
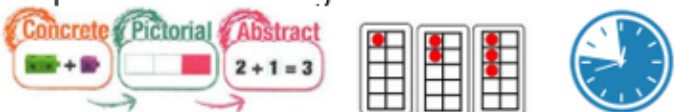




Across the school we develop and build on our knowledge and understanding of pattern, grouping and groups. From early on we understand what is an equal group and what is not an equal group. When working with repeated equal groups, we recognise that we can use and apply skip counting to help us find out how many there are altogether. The progression of skills learnt in Number Sense, such as learning doubles and halves and counting in odd and even numbers, further help us to build connections and strengthen our recall of multiplication facts and sequences.

Our Hindhayes Maths Ambition

To grow....

| | |
|---|--|
| <p>I can attitudes to maths</p>  <ul style="list-style-type: none"> • Offer support through learning partners, scaffolding and modelling. • Explore new vocabulary and expose it's meaning. Make a poster to help us remember. • Have a number sense display to help us make sense of the maths • Celebrate small steps of learning • Use different ways to assess what has been understood and what has not been understood YET • Present learning in manageable chunks | <p>deeper understanding within maths</p>  <ul style="list-style-type: none"> • The concrete experiences <u>is</u> where the children make discoveries – always start a unit with concrete experiences. Take photo graphs for learning prompt displays and pic collage evidence. • Adults to apparatus to model and expose the maths – silent modelling, two colours of snap cubes for number facts. • Give children time to deepen their understanding, retrieve previous learning and make links across maths concepts <u>eg</u> number doubles and the 2 times table. |
| <p>our declarative knowledge</p>  <ul style="list-style-type: none"> • Daily Number Sense sessions help us to learn number facts in a systematic and progressive manner • Regular retrieval of known facts helps us free up our working memory • We can use our known facts to help us be effective and efficient mathematicians | <p>our procedural knowledge</p>  <ul style="list-style-type: none"> • Explicit instruction, modelling and scaffolding helps us to learn HOW to carry out the maths • Using techniques, following short steps and using stem sentences help us to remember what to do. |

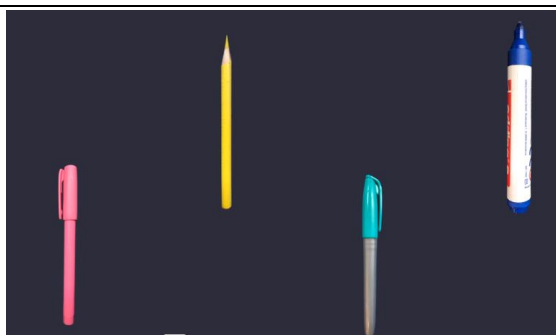
Developing Early
Multiplication and Sharing
Skills
EYFS

Vocabulary

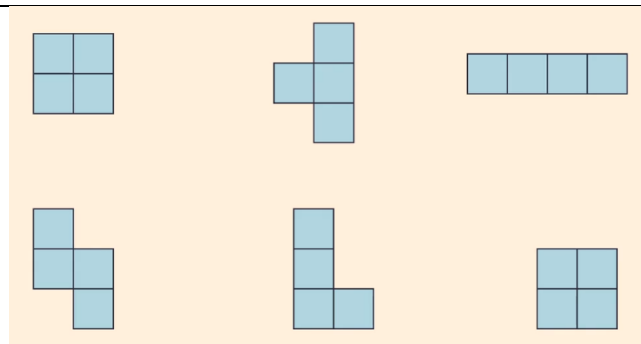
Part, whole, groups of, lots of, double, pair, pairwise, equal, share, share equally, one each, two each..., group, groups of.

Key Skill

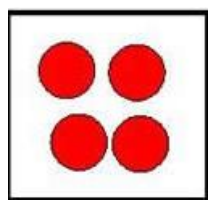
Subitising, recognising pattern and counting



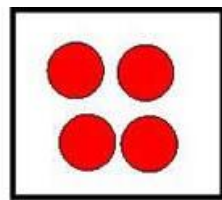
Identifying how many, recognising pattern.



