



# Firrhill High School



## Summary Questions: P2: Energy & Reactions

Before you answer these questions, look over your summary sheets and the success criteria from this topic.

### 1. TYPES OF ENERGY

- Name the 'energies in action'.
- Name the 'potential energies'.
- Albert Einstein said 'energy can not be created or destroyed. It can only change form'. What do you think this means?
- What is the energy change in a wind-up torch?
- What is the energy change when you eat a sandwich?

### 2. SIGNS OF A CHEMICAL REACTION

- What is a chemical change?
- What is a physical change?
- Give an example of a chemical and physical change.
- If bubbles are seen during a chemical reaction, what is being released?
- What is the name given to a solid formed during a chemical reaction?
- What types of energy can be given off during a chemical reaction?
- Name one other way you can tell if a chemical reaction has taken place.

### 3. RATES OF REACTION

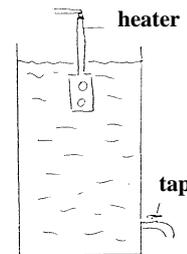
- Name three things that can affect the rate of reaction.
- Why does increasing the surface area increase the rate of reaction?
- Why does increasing the concentration of a liquid increase the rate of reaction?
- Why does increasing the temperature of a substance increase the rate of reaction?
- What is the name given to a substance that can be added to solution to speed up reaction without being changed by the reaction?

### 4. CONDUCTION

- Explain what is meant by a heat conductor.
- Explain what is meant by a heat insulator.
- Explain why holding bare metal handlebars on a mountain bike feels cold to touch but holding the rubber handgrips does not.
- Zunaira buys some chips and has them wrapped in newspaper to keep them warm. Explain how newspaper can keep chips hot.
- Alan buys some ice cream and also has it wrapped in newspaper, but this time to keep it cool. Explain how newspaper can also manage to keep ice cream cold.

## 5. CONVECTION

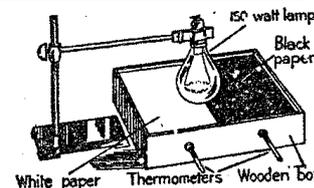
Ali sets up a tank of water with a heater at the top and a tap at the bottom. Tom switched on the heater and when he saw the water boil he opened the tap, but only cold water came out.



- Explain why only cold water came out of the tap
- Explain where he should have put the heater to get hot water out of the tap.
- Convection currents happen in liquids and gases. Explain why convection currents
- cannot happen in solids.
- Give two reasons why it is better to only heat half of the water if you only need a small amount rather than heating the whole tank of water every time?

## 6. RADIATION

A wooden box has one side covered with white paper and the other side covered with black paper. The light bulb is used to produce heat. The bulb is switched on for 5 minutes.



- Will the thermometer under the black paper or under the white paper show the highest reading?
- What does the black surface do to the radiation?
- What does the white surface do to the radiation?

## 7. MIXED QUESTIONS

- Explain the difference between heat and temperature
- Which would cool faster: a full or a half full cup of tea?
- Draw how particles align in a solid, liquid and gas.
- Why can heat conduction and convection not happen in space
- Imagine you were stranded on Ben Nevis trying to keep warm until mountain rescue found you. What would you do? You must use the words convection, conduction, radiation and insulation in your answer.
- On the table below you can see how much salt was dissolved in water at different temperatures. Display this information as a line graph.

Temperature (°C)	Mass of salt dissolved in 50cm <sup>3</sup> of water (g)
10	20
20	21
30	19
40	23
50	22
60	23
70	23
80	24
90	24

