Representing Numbers

We want to develop children's number sense so that they understand the number rather than just recognising the numeral. Children need to understand that numbers can be represented in many ways, not just as a written numeral.

We use many different objects and pictures to show that numbers can be represented in lots of ways. Children sometimes need lots of practice to recognise numbers in different forms. We play matching games and encourage children to recognise and make different amounts in our indoor and outdoor areas.

Counting

When counting, children need to understand the following:

- That we need to say one number for each object counted (touch counting).
- The final number we say is how many altogether. Some children continue to count after they have reached the final object as they don't connect the numbers they are saying to the objects in front of them.
- That we can count objects in any order and the total stays the same.
- That the total stays the same even when the objects move. When children first start to use numbers, they often do not understand that if we move objects into another arrangement the total stays the same. We practice this with many different types of objects before moving onto more abstract ways of recording.

Recognising amounts

Another skill that is very important is recognising small amounts without the need to count them. This is sometimes called subitising.

Initially this should be by using real objects but as children progress, allowing them to see groups of dots in different arrangements helps them to mentally 'see' how many objects are there without needing to count. This is a very important skill when children begin to add and subtract. Using dice is a good way to practise this skill before moving onto objects in different arrangements.

Composition

When a child understands the composition of number, they understand that numbers are made up of other numbers. They 'see the numbers inside' other numbers: first, that all numbers are made up of ones, and then that they can be made up of pairs of bigger numbers.

So for example, 5 is made of 'five ones', or of '1 and 4', or of '2 and 3'.

The CBeebies' *Numberblocks* characters demonstrate this with their ability to split into other characters as shown in this clip:

Numberblocks

The concept of composition allows children to build fluency with number bonds – not only number bonds of 10, but *all* the number bonds within numbers.

Reasoning

Reasoning helps children explain their thinking, which enables them to more deeply understand how they do maths. It helps them consider how to solve a problem, explain how they solved it and to think about what they could do differently. Some examples of reasoning are:

- True and false statements, for example: adding to a number always makes it smaller – true or false?
- Spotting Maths errors, for example: 1, 2, 3, 4, 6, 5, 7, 8, 9, 10
- Explaining how we know something or how we worked it out

Problem Solving

Problem Solving allows children to use their maths skills in a range of contexts and in situations that are new to them. It allows them to seek solutions, spot patterns and think about the best way to do things rather than blindly following maths procedures that they have been taught.

In Hazel Class problem solving might include:

- Identifying, following and creating patterns
- Estimating amounts of objects
- Predicting how many times they can do something in a minute
- Sharing objects between different groups – particularly when the amount of groups change and the amount of objects stays the same
- Finding different ways to partition numbers, for example 4 can be made up of 3 + 1, 2 + 2, 4 + 0 or 1 + 3.