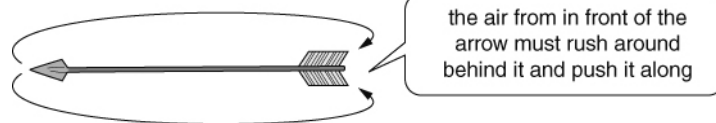
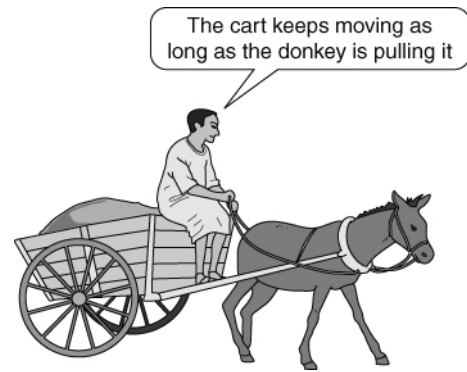


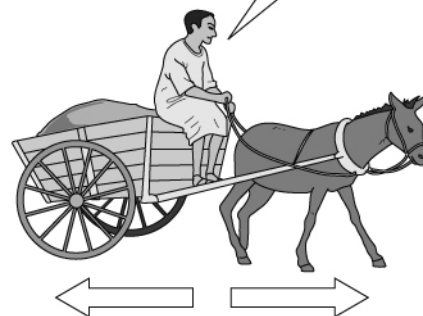
Aristotle (374–322 BCE) was a famous Greek philosopher (thinker). He was one of the first people to think in a scientific way about forces. One of his theories was that moving things kept moving as long as there was a force on them. This idea seems obvious when you think about things like carts. Aristotle's ideas relied on thinking about observations; he did not carry out investigations to test his theories.

Things that were thrown, like arrows, were a little harder to explain.



Many other scientists studied forces and movement. One of the most famous was Galileo Galilei (1564–1642). Galileo knew about Aristotle's ideas, and he decided to test them. He carried out a lot of experiments to study how objects moved on different surfaces, and realised that there was a force that tried to slow things down. This is the force we call friction. He suggested that if you could reduce friction to zero, an object would keep moving for ever.

There is a force of friction in the wheels and between the wheels and the ground. If the donkey did not pull the cart, friction would cause it to slow down and stop. The donkey provides enough force to balance the force of friction, so the cart carries on moving at a steady speed.



there is a force of air resistance on the arrow. This force will eventually slow the arrow down until it stops (unless it hits the ground first!). If there was no air resistance, the arrow would just keep on moving.



- 1
 - a What was Aristotle's idea about forces and moving objects?
 - b What was Galileo's idea?
- 2
 - a How did Aristotle arrive at his ideas?
 - b How did Galileo arrive at his ideas?
 - c Which method is closest to the method that scientists use today?

- 3** You are cycling at a steady speed along a level road. You need to keep pedalling to keep moving at a steady speed.
- a** How would Aristotle explain the fact that you need to keep pedalling?
 - b** How would Galileo explain it?
- 4** You stop pedalling.
- a** What happens to the speed of the bicycle?
 - b** Can Aristotle's idea explain this? If so, how?
 - c** Can Galileo's idea explain this? If so, how?

I can...

- recall that ideas about forces and movement have changed
- describe how evidence can be used to change ideas
- describe how friction forces affect movement.