

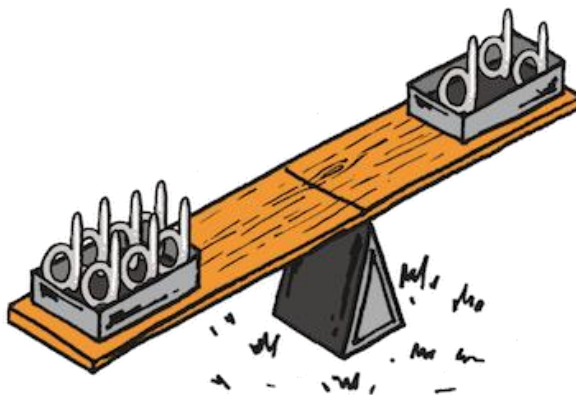
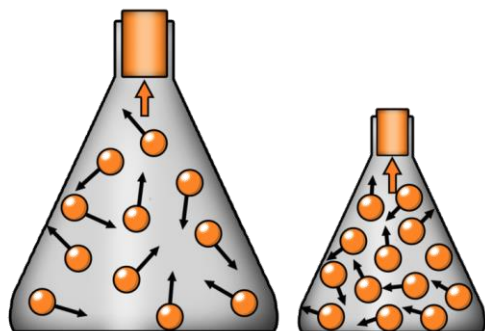
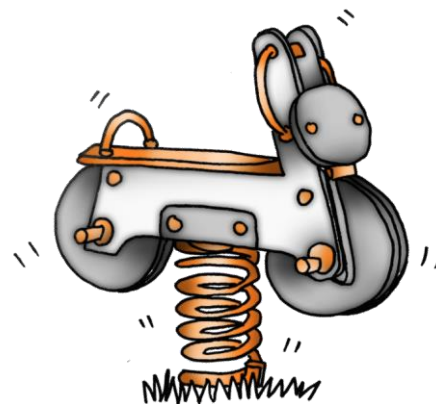


EDExcel GCSE

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Elastic Materials 1:

- What is the most stretchy material that has been discovered? Where is it used?
- Steel is a more elastic material than rubber. Explain how this is the case even though rubber stretches much more easily than steel.
- Some trampolines use as many as 96 springs in parallel. Find out how connecting springs in parallel affects how much the spring stretches when a force is applied.

Pressure in a Fluid 1:

- Discuss why a helium weather balloon is released into the atmosphere only partly filled.
- Explain how gravity makes hot air balloons rise.
- Find out the maximum depth that modern nuclear submarines can sink to. How would this depth change in fresh water compared to sea water.
- Explain what would happen to a football if you took it on a deep dive in the ocean.

Elastic Materials 2:

- Compare and contrast elastic and plastic deformations. Give examples of each one.
- All solid materials can behave elastically to some extent. Explain how a wine glass behaves elastically when you rub a wet finger around its edge.

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Pressure in a Fluid 2:

- Lucy is at the top of a mountain and finishes her water (in a plastic bottle) and screws the top of the bottle back on. When she gets back to her car at the bottom of the mountain describe what her water bottle looks like now.

Questions:

- Springs are used in motorcycle suspension. The springs are compressed when the motorcycle goes over a bump. The table shows the force applied to the spring and the amount of compression the spring undergoes.

Force Applied in N	0	100	200	300	400	500	600	700
Compression in mm	0	2.2	4.5	6.7	8.6	9.0	13.2	15.3

- Draw a graph to show to the force applied to the spring in the table affects the compression of the spring.
- There is an anomalous result which one is it.
- Calculate the spring constant of the motorcycle spring. Use your graph to help answer this question.