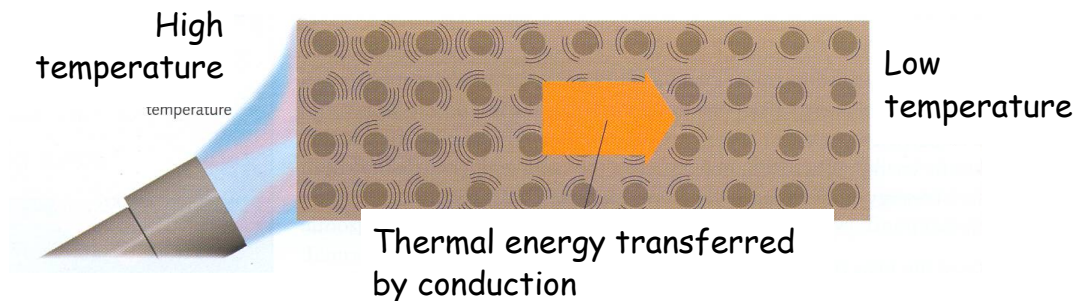


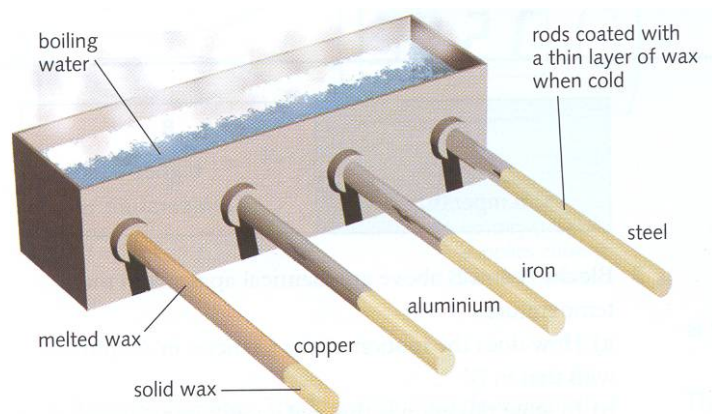
CONDUCTION

CONDUCTION: This occurs when heat energy is passed through a material from one particle to the next. The particles at the warm end move faster and hit the particles next to them causing them to move faster, in this way heat is transferred by the vibrational movement of atoms.



Experiments:

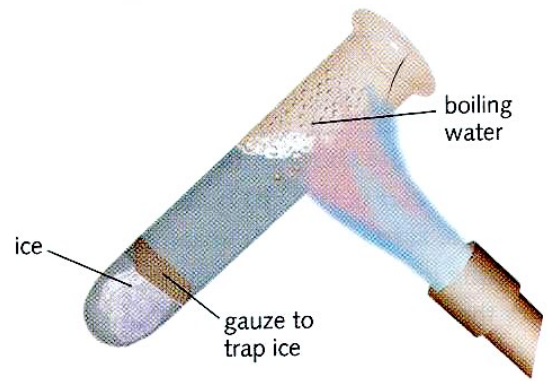
1. The experiment below demonstrates which metal is the better conductor.



Explain how you know which metal is the best conductor.

2. Using the apparatus shown find out if water is a good conductor of heat.

Write and explain your answer here.

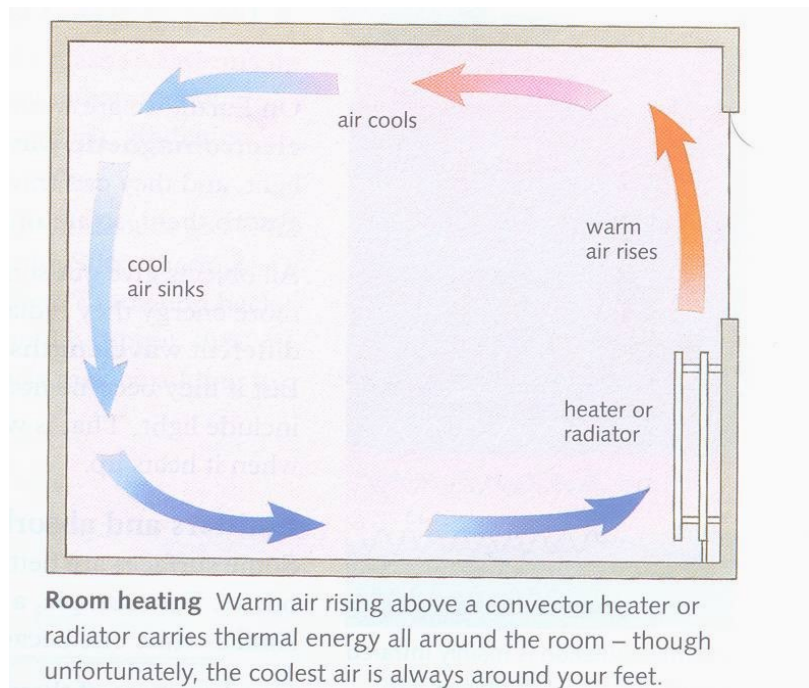


Some materials that are good conductors are: - copper, iron, brass (all metals).

