

Newtons law:

1st Law- (Law of inertia) an object in motion will stay in motion and an object at rest will stay at rest.

Ex: a book sitting on a table will not move without a force being applied. A person in a car slams on the brakes and the seatbelt has to hold them back.

2nd Law- (law of acceleration) a larger object is harder to push than a smaller object

Ex: A person pushes a chair across the room

3rd Law- (law of action-reaction) for every action there is an equal but opposite reaction.

Ex: A hammer hits a nail and the nail pushes back on the hammer with the same force in the opposite reaction.

States of Matter:

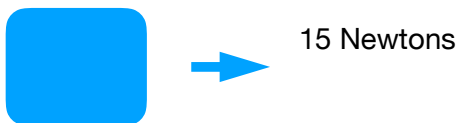
Solid - Molecules have less energy and vibrate slowly

Liquid - molecules have more energy than a solid, but less than a gas

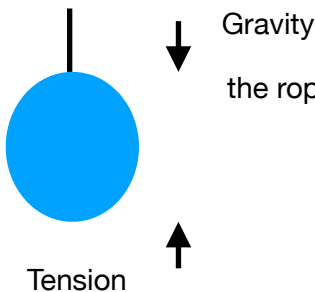
Gas - Molecules have a lot of energy and move quickly

Thermal balance - If one object is transferring energy to another the energy will eventually balance and become equal in each object. An ice cube melts in water because the water is warmer than the ice cube and the two exchange energy

Forces:



If this block is being pushed at 15 newtons to the right and another force is applied at 10 newtons to the left the total movement would be 5 newtons to the right



If gravity is pushing down and tension on the rope is holding the circle up. Then the object will stay at rest.

All matter has gravity. Which means everything in the universe made of matter has its own gravity

Chemical and Physical Properties and changes:

Physical properties can change but then be brought back easily (state of matter change)
Chemical properties can change but not be Brough back easily (burning)
Dissolving sugar in water is a physical change (solubility is ability to dissolve in a solvent)

Atoms and Molecules:

Atoms make up molecules so in a molecule of water the one oxygen atom and the two hydrogen atoms make up one water molecule.

Atoms in different substance are arranged differently. For instance a diamond and graphite are both made of carbon but their atomic arrangement are different giving them different properties.

Solutions and mixtures:

A mixture contains different substances that are not chemically combined. Think a bunch of different types of candy in a bowl. A solution is when substances can not be separated easily.

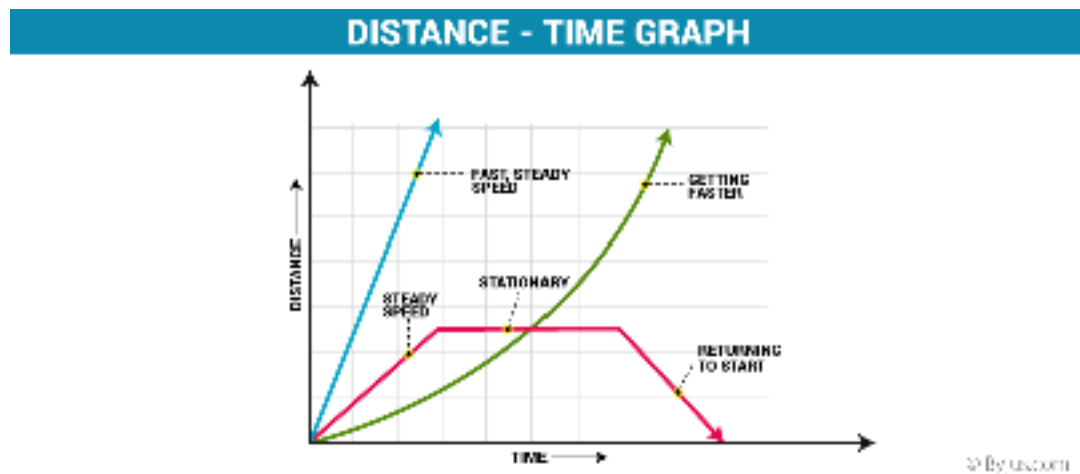
Energy:

Radiation - electromagnetic energy (energy from the sun)

Convection - warm materials rise and cool materials sink (plate tectonics, boiling water)

Conduction - energy is transferred through molecules touching each other (a pot on the stove and its handle getting warm)

Distance/ Time Graph:



Potential and Kinetic Energy:

