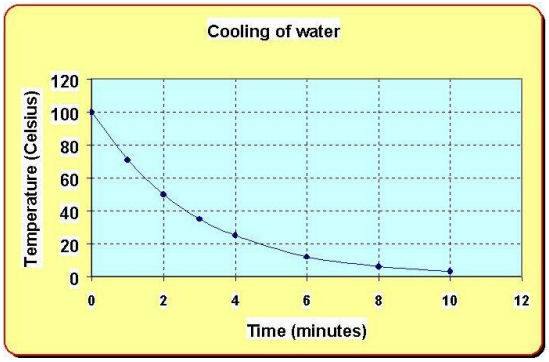
Heating and Cooling Knowledge Organiser

References: http://misswise.weebly.com/ http://www.physicsclassroom.com/ http://www.bbc.co.uk/ https://www.slideshare.net/kombuchamushroom/ http://keywordsuggest.org/ https://sites.google.com/site/mrkochs9thgradephysicalscience/ http://www.aplusphysics.com/

Temperature = °C

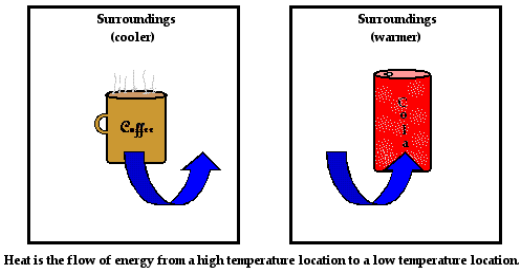
Energy = Joules (J)



A substance cools quickly when there is a big difference between it and the surroundings.

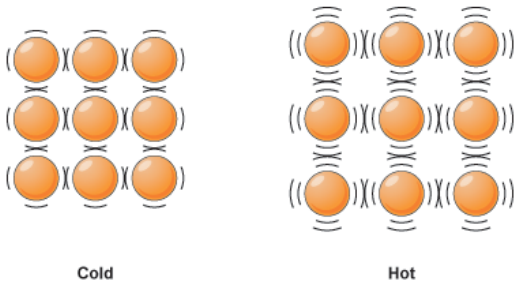
It cools slowly when there is a small difference between it and the surroundings

It will cool until it is the same temperature as the surroundings and then energy will flow in and out at the same rate.

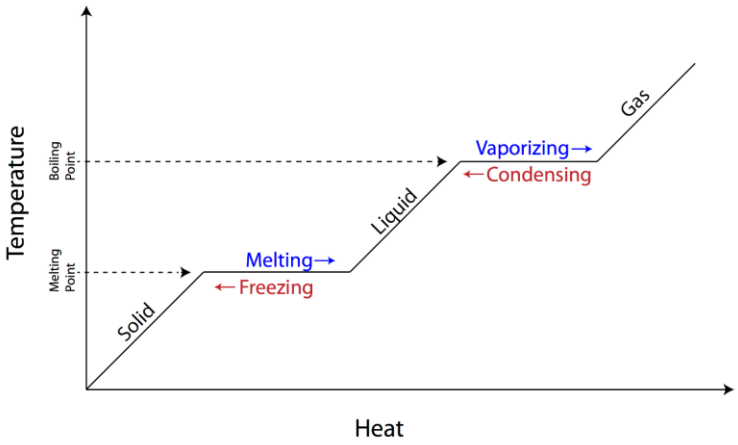


Heat is the flow of energy from a high temperature location to a low temperature location.

Heat flows from high to low until they are the same temperature: cold things warm up; hot things cool down. The energy flows into or from the surroundings.



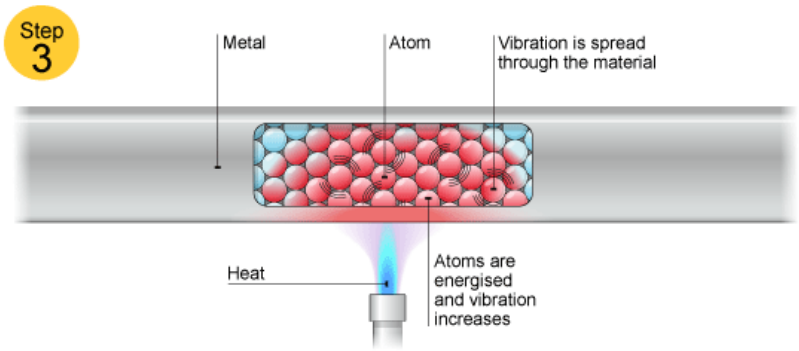
Particles that are hot have more Kinetic energy, so they vibrate and move more: this makes the solid expand. It contracts when cold.