Identifying matching pairs.



4

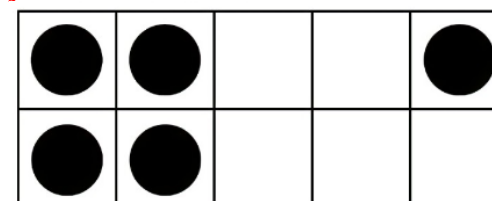


4

Recognising and learning doubles facts (within 10).

What can you see?

I can see 2 lots of 2 and one more.



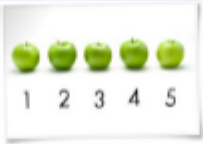
Solving simple problems using 'lots of' and sharing.

Developing Early
Multiplication and Sharing
Skills
EYFS

Vocabulary

Part, whole, groups of, lots of, double, pair, pairwise, equal, share, share equally, one each, two each..., group, groups of.

Key Skill
Cardinality, Comparing and Counting

| Key Concept | Importance of Concept | Teaching and Learning Points |
|---|--|---|
| <p>Pre-counting</p> <p>The key focus in pre-counting is an understanding of the concepts more, less and the same and an appreciation of how these are related. Children at this stage develop these concepts by comparison and no counting is involved.</p> | <p>This is important because these concepts lay the foundation for children to later develop an understanding of the many ways that numbers are related to each other; for example five is two more than three, and one less than six.</p> | <p>Children often have some concept of more; this needs to be extended and refined. Less is a more difficult concept and understanding can be developed by pairing the terms less and more to help develop an understanding of the relationship between the two.</p> |
| <p>One-to-one counting</p> <p>The key focus of one-to-one counting is developing children's ability to count. Two skills are needed:</p> <ul style="list-style-type: none"> ▪ ability to say the standard list of counting words in order ▪ ability to match each spoken number with one and only one object | <p>Counting is important because the <i>meaning</i> attached to counting is the key conceptual idea on which all other number concepts are based.</p>  | <p>Children have often learnt the counting sequence as a rote procedure. They need to learn the meaning of counting by using counting skills in a variety of meaningful situations. Start with counting small numbers, up to five objects.</p> <p>Once children can count reliably their knowledge of the number sequence can be extended to count both forwards and backwards, from any given number.</p> |

| | | | | |
|--|--|--|---|--|
| | <p>Counting sets</p> <p>The key focus of counting sets is developing children's understanding of cardinality. This means that children understand when you count the items in a set, the last number counted tells the size of that set.</p> <p>They also know that the number in a set will remain constant as long as no items are added to the set, or taken from the set. The count</p> | <p>Cardinality is important because it allows numbers to be used to describe and compare sets. This allows sets of items to be combined (addition) and separated (subtraction).</p> | <p>Children develop an understanding of cardinality by counting a variety of objects into different sized sets.</p> <p>Counting the same set several times in a different order or arranging the counting objects in a different pattern develops children's understanding that the number in a set stays the same unless items are added or taken away. Try covering the amount- How many now?</p> | |
| | <p>will remain the same despite where you start counting.</p> <p>Counting from one to solve number problems</p> <p>The key focus here is counting objects to solve addition and subtraction problems.</p> <p>Children will need to use materials such as buttons, plastic animals, or whatever they may be playing with, to keep track of their counting. For example, children will combine 3 and 2 by first counting out "1,2,3" for the first set, then "1,2" for the second set, then physically join the sets and counting them all "1,2,3,4,5."</p> | <p>Using counting to solve number problems shows children that counting can be used meaningfully in a variety of situations. This helps them understand and appreciate counting as more than a rote procedure.</p> <p>Using counting to combine and separate groups of objects develops children's understanding of the operations of addition and subtraction. Children come to understand that when groups are combined the count gets bigger, and when groups are separated the count gets smaller.</p> | <p>The ability to recognise and write numerals are important skills to develop alongside counting.</p> <p>Encourage children to count a wide variety of concrete materials to solve number problems. Start by joining small sets, with a total of five and then ten items. Identify the first amount and count on from that number.</p> | |

Multiplication and Division

Year 1

Vocabulary

Part, whole, groups of, lots of, double, pair, times, array, altogether, multiply, count, equal, not equal, share, share equally, one each, two each..., group, groups of, lots of, array, odd, even, half.

