# Addition

- Practical counting of a given amounts of objects changing them from a group to a line.
- Counting out a certain amount, placing objects in a line to count, pointing finger to touch each object.
- Matching numerals to groups of objects
- Counting up and down a number line.
- Understand the concept of more than with quantities by direct comparison, which pile has more?
- Count out more objects than a given number e.g. count out more than six
- Say the number that is one more than a given quantity e.g. you have three what's one more?
- Counting up a visualised number line.
- Find numerals that are more than a given number e.g. which numbers are more than 5?

- One more than a given number e.g. what is 1 more than 3? (using their visual number line if possible, if not show one hop up the number line).
- Two more than a given number e.g. what is 2 more than 6? (using their visual number line if possible to do one hop and then another hop).

- Investigate different ways of making the same towers using 2 colours of cubes e.g. 3 red and 1 blue    makes 4 altogether, 2 red and 2 blue makes 4 altogether. Use the language and, add, plus, makes, equals

- Children to think of a way of representing this.
- Make it more formal by removing the colour names e.g. 3 add 1 equals 4, 2 add 2 equals 4
- Children to make towers to represent given sums e.g. make me a tower to show 4 add 3 equals 7
- Introduce the + and = symbol by children matching written sums to drawn towers e.g.

$$3 + 2 = 5$$

$$2 + 1 = 3$$

- Children to write sum for a given tower
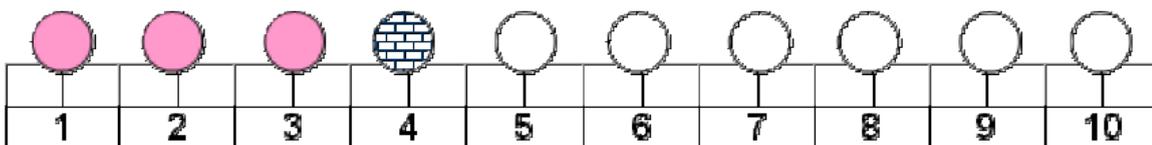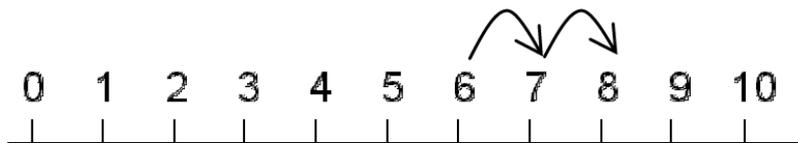- Children to find matching sum by turning tower over

$$2 + 1 = 3$$

$$1 + 2 = 3$$

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

- Read and understand a number sentence using standard symbols
- Write a number sentence to match two groups of objects
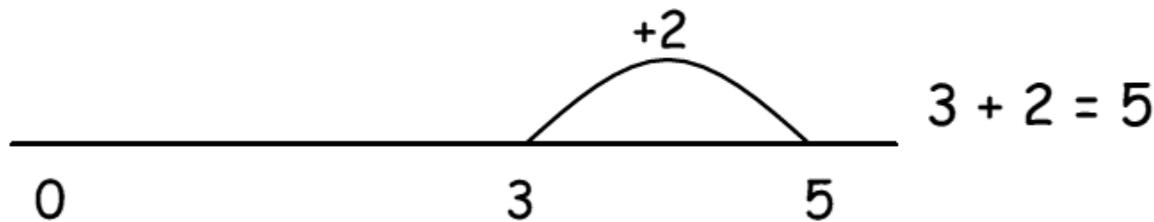
- Begin to understand that addition can be done in any order
$2 = 1 + 1$          $3 + 2 = 2 + 3$                    $a + b = b + a$
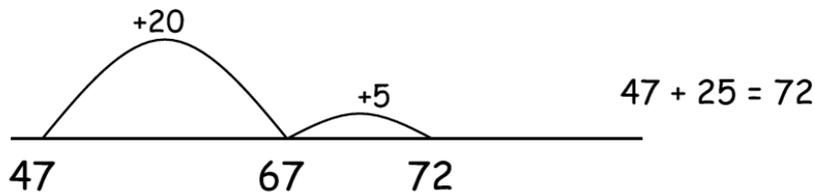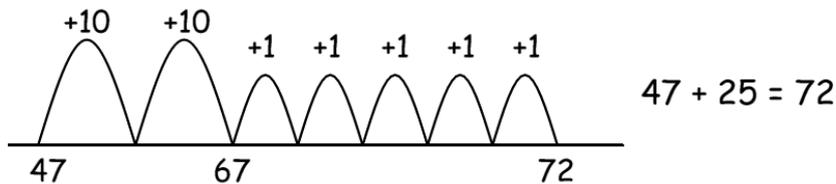
- Record addition jumps on a simple number line (e.g. 6+2)

