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SPECA

GCSE Combined Science (AQA Trilogy) · Physics

Particle Model of Matter · Worksheet

No Higher-tier-only content in this topic: the same questions apply to all students.

Density and the particle model

1) Calculate the density of a block of wood with a mass of 6 kg and a volume of 0.008 m³. **[2]**

2) Calculate the mass of a metal cube with a volume of 0.002 m³ and a density of 8900 kg/m³. **[2]**

3) Using the particle model, explain why gases are much less dense than solids. **[1]**

4) Describe the arrangement and movement of particles in a liquid. **[2]**

5) Explain why mass is conserved when ice melts to form water. **[2]**

6) Explain why melting is described as a physical change rather than a chemical change. **[1]**

Internal energy, specific heat capacity, and specific latent heat

7) Define internal energy. **[2]**

8) Explain what happens to a substance's internal energy when it is heated, in terms of its particles. **[2]**

9) Calculate the energy needed to raise the temperature of 0.2 kg of copper by 50°C. Specific heat capacity of copper = 385 J/kg°C. **[3]**

10) Define specific heat capacity. **[1]**

11) Calculate the energy needed to completely melt 0.4 kg of ice. Specific latent heat of fusion of ice = 334 000 J/kg. **[3]**

12) Define specific latent heat. **[1]**

13) Distinguish specific latent heat of fusion from specific latent heat of vaporisation. **[2]**

14) A heating graph shows a substance's temperature rising steadily, then staying flat for a period, then rising again. Explain what is happening to the substance during the flat section. **[2]**

Gas pressure and required practical

15) State how a gas's temperature relates to the average kinetic energy of its particles. **[1]**

16) Explain, in terms of particle motion, why increasing the temperature of a gas at constant volume increases the pressure it exerts on its container. **[2]**

17) A student measures the volume of an irregularly shaped rock using the displacement method. Describe how they could do this. **[2]**

18) Distinguish specific heat capacity from specific latent heat. **[2]**

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