Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 14_Particle Model

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

(i) Figure 6 shows an electric kettle.

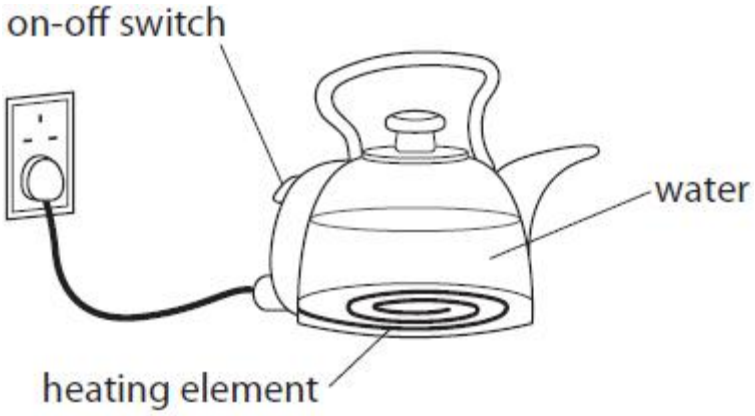

Figure 6

The kettle contains 1.5 kg of water.
The kettle is switched on.
Calculate the energy needed to raise the temperature of the water by 50 °C.
Specific heat capacity of water = 4200 J/kg °C
Use the equation

$$\Delta Q = m \times c \times \Delta\theta$$

(2)

energy needed = ... J

(ii) The amount of energy, E, needed to bring the water to boiling point is 670 000 J.

The kettle has a power of 3500 W.
Calculate the time, *t*, it takes to bring the water to boiling point.
Use the equation

$$P = \frac{E}{t}$$

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(3)

time to bring the water to boiling point = ... s

(Total for question = 5 marks)

Q2.

Figure 8 shows a saucepan of milk being heated on an electric cooker.

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Figure 8

Figure 9 is a table of data about the milk being heated.

mass of milk	0.82 kg
starting temperature of milk	10 °C
final temperature of milk	40 °C
change in thermal energy of milk	96 000 J

Figure 9

(i) Using data from the table in Figure 9, calculate the increase in temperature of the milk.

(1)

increase in temperature = ... °C

(ii) Using data from the table in Figure 9, calculate the specific heat capacity of the milk.

Use the equation

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$$\text{specific heat capacity} = \frac{\text{change in thermal energy}}{\text{mass} \times \text{increase in temperature}}$$

(2)

specific heat capacity = ... J/kg °C

(Total for question = 3 marks)

Q3.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

A student determines the density of a liquid.

The student puts an empty measuring cylinder on a balance (Figure 5a).
The student then adds liquid to the measuring cylinder (Figure 5b).

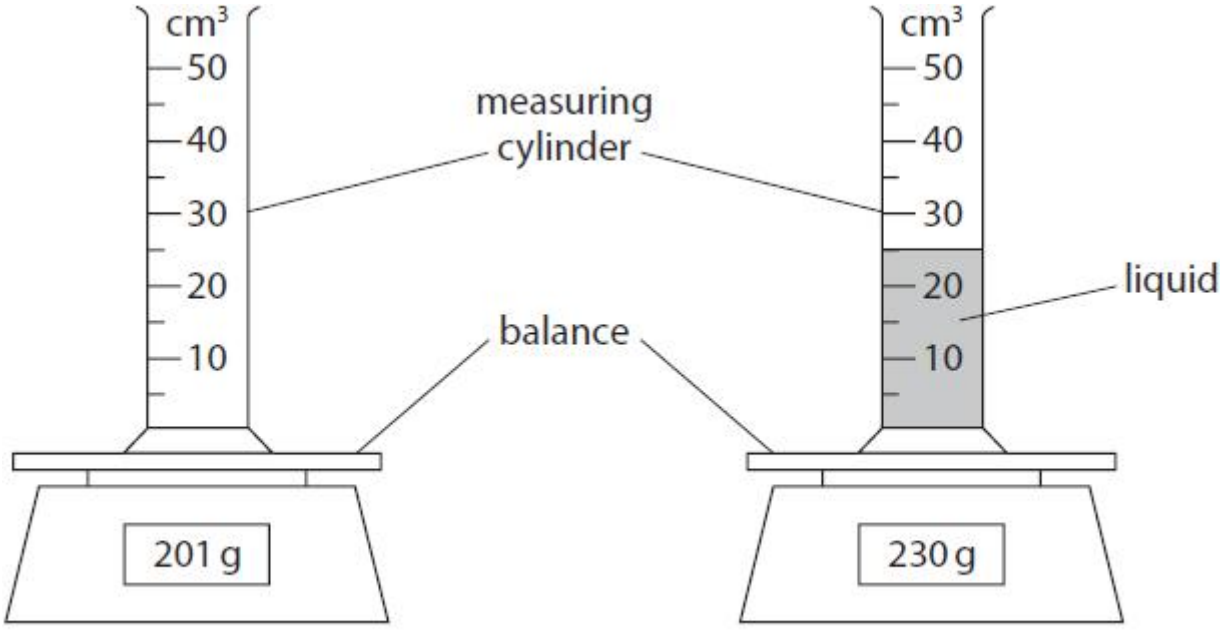

Figure 5a **Figure 5b**

Calculate the mass of liquid added and the volume of liquid added.

