1. A scientist asks a question about the way things work.
2. They form a hypothesis (what they think is the most likely answer to the question). They base this hypothesis on scientific theories (explanations of the way things work that are already accepted as being correct).
3. To find out whether their hypothesis is correct, the scientist carries out an experiment.
4. If the results of the experiment support the scientist's hypothesis, then the hypothesis may be correct. The scientist shares their results with other scientists.
5. If other scientists get the same results from the experiment, then the hypothesis is accepted as being correct, and becomes a theory. Scientists can use the new theory to base their own hypotheses on.

Here is a true story that shows how scientists work:

Edward Jenner was an English doctor who lived about 200 years ago. One of the deadliest diseases at the time was smallpox.

Doctor Jenner noticed that milkmaids who had caught the much milder disease of cowpox never suffered from smallpox. He formed a hypothesis: *Catching cowpox protects you from smallpox.*

Doctor Jenner tested his hypothesis by taking pus from a cowpox blister on a milkmaid's hand and injecting it into a young boy's arm. Several days later, he injected the boy with smallpox, and waited...

The boy did not become ill. Doctor Jenner's hypothesis was correct! Doctor Jenner named this new process ‘vaccination’ from the Latin word *vacca*, which means cow.

Thanks to his invention, deaths from smallpox began to drop and the disease was eventually eradicated. Other doctors used Doctor Jenner's vaccination technique to protect people from other diseases, too.





