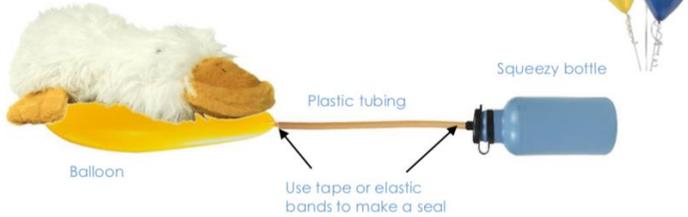


Pneumatics

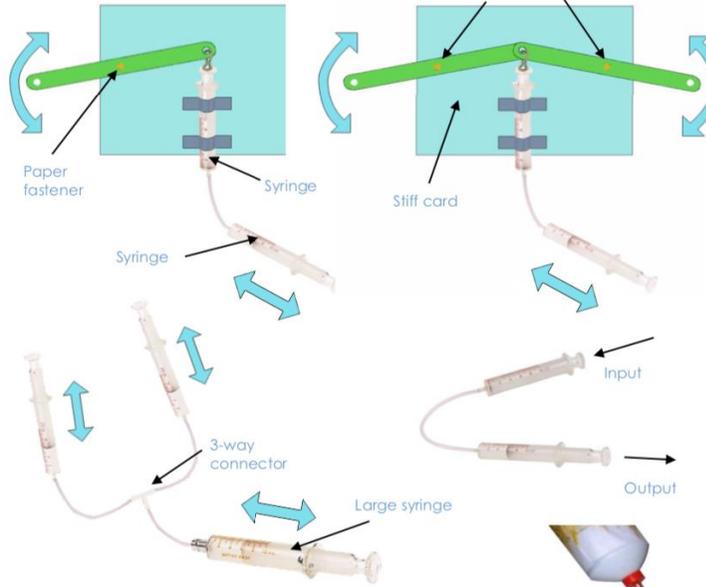
Squeeze the bottle (input movement) to inflate the balloon (output movement) and raise the toy.



Design decisions

- You might use a squeezy bottle and a balloon in a container to raise or lower an object or a lever.
- You might choose to use three syringes connected by a T-connector so that two objects move backwards and forwards.
- You might add levers and linkages to design and make more complex mechanical systems.

Using syringes



Engineer Study

Richard Arkwright

- ✓ Richard Arkwright was born in Preston, England on 23 December 1732.
- ✓ In 1769 Richard Arkwright patented the spinning frame (later called the water-frame), a machine to produce inexpensive spun cotton.
- ✓ In 1771, Arkwright and his business partners built the first water-powered cotton mill at Cromford in Derbyshire.



Vocabulary

System – a set of related parts used to create an outcome. Systems have an input, process and an output. In a pneumatic system, the ‘input movement’ is where the user pushes or pulls a syringe or pump. The ‘output movement’ is where the object at the end of the tube moves.

Compressed – something that is squashed, such as air in a tube.

Pneumatic – a system that works using gases (air).

Inflate – fill something with air or a gas to make it swell up.

Deflate – remove the pressurised air to allow an object like a balloon to shrink.

Syringe – a tube with a nozzle and plunger for sucking and blowing air or liquids.