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?


Syringes

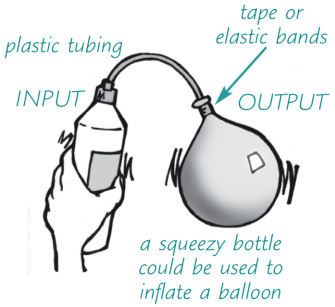

Plastic Tubing


Paper fasteners


T Connector

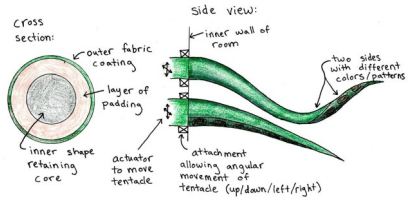
How can I show my design to others?

Annotated Sketch



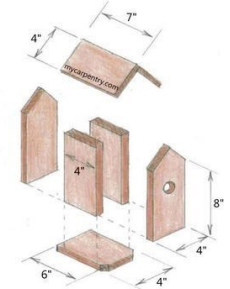
Shows your whole design idea.

Cross-sectional diagram



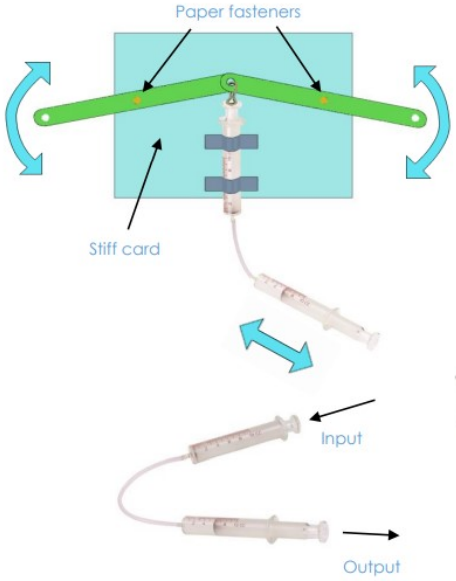
Focuses on one section of your design, in detail.

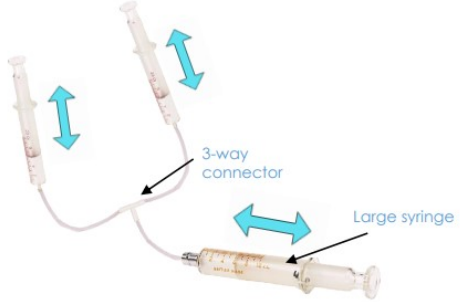
Exploded Diagram



Shows how the different parts fit together.

How can I use syringes to create a pneumatic mechanism?





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

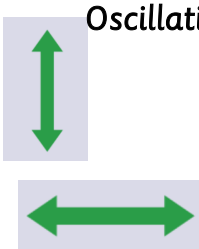
Linear

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).