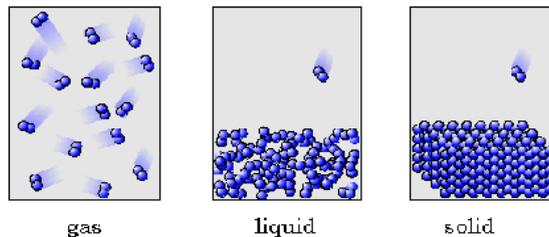
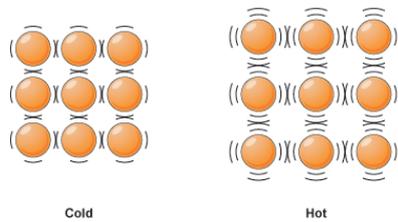


Heat Revision Questions

1. What is the unit for measuring heat energy? Joule
2. What type of energy is due to motion of an object? Kinetic energy
3. Describe whether energy is transferred or transformed in the scenarios below
 - a) A battery is connected to a light globe
Transformed (electrical to light)
 - b) a bowling ball collides into the pins
Transferred (from ball to pins)
4. What is the difference between a source and receiver?
A source provides energy while a receiver uses energy
5. Draw 3 diagrams, based on the kinetic theory of matter, to represent a solid, a liquid and a gas.



6. If the cost of 1 kilowatt hour is 14c, how much would it cost to have a 300 watt TV running for 5 hours? (1 kilowatt = 1000 watts)
 $300 \text{ watts} = 0.3 \text{ kW}$
 $\text{cost} = 0.3 \text{ kW} * 5 \text{ hours} * 14 \text{ cents} = 21 \text{ cents}$
7. How much would it cost to run the same TV for 7 days straight?
 $\text{cost} = 0.3 \text{ kW} * 24 \text{ hours} * 7 \text{ days} * 14 \text{ cents} = 705.6 \text{ cents}$
8. Name the three methods of heat transfer.
Conduction, convection, radiation
9. Which method of heat transfer is dominant in
 - a. Solids - Conduction
 - b) Liquids- Convection
 - c) Gases - Convection
10. Explain two design considerations of a solar hot water system which help make it an effective means of heating up water.
Black backing to absorb radiation. Glass surface to allow radiation through. Filling up from the bottom to allow for convection. Made of metal to increase conduction into water.
11. How does the warmth of the Sun reach Earth when there is so much empty space between us and the Sun?
Radiation does not need any particles to transfer heat energy.
12. A car radiator (device which helps to cool a hot engine) is coloured black and has a wavy surface instead of a flat one. Why has it been designed this way?
A black surface radiates heat away faster. A wavy surface has more surface area which increases the amount of heat that is radiated away.
13. Name one method of help keeping your house warm in the winter months that does not require electricity. How does this method work?
Insulation in the walls/ceiling. This slows down the amount of conduction.
Double glazing of the windows. This slows down conduction through the glass.
Light coloured roof tiles. This slows down the amount of radiation released heat from the roof.
14. How do solid objects change when heated? Draw a diagram to help explain.
They expand when heated because of the increased vibrations increasing the space between particles.



15. Why do we use alcohol in thermometers instead of mercury?

Mercury is poisonous

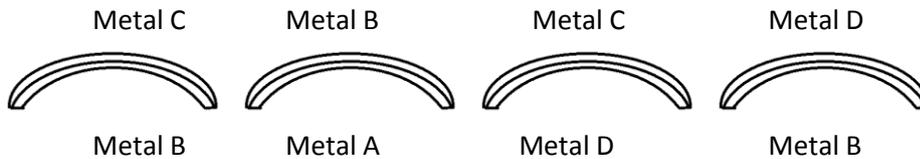
16. Why do we use alcohol in thermometers instead of water?

Alcohol freezes below 0°C and boils above 100 °C. This makes the use of a thermometer safe.

17. Briefly describe how a thermometer works.

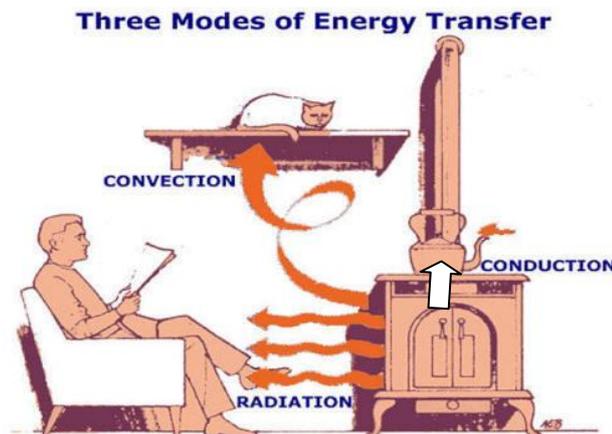
The liquid expands when it is heated, causing it to rise through the small tube. The more it is heated, the more expansion that occurs.

18. Two bimetallic strips are shown below. Which metal expands the most when heated?



Metal C expands the most (then D, B, A)

19. Write down what type of heat transfer each of the arrows represents below.



20. How does conduction transfer heat energy?

Hotter particles vibrate faster which cause neighbouring particles to start vibrating, passing on their energy.

21. How does convection transfer heat energy?

Hotter areas of a liquid or gas expand, becoming less dense. Less dense areas of liquid or gas rise while denser areas (cold areas) fall.

22. How does radiation transfer heat energy?

By waves. These heat waves do not need particles to transfer heat.

23. Jack and Jill went up the hill. Then they held hands. How sweet. Jack said to Jill, "Your hands are warmer than mine. You must be giving me heat". Jill replied, "No, you goose. I am giving you temperature. That's why it feels warm". Who is right? Why?

Jack is right. Heat is a form of energy that can be transferred from hot objects to cold objects.

Temperature is a measure of hotness which cannot be transferred.