Key Skill

Recognising and learning number doubles and halves (to 6 + 6)



I see 2 lots of 5.
There are 5 altogether.

Making connections with factual fluency (bonds within 10)

2 people on the see-saw



Half of 2 is

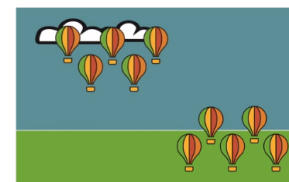
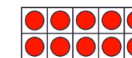
Double is 2

Making links between doubles and halves.

There are 10 hot air balloons.

5 hot air balloons take off.

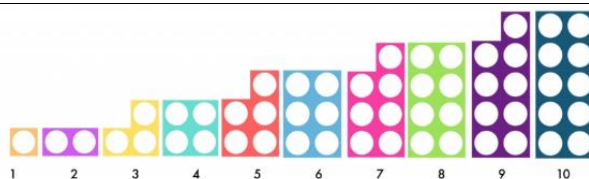
How many are still on the ground?



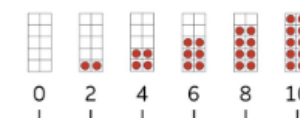
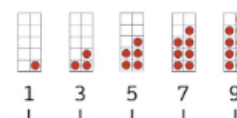
$5 + 5 = 10$ so $10 - 5 = 5$

Key Skill

Recognising patterns and skip counting in 2s, 10s and 5s.



What do you notice about the numbers?



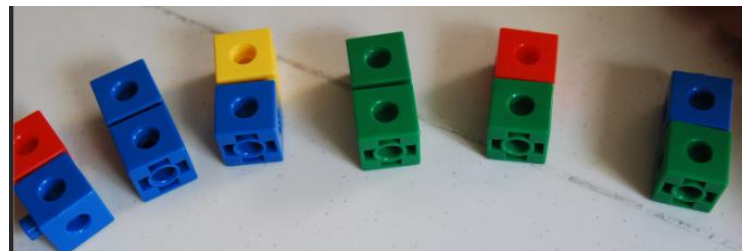
Can you count in even numbers?

Can you count in odd numbers?

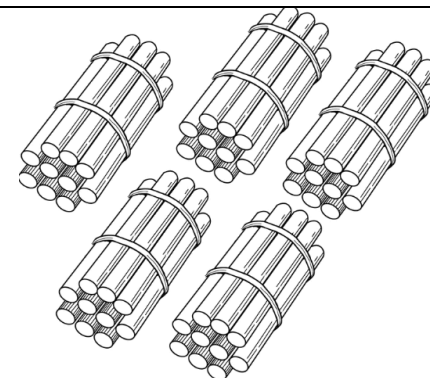
Key Skill

Making equal groups and counting in lots of

Which image shows equal groups?



Use your cubes to make equal groups of 2.
6 groups of 2 is equal to 12.



I have 5 lots of 10, how many do I have altogether?



I have 20 sweets. How many equal groups of 5 can I make?
I have _____ groups of 5.



Betty and Bill collected some conkers.
They collected 14 counters. Can you help them share the conkers into two equal groups so that they both have the same?



Look at the paints. How many groups of 2 can you see? How many blocks of paint are there altogether?
 $2+2+2+2+2+2 =$

Multiplication and Division

Year 2

Vocabulary

Part, whole, groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times..., multiple of, share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, odd, even, half

Key Skill

Counting in equal groups to find a total.



