



Subject: Grade 7 Natural Sciences

Topic: Heat transfer, insulation and energy saving

Total: 34 Marks

1. true 2 marks

Explanation:

The air trapped inside these pockets is a *very poor conductor of heat*. Because the air is trapped in small pockets, convection cannot take place.

2. false 2 marks

Explanation:

Humans' body temperatures do not drop in winter because cold air is transferred to their bodies.

If the surrounding air is colder, heat will be transferred from a human's body to the surroundings. This makes the body temperature drop. Winter clothing is normally made of thermal insulators. It slows down the transfer of heat from the body to the surroundings.

3. the sun's energy | solar 4 marks

Explanation:

Solar geysers are placed on the roof of a house (refer to picture). Heat is transferred from the sun to the water in the geyser by radiation, conduction and convection.

4. transfer | energy | hotter body | cooler body 8 marks

Explanation:

When two bodies are at different temperatures, energy is transferred from the hotter body to the cooler body until they have the same temperature. We experience this as heating or cooling.

5. 37 degrees Celsius | radiates heat 4 marks

Explanation:

Your body also heats the air next to your skin. This heat escapes by convection and by wind moving the warm air away from your body.

6. true 2 marks

Explanation:

Wood is a thermal insulator. It prevents heat to pass through it.

7. false

2 marks

Explanation:

Double glazing is having two panes of glass in the window frame, with an air gap between them. Air is a poor conductor of heat.

8. Insulating

3 marks

Explanation:

The air space in the cavity walls reduces heat transfer. The **insulating** material slows the heat transfer down even further.

On a hot day, the heat is kept out of the house. On a cold day, when a heater is on inside the house, the heat is kept inside the house.

9. A: Metals can conduct heat from the stove to the food in the pot so that the food is cooked.

4 marks

Explanation:

Metals are generally good conductors of heat. This means that metal cooking pots can transfer heat energy from the stove to the food. It also means that heat is transferred from the cooked food to the surroundings once the stove is switched off. Therefore metal pots cannot keep food warm.

Metals can withstand high temperatures, but that will not prevent the food from burning. Most metal pots will rust if they are not used and cleaned correctly.

10. convection

3 marks

Explanation:

Heat is generally transferred in three ways. Convection uses the movement of gas or liquid particles to transfer heat from one place to another.

Total: 34 Marks