AQA GCSE FORCES THINK IT!

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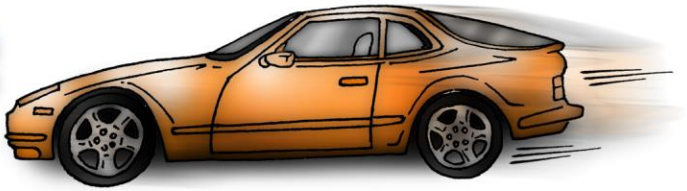

Contact and Non-contact Forces:

- Why does gravity only ever act to attract other objects never repel them?
- Discuss advantages and disadvantages to everyday situations about being able to switch gravity off.
- Find out why falling objects on The Moon will never reach terminal velocity.
- Find out how the electrostatic and magnetic forces are linked.

Elastic Materials:

- 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.

Stopping Distance:

- The stopping distances in the highway code were written in the 1970's. Discuss how the design of cars since the 1970's will have changed the stopping distances from the stated values.
- Distractions when driving causes crashes. Discuss the reasons why people still use their mobile phones when driving, when mobile phone use was responsible for 492 crashes in 2014 alone.

Weight:

- Find out how your weight would differ if you measured it at different point across the Earth's surface.
- Explain to the person next to you the difference between weight and mass.
- Jupiter is approximately 11 times the diameter of the Earth. The gravitational field strength of Jupiter is only 2.5 times greater than that of Earth. Find out why there gravitational field strength of Jupiter is not 11 times greater.

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Pressure in a Fluid:

- 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.

Work Done:

- The American unit of work done is the foot-pound force. The S.I. unit for work done is the joule, J. Find out how to convert from the S.I. unit to the non-standard American unit.
- The space shuttle enters the Earth's atmosphere at 17,500 mph. On re-entry the temperature of the space shuttle will exceed 1500 °C. Find out why the temperature of the space shuttle gets so high on re-entry.

Gears:

- Modern bicycles have many gears on the front and rear of the bicycle. Old Penny Farthing bicycles only had one fixed gear. Find out how it was possible to change the gearing on a Penny Farthing.
- Old mechanical watches had gears to control the rate that the second hand and hour hand rotated. Investigate to see how the gears were made so small, and how they fitted together.

Vehicle Safety:

- Motorcyclists are 35 times more likely to die in a crash compared to car drivers. Motorcycle crash helmets do help prevent injuries. Explain how crash helmets reduce injuries in terms of momentum.
- Google recently developed a sticky car paint that will hold a pedestrian that has been hit. Discuss the advantages and disadvantages of this sticky paint.