

Zero the Hero

The earliest number systems had no value for zero. The Ancient Greeks mulled over the idea of zero as a number, but were concerned about how 'nothing' could be 'something'. The Mayans are known for the first culture to have a symbol for zero. India was the first culture to integrate zero completely into their mathematics, with rules for how to use zero, and negative numbers that were smaller than zero.

Today the number zero plays two roles in mathematics. Firstly, it acts as a **value** of nothing, and secondly it acts as a **placeholder** in positional number systems, allowing us to distinguish similar multi-digit numbers from each other, such as 203 and 23. Without the zero as a placeholder (showing no values of ten), two hundred three would read the same as twenty-three.

Zero is the only number that differentiates the set of natural numbers and the set of whole numbers. Young children understand the value of zero ("All gone!") long before they learn the role of zero as a placeholder.

Zero serves the role of the **identity element** for the operation of addition. Adding zero to a number or adding a number to zero does not change the value of the number.

Questions to think about:

1. Is zero even or odd?
2. Is zero a positive or negative number?
3. What happens when we multiply by zero?
4. What happens when we divide by zero?