GOLDBACH'S CONJECTURE

You have learned about **prime numbers**.

A prime number has **exactly two factors**, itself and 1.

The first ten primes are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29.

Action - Can you find the next ten primes?

In 1742, Christian Goldbach (1690-1764) wrote a letter to Leonhard Euler, the top mathematician of his day. In the letter he made a **conjecture**, which just means that he made a statement without proving it.

Goldbach's conjecture says that every even number greater than 2 can be written as the sum of two prime numbers. **To this day no-one has managed to prove or disprove it**.

Action - Can you write every **even** number between 4 and 100 as the **sum** of two prime numbers? Here are the first few...

$$4 = 2 + 2 \qquad 6 = 3 + 3 \qquad 8 = 5 + 3 \qquad 10 = 7 + 3$$

Action – Clearly we can write **10** as **7 + 3** or **5 + 5**. Which other numbers between 4 and 100 have more than one way of writing them as the sum of two primes? Which ones? Is there any pattern?