Understand the difference between equal and unequal groups.

The ___ have been grouped.



$$5 + 5 + 5$$

$$3 \times 5$$

$$5 + 5 + 5 = 3 \times 5$$

We can represent repeated addition using a multiplication expression.

The 3 represents the number of groups.

The 5 represents the number of eggs in each group.

15 represents the total number of eggs.

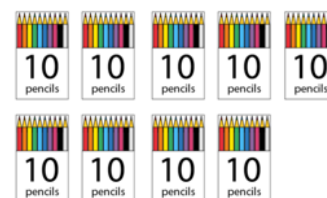
We can represent equal groups as repeated addition.

There are 3 groups of 5.

The ___ represents the number of groups.

The ___ represents the number of ___ in each group.

___ represents the total number of ___.



$$9 \times 10$$

We can skip count in multiples of ___ to work out the total amount.

10, 20, 30, 40 ... there are 90 pencils altogether.

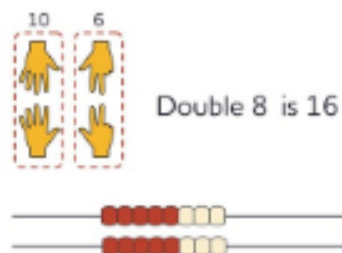


$$7 \times 2$$

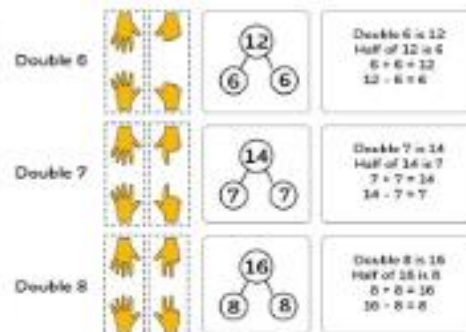
Notice how the representations allow the children to see each of the numbers (i.e. 10 pencils and 9 packets).

Key Skill

Recognising doubles and halves cont



Learning strategies to help us learn doubles beyond $5 + 5$.
 Making links between number doubles and the 2 times table
 $2 \text{ lots of } 8 = 16$
 $2 \times 8 = 16$



Using learnt doubles to help us learn number halves beyond half of 10.
 Making links between number halves and sharing into two equal groups.
 Half of 16 is 8.
 16 shared into 2 equal groups is 8.

What do you notice?
 If I know $6 + 6$ then I also know $6 + 7$

$$6 + 6 = 12$$

$$6 + 7 = 13$$

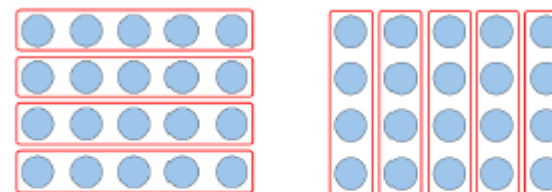
Supporting factual fluency.
 Using known doubles to derive near doubles

Key Skill

Exploring multiplication through arrays



What do you notice?
 I have noticed.....



Identify that multiplication is commutative.

$$4 \times 5 = 5 \times 4$$

Key Skill
Solving multiplication and division problems

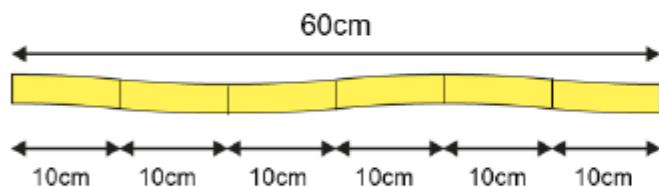


$$3 \times 5 = 15$$

$$15 \div 5 = 3$$

We can solve division problems by finding missing factors.

The 15 represents the number of biscuits.
The 5 represents the number of biscuits in each bag (group).
The 3 represents the number of bag (groups).



