

Y2 Design Technology Knowledge Organisers



TO DO

- ☒ creative
- ☒ concept
- ☐

es!

Innovation

Skill development

A pneumatic system is a mechanism that runs on air.

The word Pneumatics comes from a Greek word which means wind or breath. Pneumatics have been used for thousands of years but really took off because of the invention of steam trains which used pneumatic systems.

Pneumatics systems use air pressure to create movement. Air pressure in a pneumatic system acts like a spring, storing energy until it's used. Pneumatic systems are very powerful .

Examples of Pneumatics

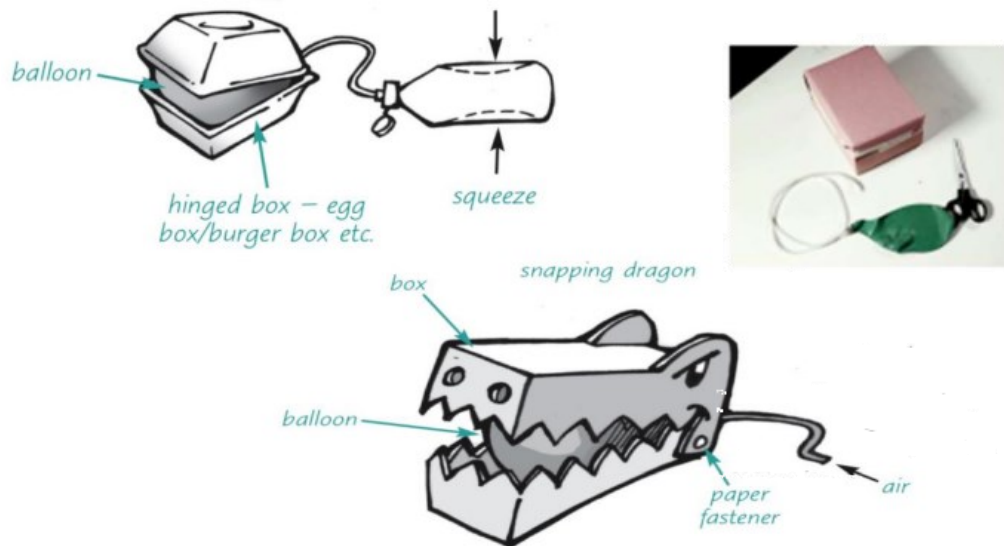


Product: A moving dragon toy

User: Me

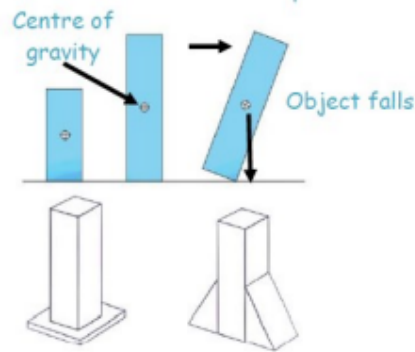
Purpose: To play with!

input	Input is the motion used to start a mechanism.
output	Output is the motion that happens as a result of starting the input.
pneumatic system	A mechanism that runs on air or compressed gas.



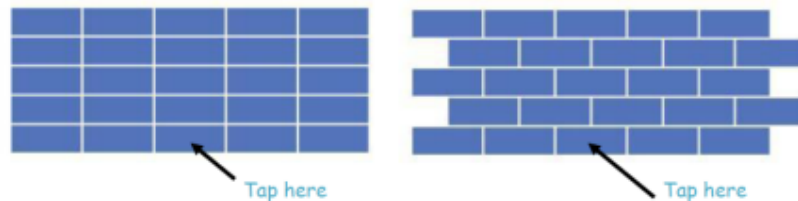
Skill development: Increasing stability in freestanding structures

As a freestanding structure becomes taller its centre of gravity rises. Stability in a structure can generally be increased by making the base wider, making the base heavier or adding buttresses.



If you look closely structures, you will notice that they often have triangles in their design. That is because triangles are stronger than squares. When you push hard on a square, the whole thing collapses. But when you push on a triangle, it keeps its shape.

Build walls with these different patterns. Tap away the centre brick in the bottom row of each wall in turn. What happens? Which wall is the strongest?



We can stack materials to make our structures stronger. Laying bricks so they are not directly on top of each other makes a structure stronger. This is a good way to make a strong structure that won't collapse. By changing the way the blocks are laid in each row, the weight is spread out more evenly.

Existing products

The Burj Khalifa in Dubai is currently the world's tallest building. The second tallest building is the Shanghai Tower in China.



Vocabulary

freestanding structure	A structure that stands on its own foundation or base without attachment to anything else.
stability	How likely the structure is to fall over if a force is applied. The stronger the structure the more stable it will become.
buttress	A structure added to a wall, tower or framework to make it more stable and/or reinforce it.
mock up	A 3D model of a product.