$$0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10$$

- Balancing additions (e.g. 2 + 3 = 4 + _)
- Missing number addition sums (e.g. 3 + _ = 5)

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- Use empty number line to jump on and record the horizontal number sentence to go with it.

$$+2$$

$$0 \qquad\qquad 3 \qquad\qquad 5$$

$$3 + 2 = 5$$

- Bridge through five (e.g. 5 + 8 = 5 + 5 + 3
  = 10 + 3
  = 17)

- Bridge through ten (e.g. 8 + 5 = 8 + 2 + 3
  = 10 + 3
  = 13)

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- Partitioning of numbers (e.g. 15 = 10 + 5, 37 = 30 + 7)
 (NB Children need to be secure adding multiples of ten to any two digit number including those that are not multiples of ten)
- Increase to two two-digit numbers or three-digit numbers, using partitioning skills. Extend to adding three numbers together in this way.

$$+10 \quad +10 \quad +1 \quad +1 \quad +1 \quad +1 \quad +1$$

$$47 \qquad\qquad 67 \qquad\qquad 72$$

$$47 + 25 = 72$$

$$+20$$
$$+5$$

$$47 \qquad\qquad 67 \qquad 72$$

$$47 + 25 = 72$$

Regular number bond practice and recall of facts

Make estimates for calculations

Regular number bond

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- When the previous methods are secure children may wish to record in one of the ways below as opposed to the number line.

Partitioning (both numbers)

36 + 45 = 30 + 40 + 6 + 5
           = 70 + 11
           = 81

Partition (one number)

36 + 45 = 36 + 40 + 5
           = 76 + 5
           = 81

Rounding and adjusting:

36 + 45 = 36 + 50 – 5
           = 86 – 5
           = 81

Partitioning (vertical columns)

$$\begin{array}{rcl} 36 & = & 30 + 6 \\ + 45 & & \underline{40 + 5} \\ & & 70 + 11 \quad = 81 \end{array}$$

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- Vertical column addition - adding the most significant digits first.

$$\begin{array}{r} 427 \\ + \quad 328 \\ \hline 700 \\ 40 \\ \underline{15} \\ 755 \end{array}$$

Understanding that addition is commutative means that the hundreds do not have to be added first, any order of adding will give the same total. It is possible to add with the least significant digits first.

$$\begin{array}{r} 427 \\ + \quad 328 \\ \hline 15 \\ 40 \\ \underline{700} \\ 755 \end{array}$$

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- This makes it possible to record the vertical method more quickly by making a note of multiples of 10 or 100 rather than writing it all out.

$$\begin{array}{r} 68 \\ + \quad 26 \\ \hline 14 \\ \underline{80} \\ 94 \end{array}$$

becomes

$$\begin{array}{r} 68 \\ + \quad 26 \\ \hline 94 \\ 1 \end{array}$$

- Pupils can then use either the expanded or compact method with larger numbers or decimals.

```
    3968
 +  5493
    8000
    1300
     150
      11
    9461
```

```
    53.2
 +   4.9
    58.1
      1
```

```
    28.53
 +   9.7
 +   5.32
    43.55
     2 1
```

- Extend to numbers with any number of digits and decimals with one, two and/or three decimal places
- Revert to expanded methods if the children experience any difficulty

Please note:
- Use of any method is appropriate depending on the type of calculation.
- Practise choosing the most appropriate method for a variety of calculations.
- Apply methods learnt and use confidently in a range of situations