

Physics



**ASSIGN
BUSTER**

Conduction

1. When a material is heated, its molecules begin to move around quicker and each molecules bumps against those around it until all molecules are moving at a high speed. In this way, heat is conducted to all parts of the material. Most metals conducted heat well because they have free electrons.
2. Three good conductors of heat are silver, copper and aluminium.
3. The best material for a table mat would be something that insulates the heat so not to damage the table top such as cork, the best material for a saucepan base would be aluminium or copper because it readily conducts heat from a gas ring or a hot plate, and the best material for a handle of a kettle would be plastic so that as little heat as possible is conducted to your hand.
4. Usually the poorest conductors of heat are liquids, such as water.
5. Fur, fibreglass and polyurethane foam are all good insulators because of the air trapped inside them.
6. A double glazed window consists of two sheets of glass with an insulating layer of thin air trapped between them.
7. Bike handles feel colder than their rubber/plastic grips because the grips are insulating the heat.

Convection

1. In a beaker containing both hot and cold water, the hot water rises by convection to the top and the cold water sinks to the bottom.
2. A header tank is fitted to a hot water system to provide the pressure needed to push hot water out of the taps. It also replaces water in the system as it is used. Hot water from the boiler collects in the storage tank. An expansion pipe serves as an overflow should steam or air bubbles build up in the system.
3. A radiator distributes most of its heat by being close to the floor allowing warm air to rise up from it, then a convection current is set up as cooler air sinks to the bottom of the heater, all air in the room is warmed as it circulates through the heater.
4. A freezer compartment is placed near the top of a refrigerator so that cold air sinks away from it. Warmer air then rises to the top of the refrigerator where it is cooled by the freezer compartment.
5. During the day, in hot sunshine the land heats up more rapidly than the sea. At night, the land loses heat more rapidly than the sea. In the day time coastal breeze blows in from the sea.

Radiation

1. The best absorber of radiation is a black surface.
2. The best reflector of radiation is silvery mirror like surfaces, followed by white surfaces.

3. People in hot countries wear white clothes, or lightly coloured clothes, to reflect the radiation from the sun and keep themselves cool.
4. The first way radiation from an object changes as the object becomes hotter is the size of the wavelength, and also as the object becomes hotter and hotter you can start to see the wavelengths its emitting.
5. Radiation passes more easily into a greenhouse than out of it because the radiation from the sun is mainly of short wavelength so it passes easily through the glass and warms up the material inside, but these warm material radiate longer wavelengths that do not pass through the glass so easily.
6. The best emitters of radiation are also the best absorbers, making black a good emitter.
7. Kettles usually have a silvery mirror like surface to cut down the amount of heat wasted by radiation.
8. 3 ways a hot object may lose heat is by conduction, convection and radiation.
9. Heat loss is reduced in a Thermos flask by a stopper in the top to prevent convection, a part vacuum surrounding it to reduce conduction and a silvered surface to reduce radiation.