Chapter 4: Heat, light and sound

Module 4.1 review

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| **1** | **a** temperature: the average kinetic energy of the particles of a substance**b** conduction: the process of heat transfer by the collision of vibrating particles**c** insulator: a poor conductor of heat |
| **2** | **a** absolute zero**b** convection **c** sea breeze  |
| **3** | **a** 32 degrees on the Fahrenheit scale**b** 0 degrees on the Celsius scale**c** 273 Kelvin |
| **4** | **a** Heat always flows from an object of higher temperature to one of lower temperature.**b** Insulators are poor conductors of heat.**c** Gases are poor conductors of heat.**d** On a warm day, a house is warmer upstairs because convection currents carry the heat upwards  |
| **5** | Convection |
| **6** | **a** Conductor**b** Insulator**c** Conductor**d** Conductor**e** Insulator |
| **7** | As a solid is heated, its particles gain kinetic energy. This means that they vibrate more rapidly. |
| **8** | **a** Water is a good conductor of heat. This is why you quickly feel cold when jumping into cool water. The water transfers heat away from your body at a faster rate than the air that had surrounded you before you entered the water.**b** A thin layer of water is trapped between the skin of the wearer and the fabric of the wetsuit. Some body heat of the wearer is used to heat this water. The neoprene fabric insulates the wearer from the cool water. It is important that a wetsuit is tight fitting in order to function effectively. If it is not, then cool water continually flushes through the layer between the skin and the wetsuit fabric which robs the wearer of body heat. |
| **9** | Hair traps pockets of air close to your head. Air is a poor conductor of heat, and so minimises the heat you lose from your head. In this way, hair is an effective insulator. |
| **10** | Although the carpet and ceramic tiles are at the same temperature, the ceramic tiles are a better conductor of heat than the carpet. Heat is conducted away from your feet, which are warmer than the tiles. As a result, your feet feel this loss of heat as cold. Your feet are insulated from heat loss by the carpet and feel warmer. |