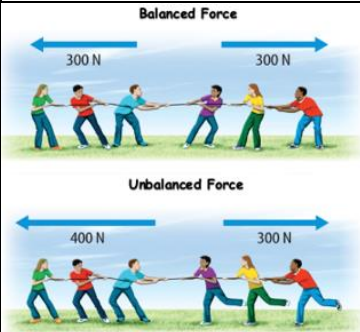




Year 5 FORCES Knowledge Organiser



Year 3 knowledge



- Forces are pushes and pulls which make things move and stop moving.
 -Most forces need contact between objects, but magnets can act at a distance.
 -When forces are unbalanced, objects can speed up, slow down, or change direction.

Definitions

There are a number of different forces that affect us in our daily lives:

Applied force: The force placed on an object by a living creature.

(see 'Gravity' definition bottom left);

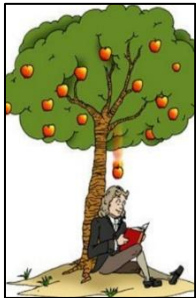
Friction: the 'sticking' force that occurs when an object moves over another.

Air resistance is a type of friction force that pulls against an object travelling through the air.

Water resistance is the friction force on objects floating or moving in water.

Surface resistance is the friction force of objects moving across a surface.

How does an object's mass affect its gravitational pull?



Gravity attracts all matter towards each other.
 -It has been around since the beginning of the Universe, and applies to all matter in the Universe.
 -**Sir Isaac Newton** discovered gravity around 300 years ago. The tale is that he saw an apple fall from a tree, and wondered what force made it fall to the

ground.

-The bigger an object's mass, the more gravity it will have. The smaller the mass of an object, the less gravity it will be subject to. This is why two objects of the same shape, when dropped from the same height, will fall to Earth at the same time. **Gallileo** spotted this first!

-Without gravity we would fly right off the planet! The moon's gravity causes our ocean tides on Earth. The Sun's gravity keeps Earth in orbit around the Sun.

-We don't actually "feel" gravity. We only feel the effects of trying to overcome it by jumping or when we fall.

How does surface area affect air/water resistance?

A person falls from an airplane with parachute 1.



slowly.

A person falls from an airplane with parachute 2.



When a parachute has a **larger** surface area, **more** air can push up on the parachute so there is **more air resistance**. The person falls more

When a parachute has a **smaller** surface area, **less** air can push up on the parachute so there is **less air resistance**. The person falls more quickly.

How do mechanisms affect the force produced?

Simple machines and mechanisms include pulleys, gears and levers. They can be used to turn a small force into larger forces. This means that we can use these machines to accomplish things more easily.

Lever: give us extra pushing or pulling force and help us lift greater weights.

Gears: are different sized cogs which work together to give a machine extra force.

Pulleys: are wheels and ropes that work together to lift heavy objects.