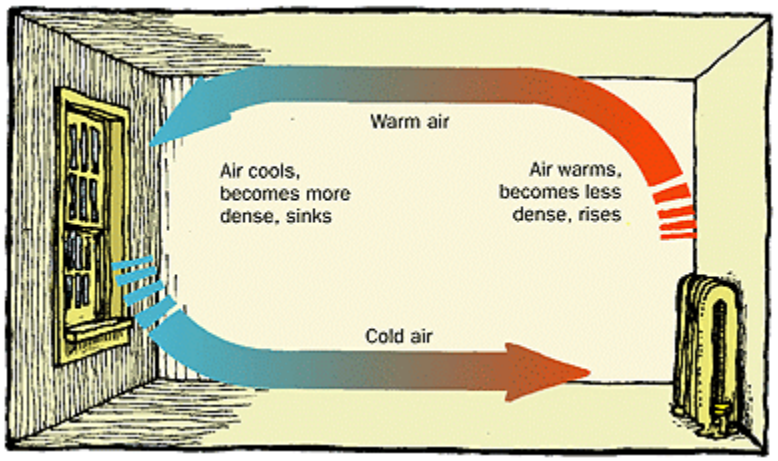
When a substance changes state the temperature stays the same as all the energy is being used to break the attraction between the particles. Once every part has changes state the temperature starts to go up again.

Heat energy can be transferred in 3 ways: Conduction, Convection and Theraml Radiation

Conduction:

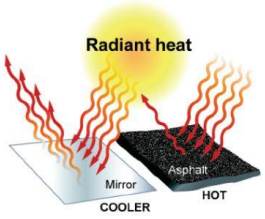


Convection:

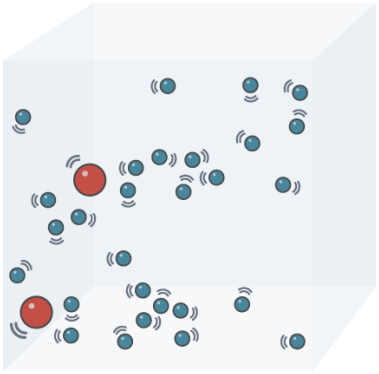


Thermal radiation

- Thermal radiation is also *absorbed* by objects.
- The amount of thermal radiation absorbed depends on the surface of a material.
- Dark surfaces absorb most of the thermal radiation they receive.
- Silver or mirrored surfaces reflect thermal radiation



Brownian Motion. An object will move around in a random way in air, proving that there are particles moving randomly at speed.



Vocabulary Sheet

WORD	PRONUNCIATION	MEANING
boiling		A process by which liquid changes into a gas.
boiling point		The temperature at which all of a liquid can change into a gas.
bonds		Forces holding particles together.

celsius scale		A scale used to measure temperature.
condensing		A gas turning into a liquid.
conduction		The transfer of heat through an object by the vibrations of its particles.
contraction		When something gets smaller.
convection current		The transfer of heat through a liquid or a gas by the movement of its particles.
density		The measure of how much ‘stuff’ of a substance is in particular volume.
evaporation	ev-app-or-**ay**-shun	When a liquid changes into a gas.
expansion		When something gets larger.
freezing		The process by which a liquid turns into a solid when it is cooled.
freezing point		The temperature at which a liquid turns into a solid.
heat energy		The hotter something is the more heat energy it has.
insulation		Material that does not allow heat energy to pass through it.
melting		The process by which a solid changes into a liquid.

melting point		The temperature at which a solid changes into a liquid.
particle	**part**-ick-al	The tiny pieces that everything is made of.
scale of temperature		Numbers which describe how hot or cold something is.
solidifying		Changing from a liquid to a solid.
temperature		A measure of how hot an object is.
thermal conductor		A material that allows heat to pass through it easily.
thermal insulator		A material that does not allow heat to pass through it easily.
thermal radiation		The transfer of heat by waves.
thermometer		An instrument used to measure temperature.
vacuum		A volume of space where there are no particles.