

Design and Technology: Year 3 and 4 – Spring Term – Mechanisms – Pneumatic Mechanisms

Prior Learning

- I have learned how some mechanisms work, such as levers and sliders.
- I have learned how some materials can be joined together to create movement.
- I have used simple tools and techniques to join materials.

Sticky Knowledge

- I will investigate products that use pneumatic mechanisms and understand how they work.
- I can design my own product using a pneumatic mechanism, focusing on the needs of the **user** and the **purpose** of the product.
- I can communicate my ideas through annotated sketches and prototypes.
- I know the stages need to make my product, using tools accurately to cut and join components.
- I can evaluate my product when I design and make, thinking about the needs of the user.

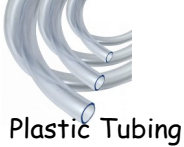


Vocabulary

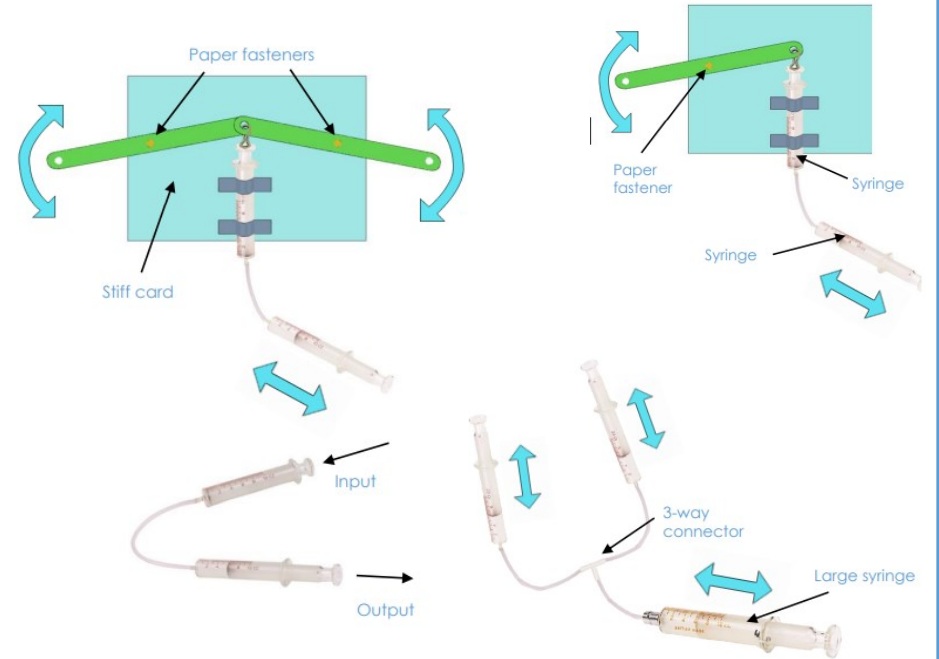
Annotated sketch	A drawing with notes or labels to explain what each part is or how something works.
Appealing	Something that looks nice, interesting, or makes you want to know more about it.
Deflate	To remove the pressurised air to allow an object like a balloon to shrink.
Drawing	A picture made by using a pencil, pen, or crayon.
Evaluate	Discussing strengths and weaknesses of a product and identifying ways it could be improved.
Functional	What the product should be able to do to work properly.
Inflate	To fill something with air or a gas to make it swell up.
Input movement	What goes into a system.
Label	A word or phrase that tells you the name of something or explains what it is.
Output movement	What comes out of a system.
Plunger	The part of a syringe or pump that you push or pull to move air or liquid.
Pneumatic system	A system that works using gases (air).
Syringe	A tool used to take in or squirt out liquids, often used by doctors to give medicine.
Tubing	Tubing is a long, hollow tube or pipe that is used to carry water or air.

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What do I need to make a pneumatic system?

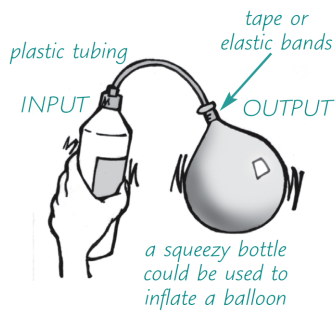


How can I use syringes to create a pneumatic mechanism?



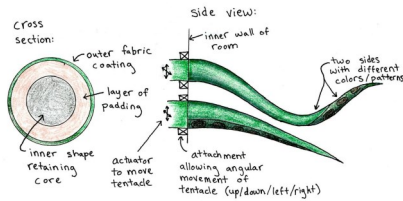
How can I show my design to others?

Annotated Sketch



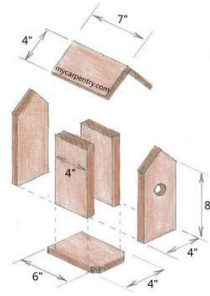
Shows your whole design idea.

Cross-sectional diagram



Focuses on one section of your design, in detail.

Exploded Diagram



Shows how the different parts fit together.

What movement will my product use? There are FOUR types of movement:

Linear



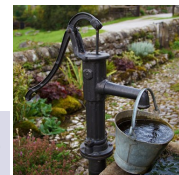
To move something in a straight line (e.g. a train on a track).

Rotar



When something moves around an axis or pivot (e.g. a wheel).

Oscillating



Has a repeated up-and-down or back-and-forth motion (e.g. a pump).

Reciprocating



Has a curved backwards and forwards motion that swings on an axis or pivot (e.g. a pendulum).