

Science - Forces Knowledge Mat (Spring 2 and Summer 1)

Sticky Knowledge- What do I need to know?

Lesson 1	I know that Sir Isaac Newton was an English physicist and mathematician who was born in 1643 and died in 1727. He established the 3 laws of motion and the law of gravity.
Lesson 2	I know that gravity is a force that acts at a distance and attracts all objects towards each other; larger objects have a stronger gravitational pull. Everything is pulled to Earth by gravity. Objects of different weights do fall at the same speed.
Lesson 3	I know that friction is a force between two surfaces that are in contact and sliding, or trying to slide, across each other. Friction has an impact on the force needed to move an object and that all forces can be measured.
Lesson 4	I can plan an investigation to answer the question – whose shoe has the greatest friction and has the greatest grip? I will use my results to write a conclusion and explain my findings.
Lesson 5	I know that air resistance is a type of friction between air and another material. It is a force that opposes the movement of an object as it moves through the air. I know air resistance acts differently according to the area of the object moving through the air and the speed at which it is moving. I know that gravity pulls objects down and air resistance pushes upwards.
Lesson 6	I know water resistance is a push force that uses friction to slow things down as they move through water. I know upthrust pushes upwards against objects falling downwards in liquid; if the upthrust is equal to the weight of the object, the object will float. I know that objects with a smaller surface area move more quickly through water and those with a streamlined shape also displace less water so move more quickly through it.
Lesson 7	I know we use simple machines when we need to turn large forces into smaller ones. I know that levers, pulleys and gears are simple machines that allow us to achieve tasks that require a lot of force.
Lesson 8	I know that Elon Musk is a South-African born physicist and entrepreneur. He was born in 1971. He is the founder of Space X and Tesla.

Key Vocabulary- What words do I need to know and understand?

Gravity	Gravity is a force which tries to pull two objects towards each other.
Friction	Friction is a force between two surfaces that are sliding, or trying to slide, across each other.
Air resistance	Air resistance is a type of friction between air and another material. For example, when an aeroplane flies through the air.
Upthrust	Upthrust force is not a type of friction. It is a force that pushes things upwards. This happens when a gas or liquid has an object floating in it.
Newtons	The measurement of force.
Levers	A lever can be described as a long rigid body with a fulcrum along its length.
Pulleys	A pulley is a simple machine and comprises of a wheel on a fixed axle, with a groove along the edges to guide a rope or cable.