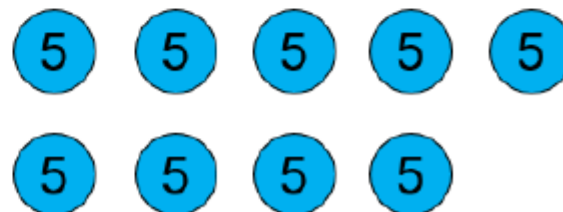
The 60cm represents the length of the ribbon.
The 10 represents the size of each piece.
The 6 represents the number of pieces we can make.

$$6 \times 10 = 60$$

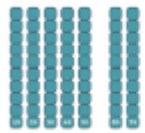
$$60 \div 10 = 6$$

We can use \div to mean 'divided by'
We can use our knowledge of times tables to help solve division problems.

$$45 \div 5 = 9$$

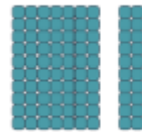


Key Skill
 Securing factual fluency - making links with multiples of 10



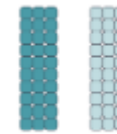
7 tens
 70
 seventy

Securing links with place value.
 Partitioning multiples of 10



$7 + 2 = 9$
 $70 + 20 = 90$

Securing links with factual fluency
 (addition)



$6 - 3 = 3$
 $60 - 30 = 30$

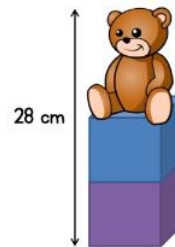
Securing links with factual fluency
 (subtraction)

Key Skill
 Solving complex multiplication and division problems (GD)

If I know $10 \times 10 = 100$
 then I also know....
 $12 \times 10 = 100 + 10 + 10$

Use known multiplication facts to derive
 unknown facts.

A teddy sits on top of two cubes.
 The teddy is 12 cm tall.
 Each cube has the same height.



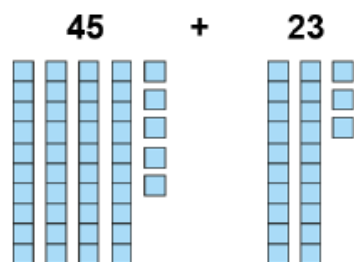
What is the height of each cube?

Use multiplication and division to
 solve 2 step problems.

Label the divisions that are missing.

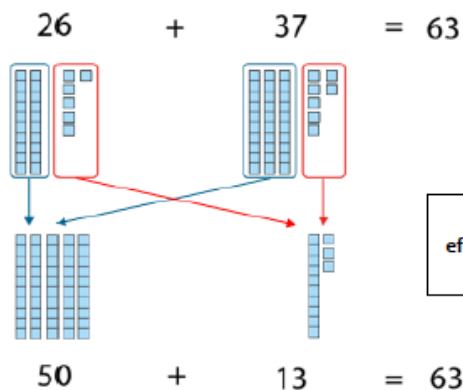


Use multiplication to find missing
 numbers on scales.



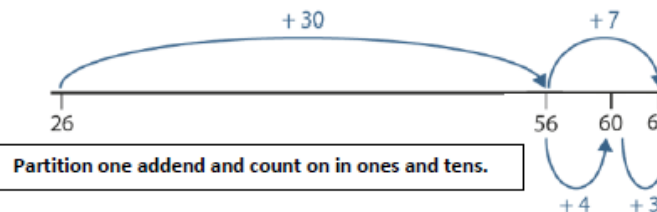
Partition both addends to add efficiently without crossing the tens boundary.

$$\begin{aligned} 40 + 20 &= 60 \\ 5 + 3 &= 8 \\ 60 + 8 &= 68 \end{aligned}$$

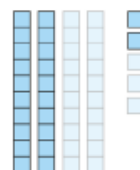


Partition both addends to add efficiently when the ones require an exchange.

