Heat Topic Summary

The _Temperature_____ of an object tells us how hot or cold an object is.

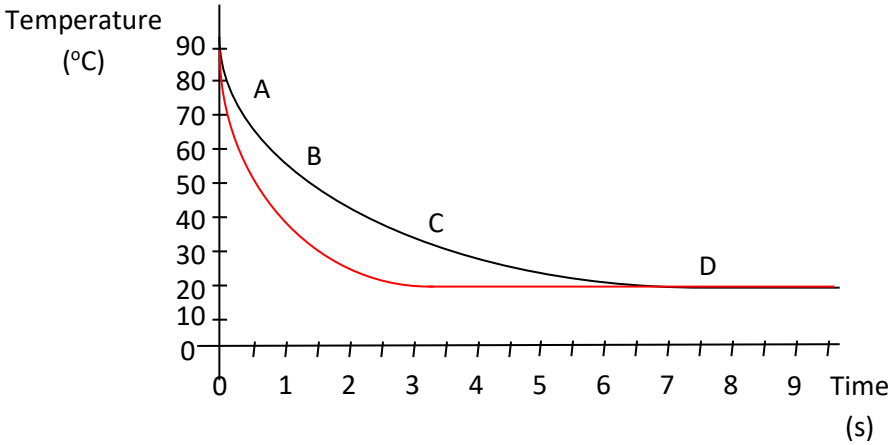
Temperature is measured in __degrees_____ ___Celsius_____ (° C)

When an objects temperature increases, the object ___gains_____ heat energy.

When an objects temperature decreases, the object ___loses_____ heat energy.

Energy is measured in ___Joules_____.

A cooling curve shows what happens to the ___temperature___ of a substance as time goes by.



Heat loss is greatest at point __A__ on the graph. This is where the slope is the __steepest____.

Room temperature is shown at point __D___ on the graph. This is where the slope becomes __flat_____.

These results were taken from a beaker with 200ml of water. If a cooling curve was plotted for 100ml of water the slope would be ___steeper_____ as the temperature falls more quickly.

Draw the shape of this cooling curve on the graph above, for this 100ml of water, with the same starting temperature and room temperature.

The greater the temperature __difference_____ between a hot object and its __surroundings___ the shorter the time will be for it to cool down.

Heat energy always travels from _hot____ objects to __cold_____ objects.

Heat travels through __solids_____ by conduction.

___Metals_____ are good heat conductors and allow heat to travel through them easily.

__Non_ __metals_ are poor conductors or __insulators__ and do not allow heat to travel through them easily.

Your feet feel cold on a tiled floor as this is a better __conductors_____ of heat than the rug in the same room. The rug is a better __insulator_____ than the tiled floor.

Wordbank

Heat temperature cold °C metals heat loses gains Joules hot Insulator
temperature degrees Celsius conductor A steeper
flat D steepest difference surroundings solids non-metals insulators

Place in house	Insulation method
Window	Double glazing
Floor	Underlay and thick carpet
Walls	Foam
Loft	Fibreglass insulation in the attic

Methods of Heat Transfer

Conduction:- The particles __vibrate_____ and pass the energy on to neighbouring particles.

Convection___:- Heat travels in liquids and gases by this method of heat transfer. Hot liquids and gases _rise_____.

Radiation:- Infrared _waves___ can pass through a vacuum and always travel in straight lines.

Thermals are convection currents. They rise because the warm air/liquid is __less____ dense than cold air/liquid. In less dense air/liquid the particles are ___further_____ apart.

Air is a ___poor_____ conductor of heat.

Many animals and house builders use materials that __trap_____ air to keep them warm or the buildings warm in the winter. Examples of materials that trap air include clothes, __hair_____, feathers and ___fibreglass_____.

All hot objects emit heat as rays called ___infra-red_____ radiation. This radiation can travel through a ___Vacuum____ and therefore does not need __particles__ to transfer the energy. The radiation also travels very fast at a speed of __300_____ million metres per second.

Dull ___dark_____ surfaces are good at giving out, or ___emitting_____, infra-red radiation.

Dull ___dark_____ surfaces are good at taking in, or __ absorbing _____, infra-red radiation.

Shiny/white, or ___silver___ surfaces, are poor at giving out, or __ emitting _, infra-red radiation.

Shiny/white, or ___silver__ surfaces, poor at taking in, or _absorbing_____, infra-red radiation.

Bright shiny surfaces __reflect_____ heat.

Wordbank

rise Loft vibrate reflect trap further Convection waves Foam Floor Double-glazing less poor hair vacuum fibreglass infra-red particles 300 absorbing absorbing emitting emitting silver silver dark dark