



Year 3 Design and Technology: Pneumatic Mechanisms

How can we use air power to make an object move?

Prior Learning

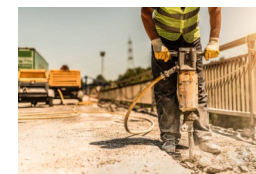
- I have learned how some mechanisms work, such as levers and sliders.
- I have learned how some materials can be joined together to create movement.
- I have used simple tools and techniques to join materials.

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

*User	The person or people who will use the product.
*Purpose	What the product is used for.
*Function	What the product should be able to do to work properly.
*Design	A plan or idea of what the product will be like and how it will function.
Pneumatic	A system that works using gases (air).
Hydraulic	A system that works using liquids (water).
Input	What goes into a system.
Output	What comes out of a system.
Compressed	Something that is squashed, such as air in a tube.
Inflate	To fill something with air or a gas to make it swell up.
Deflate	To remove the pressurised air to allow an object like a balloon to shrink.
Pivot	A point about which a lever turns.
*Lever	A beam which turns about a point.
*Evaluate	Discussing strengths and weaknesses of a product and identifying ways it could be improved.





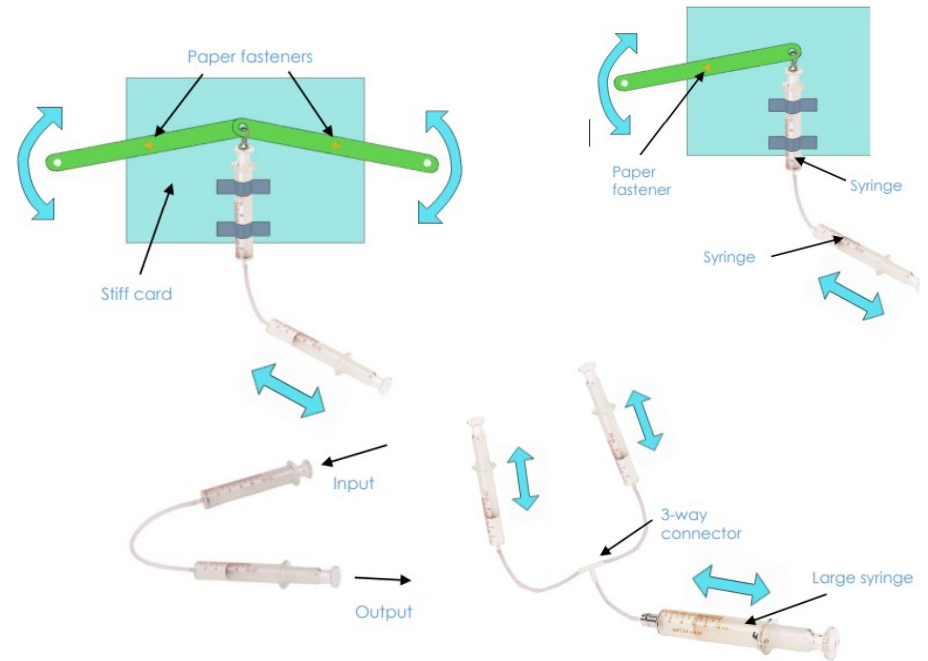
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How can we use air power to make an object move?

What do I need to make a pneumatic system?

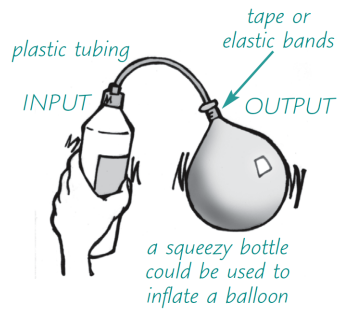


How can I use syringes to create a pneumatic mechanism?



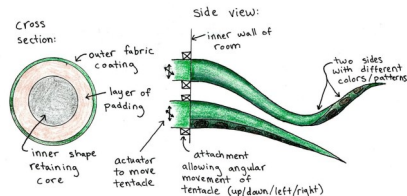
How can I show my design to others?

Annotated Sketch



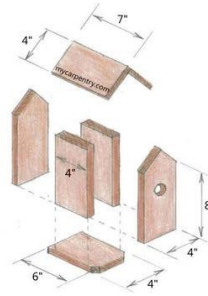
Shows your whole design idea.

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



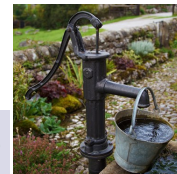
To move something in a straight line (e.g. a train on a track).

Rotary



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).