# GCSE Checklist – Particle Model of Matter.

By the end of this topic (Topic 3 in the AQA GCSE Physics textbook, pages 106-119 and pages 30-32, 35-39), you should be able to do the following things:

| | | Page(s) |
|---|---|---|
| Describe the three **states of matter** in terms of the **arrangement**, **movement** and **spacing** between their **particles** | | 106-7 |
| Use the **particle model** to explain the **properties** of the different states of matter | | 107 |
| Define the term **density** of a substance and be able to do calculations using the formula: $\rho = m / V$ | | 106 |
| Describe how to **measure** the density of a **regular solid** object, an **irregular solid** object and a **liquid** (Required Practical no. 5) | | 108 |
| Describe what is meant by the **internal energy** of a system | | 110 |
| Describe the changes in energy stores during **heating, cooling** and **changes of state** | | 110-111 |
| Name all of the **changes of state** and describe when they occur | | 110 |
| Explain why a change of state is a **physical change** | | 111 |
| Explain why the **temperature** of a substance stays **constant** during changes of state and relate this to **energy** being transferred to/from the substance | | 111-2 |
| Sketch **graphs of temperature against time** for heating and cooling | | 111-112 |
| Describe the process of **conduction** | | 35 |
| Explain why metals have a high **thermal conductivity** | | 35 |
| Describe the process of **convection** | | 36 |
| Discuss how we can reduce **unwanted energy transfers** | | 37-38 |
| Describe how to investigate the effectiveness of **different materials of insulation** | | 38 |
| Describe the factors that affect the amount of energy required to increase the temperature of a material | | 30 |
| Define **specific heat capacity** | | 30 |
| Use and rearrange $E = mc\Delta\theta$, defining all terms and units | | 30-31 |
| Know how to describe an experiment to determine **specific heat capacities** of various materials | | 31-32 |
| Discuss the sources of error in the specific heat capacity experiment | | 32 |
| Define the terms **specific latent heat of fusion** and **specific latent heat of vaporisation** of a substance | | 113 |
| Use and rearrange $E = mL$, defining all terms and units | | 113 |
| Explain how the **temperature of a gas** is related to the average energy that its particles have in their kinetic energy stores **(triple only)** | | 114 |
| Explain the meaning of the term **pressure** and how a gas exerts a pressure on the walls of its container **(triple only)** | | 114 |
| Describe qualitatively the effect of changing the temperature or volume of a gas on its pressure (while keeping other factors constant) and explain this in terms of particles **(triple only)** | | 114 |
| Understand the relationship between the **pressure** and **volume** of a fixed mass of gas at constant temperature (Boyle's Law) **(triple only)** | | 114 |
| Use the equation: $pV = constant$ to find the pressure or volume of a gas when the other factor is changed **(triple only)** | | 114-5 |
| Describe the effect of **doing work** on a gas on the gas's **internal energy (triple only)** | | 115 |

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