Materials that are poor conductors are called insulators: - Glass, wood, plastic, rubber, water and air are some examples.

CONVECTION

CONVECTION: This occurs when particles in a gas or liquid (that are free to move) become warm. When particles become warm they expand and become less dense, than the cold particles nearby. The warm particles then rise and the cooler particles fall into the space left behind by the warm particles. When this happens a **convection current** is set up.



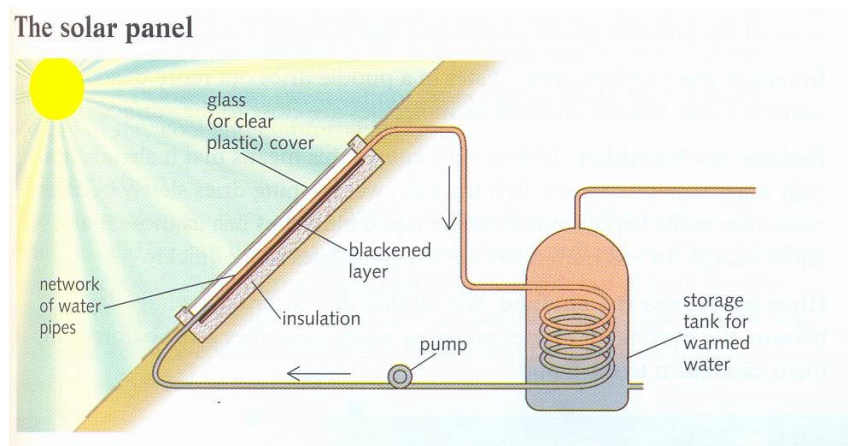
HOT LIQUIDS AND GASES EXPAND AND RISE WHILE THE COOLER LIQUID OR GAS FALLS.

Convection only occurs in liquids and gases because the particles in a solid are not free to move from place to place.

Draw a diagram of a pot on a stove filled with water. Draw in the convection current that would occur as the water heats to boiling. Describe in writing why you drew things the way you did.

RADIATION

Radiation is the method of heat transfer that takes place without the need for a material to pass through (it can happen where there are no particles). It is the way that the Earth receives heat energy from the sun through the vacuum of space.

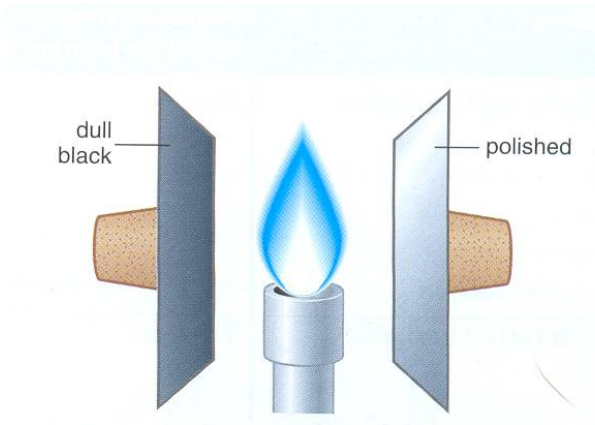


Heat energy is transferred as waves - Infrared waves

- If an object is hotter than its surroundings it emits (gives out) radiant heat (_____)
- If an object is cooler than its surroundings, it absorbs (takes in) radiant heat. (_____)

Which surfaces are best for giving out (emitting) and taking in (absorbing) heat. The experiment below allows us to compare

black and shiny silver surfaces. In the space below describe and explain what you would observe.



The table below shows which materials are best at absorbing and emitting heat energy.

emitters	best.....	worst
	matt = non-shiny	<div style="display: flex; align-items: center; gap: 10px;"> <div style="background-color: black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; color: white; font-size: 8px;">matt black</div> <div style="border: 1px dashed black; width: 100px; height: 20px;"></div> <div style="display: flex; align-items: center; gap: 5px;"> <div style="background-color: white; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; color: black; font-size: 8px;">white</div> <div style="background-color: silver; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; color: black; font-size: 8px;">silver</div> </div> </div>	
reflectors	worst.....	best
absorbers	best.....	worst

part shows how some compare as emitters, and absorbers of thermal