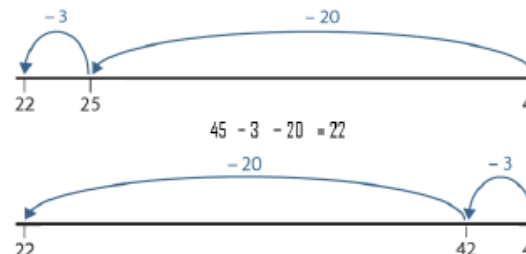
$$\begin{array}{r} 26 + 37 = 63 \\ 30 \quad 7 \end{array}$$



$$45 - 20 - 3$$

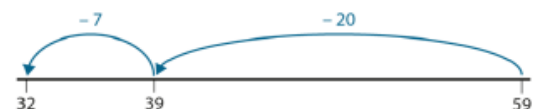


$$45 - 23 = 22$$



Subtract from any two-digit number by subtracting tens then ones without crossing a tens boundary.

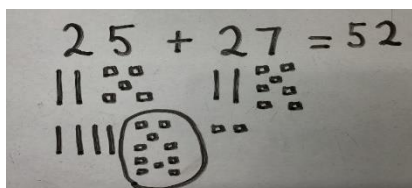
$$\begin{array}{r} 59 - 27 = 32 \\ 20 \quad 7 \end{array}$$



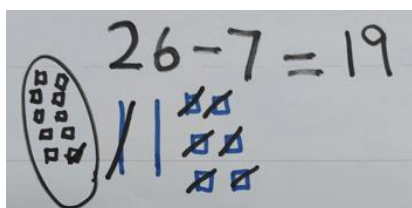
Subtract from any two-digit number by partitioning the subtrahend into tens and ones and counting back.

Add two-digit numbers by using the technique:

Build/Group/Count



Subtract from a two-digit number when crossing the tens boundary using the exchange method.

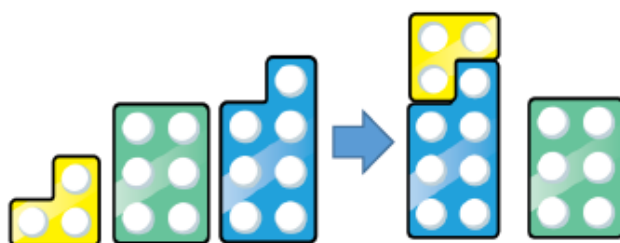
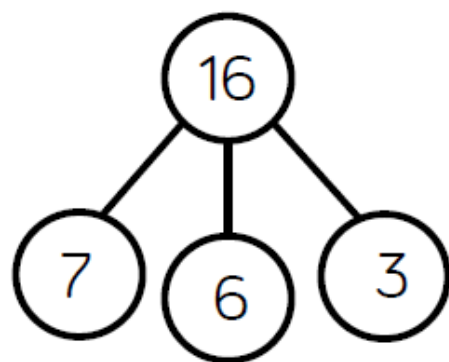


Vocabulary

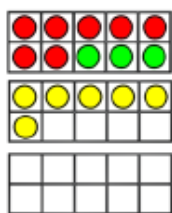
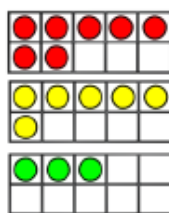
Part, whole, add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column, tens boundary, partition, recombine, take, take away, less, minus, subtract, leaves, difference between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is_?

Key Skill

Adding 3 single digits - using known facts

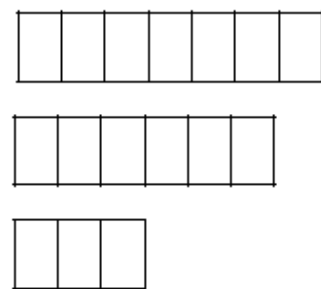


$$7 + 6 + 3 = 16$$



$$7 + 6 + 3 = 16$$

10



16

When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.

This supports children in their understanding of commutativity.

Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.