
20 + 5 = 25
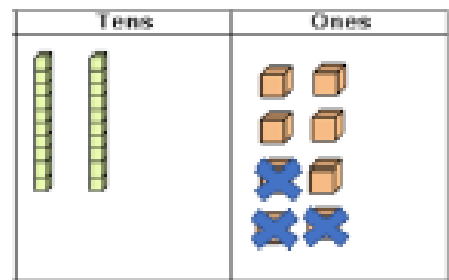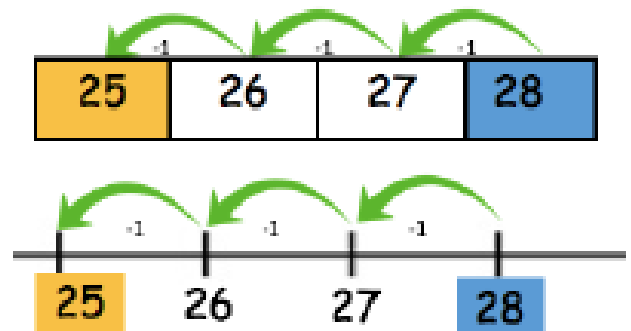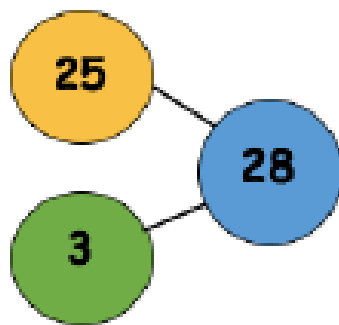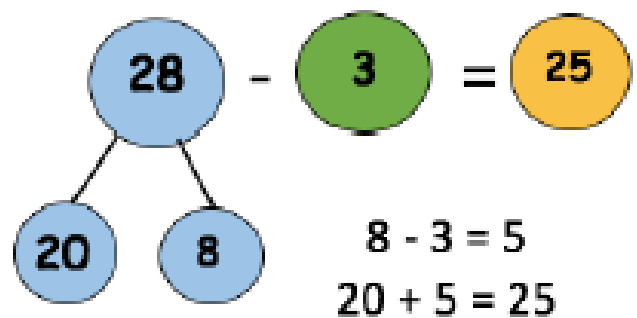
Column subtraction:

Without renaming:

$$\begin{array}{r} 28 \\ -\ 3 \\ \hline 25 \end{array}$$

With renaming:

$$\begin{array}{r} \overset{1}{2}\overset{13}{\cancel{23}} \\ -\ 19 \\ \hline 4 \end{array}$$

Expanded method:

$$\begin{array}{r} 29 \\ -14 \\ \hline 5 \\ 10 \\ \hline 15 \end{array}$$

Abstract calculations:

Commutative	Inverse
25 + 3 = 28	28 − 3 = 25
3 + 25 = 28	28 − 25 = 3

YEAR 2
MULTIPLICATION

Repeated addition:

3 + 3 + 3 + 3 = 12

Number line method:

+3 +3 +3 +3

| 0 | 3 | 6 | 9 | 12 |
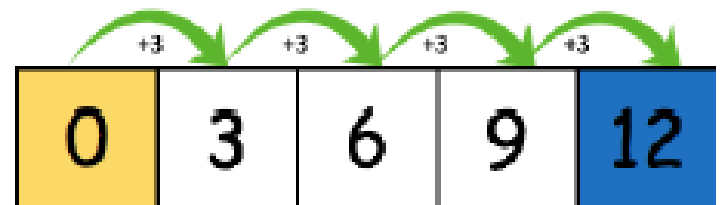
Groups of:

4 groups of 3 is 12

Multiplication:

4 × 3 = 12

Grouping Method:
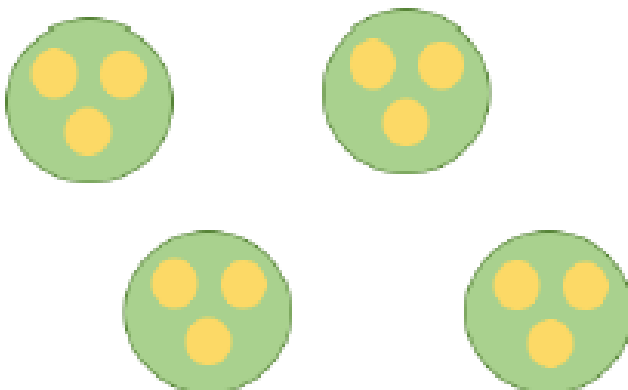
Abstract calculations:

Commutative
3 × 4 = 12
4 × 3 = 12

Make a family of multiplication and division facts:

Look at the picture.
Make a family of multiplication and division facts.

$2 \times 10 = 20$ ———— $20 \div 2 = 10$

$10 \times 2 = 20$ ———— $20 \div 10 = 2$

Solving Problems

Ruby has 15 marshmallows.
She packs 5 marshmallows into each bag.
How many bags does Ruby need?
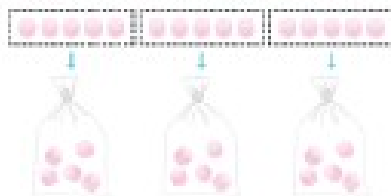
Method 1   Use 🟡 to stand for 🔵.

Use 🥤 for each bag.

Solving Problems:

Ruby has 15 marshmallows.
She packs 5 marshmallows into each bag.
How many bags does Ruby need?

Method 2   Draw a picture.

Solving Problems:

Ruby has 15 marshmallows.
She packs 5 marshmallows into each bag.
How many bags does Ruby need?

Method 3   Use a division equation.

$$15 \div 5 = 3$$

Ruby needs 3 bags.