Beckfoot

Subject: Science (Physics) | Topic: Forces | Year Group: 8

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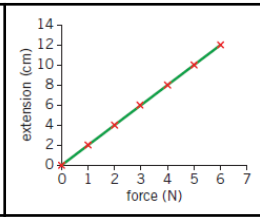
Friction and drag

1	Friction slows objects down. The more friction, the faster the object slows down.
2	It occurs when two surfaces rub together. Smoother surfaces have less friction than rougher surfaces.
3	Drag is the force that slows an object down as it moves through a fluid. It exists because when objects move through fluids they collide with the fluid particles.
4	Friction and drag are contact forces.

Hooke's law

1	A force can be applied to a string to make it stretch e.g. hanging masses on the end of a spring exerts the force of weight on the spring, causing it to stretch.
2	This graph shows how the extension of a spring changes as more force is applied to it. This is a linear relationship and the spring is obeying Hooke's law. 
3	Hooke's law – the force applied to a spring is directly proportional to its extension. This means as the force doubles, the extension also doubles and the graph is a straight diagonal line that passes through the origin.

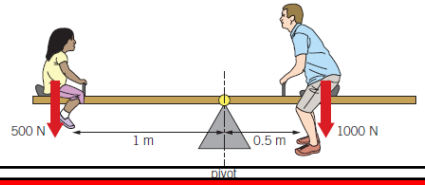
Pressure in liquids

1	Particles in liquids are already touching which means liquids cannot be compressed.
2	Liquids transfer pressure that is applied to them.
3	As water gets deeper the pressure increases because there are more water particles above, meaning there is more weight pushing down.

Key equations

1	Moment (Nm) = force (N) x distance form pivot (m)	$M = F \times d$
2	Pressure (Pa) = force (N) ÷ surface area (m^2)	$p = F \div A$

Moments

1	A moment is the turning effect of a force. Measured in Newton meters (Nm).
2	The size of the moment increases … a. As the distance from the pivot increases. b. As the size of the force increases.
3	When a see-saw is balanced the clockwise and anti-clockwise moments are equal and opposite. 

Pressure in gases

1	Gas pressure is caused by the particles of the gas colliding with the walls of the container.
2	The more frequently the particles collide with the walls, the higher the pressure.
3	Gas pressure can be increased by, a. Heating the gas b. Reducing the volume of the container c. Putting more particles in the container.
4	Atmospheric pressure is greatest nearer the ground as there are more particles weighing down on you.

Key Vocabulary

1	Friction	A force produced when two surfaces rub together that acts to slow down moving objects.
2	Fluid	A liquid or gas.
3	Drag	The force that slows down objects moving through fluids.
4	Contact force	A force that acts between objects that are touching.
5	Extension	The increase in length of an object such as a spring.
6	Hooke's law	The force applied to a spring is directly proportional its extension.
7	Moment	The turning effect of a force.
8	Resultant force	The overall force acting on an object.
9	Stress	The pressure that is exerted on a solid.
10	Atmospheric pressure	The pressure that the air exerts on you all of the time.
11	Incompressible	These objects cannot be squashed.

Stress

1	Pressure exerted on a solid is called stress.
2	It can be calculated using p = F ÷ A.
3	Stress can be reduced by increasing the area over which the force is exerted. This is how snowshoes work.