Use the information in Figures 5a and 5b.

(i) mass of liquid added = ... g

(1)

(ii) volume of liquid added = ... cm^3

(1)

(iii) Which equation should the student use to calculate the density of the liquid?

(1)

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☒ **A** density = mass + volume

☒ **B** density = mass − volume

☒ **C** density = mass × volume

☒ **D** density = $\frac{\text{mass}}{\text{volume}}$

(iv) State **two** improvements the student could make to this investigation.

(2)

1 .....

.....

2 .....

.....

(Total for question = 5 marks)

Q4.

Figure 13 shows the dimensions of a solid block of concrete.

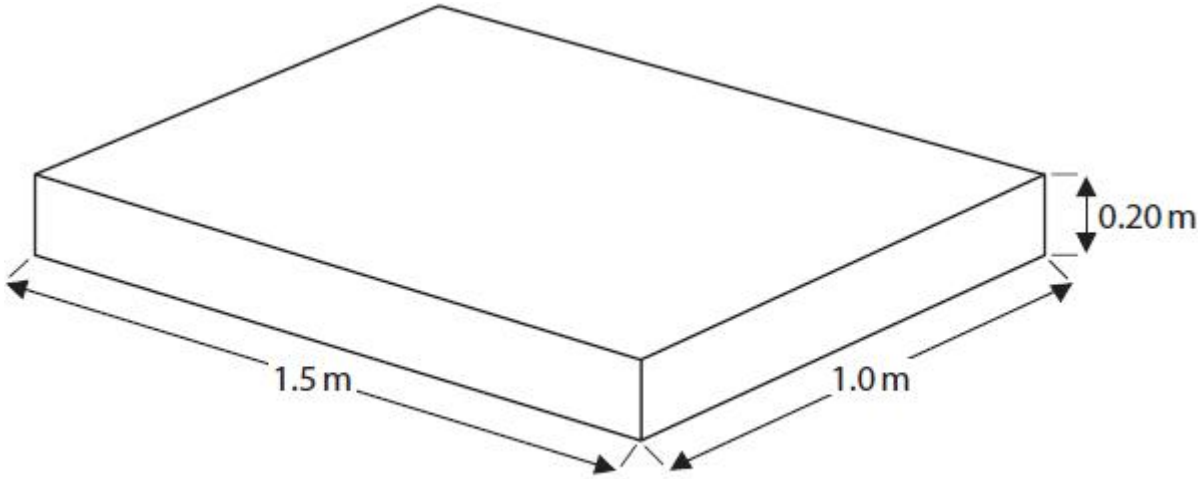

Figure 13

Density of concrete, ρ, = 2100 kg / m^3.

Calculate the mass of the concrete block.

Use the equation:

$$m = \rho \times V$$

(3)

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mass of concrete block = ... kg

(Total for question = 3 marks)

Q5.

Figure 11 shows some water in a measuring cylinder and a lump of iron.

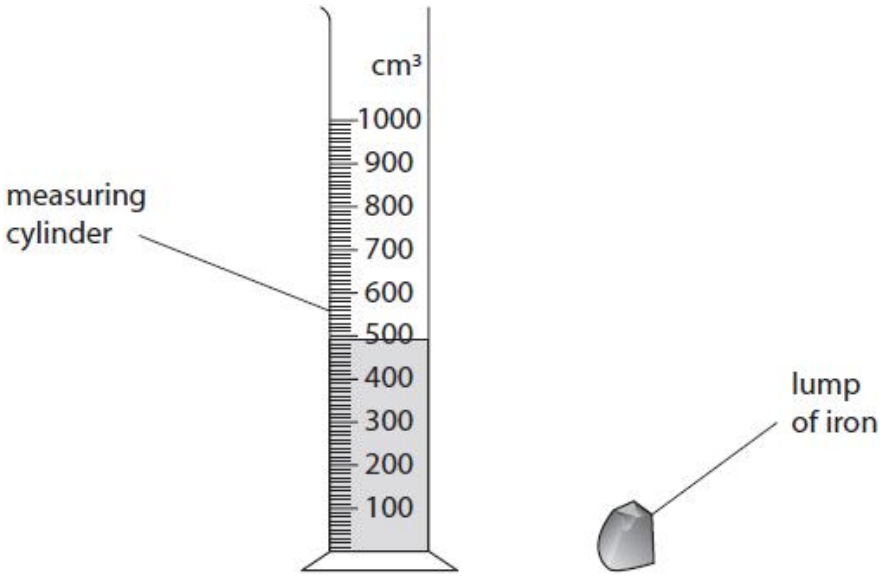

Figure 11

The lump of iron is lowered fully into the water.

The water level in the measuring cylinder rises to 530 cm^3.

The density of iron is 7.9 g / cm^3.

Calculate the mass of the lump of iron.

Use the equation

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Give your answer to 2 significant figures.

(4)

mass = ... g

(Total for question = 4 marks)

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