Heat Transfer

Created by Faculty of Agriculture and Life Sciences

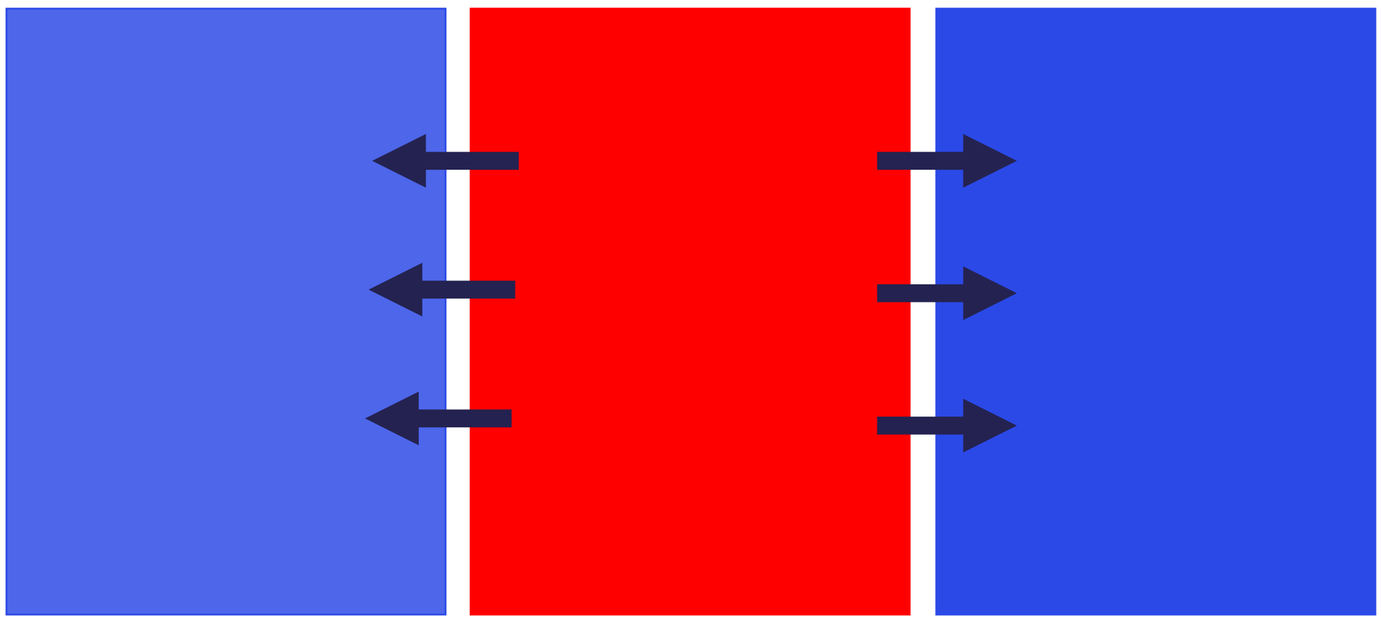
Heat is a type of energy

When object's gain heat energy, the particles vibrate more and move faster, ie., their kinetic energy increases.

Radiant heat energy travels as electromagnetic energy.

Heat moves from cold objects to hot objects

Hot objects transfer heat energy to cooler objects around them (until they are the same temperature)



Solid materials allow heat to travel quickly through them

- Some materials are heat or thermal conductors and allow heat to travel quickly through them.
- Other materials are thermal insulators and slow the transfer of heat through the material.
- Solids can be conductors or insulators, depending on the type of particles they are made of and how those particles are packed and bonded together.

Heat rises

The particles of hot objects move faster making hot substances less dense (take up more volume). This means hot liquids and gases can rise above more dense, cooler liquids and gases.

Black attracts heat

Does the heat energy decide it likes a black T-shirt more than a white T-shirt? Attracts is not the correct term to use in this case. Dark, matte surfaces are better absorbers and emitters of radiant heat energy. Light coloured, shiny objects are better reflectors of radiant heat energy so feel cooler.

Heat (or _____), is a type of _____ that is transferred from

_____ objects to _____ objects.

When heat is transferred by direct contact between particles, this is called

_____. Heated particles _____ more and can move faster if

they are not fixed in position (like in a _____). When particles

_____ they pass on heat energy.

As particles can move freely in _____ and _____, when these

substances heat up the particles can move faster and further away from each other, making

the substance _____ dense. _____ dense substances can

rise above more dense substances before cooling and sinking. This allows heat to transfer

throughout the substance and is called _____.

Heat can also be transferred by _____. This type of transfer involves heat travelling between objects as _____ waves and means the energy does not need particles to travel, ie. can travel through _____. Dull, black objects are better than shiny, light objects at _____ and _____ heat energy by radiation.

Heat (or thermal), is a type of energy that is transferred from warmer objects to cooler objects.

When heat is transferred by direct contact between particles, this is called conduction. Heated particles vibrate more and can move faster if they are not fixed in position (like in a solid). When particles collide they pass on heat energy.

As particles can move freely in liquids and gases, when these substances heat up the particles can move faster and further away from each other, making the substance less dense. Less dense substances can rise above more dense substances before cooling and sinking. This allows heat to transfer throughout the substance and is called convection.

Heat can also be transferred by **radiation**. This type of transfer involves heat travelling between objects as **electromagnetic** waves and means the energy does not need particles to travel, ie. can travel through **space**.

Dull, black objects are better than shiny, light objects at **absorbing** and **emitting** heat energy by radiation.

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