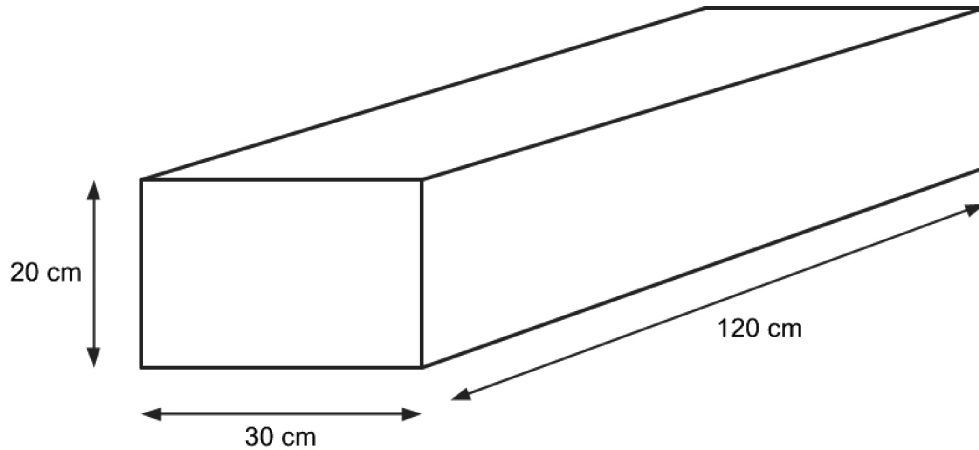


Gateway Science Physics A
J249/01 Paper 1 Foundation Tier

Question Set 20

20

A piece of wood, shown below, has a density of 180 kg/m^3 .



Calculate the mass of this piece of wood.

Show your working and give the units.

$$\begin{aligned} \text{density} &= \frac{\text{mass}}{\text{volume}} && \rightarrow \text{density} \times \text{volume} = \text{mass} \\ & && = 180 \times (0.2 \times 0.3 \times 1.2) \\ & && = 180 \times 0.072 \\ & && = 12.96 \\ & && \approx 13 \text{ (2sf)} \end{aligned}$$

Answer = 13 Units kg

[6]

Total Marks for Question Set 20: 6

Equations in physics

$$(\text{final velocity})^2 - (\text{initial velocity})^2 = 2 \times \text{acceleration} \times \text{distance}$$

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

$$\text{thermal energy for a change in state} = \text{mass} \times \text{specific latent heat}$$

$$\text{energy transferred in stretching} = 0.5 \times \text{spring constant} \times (\text{extension})^2$$

$$\text{potential difference across primary coil} \times \text{current in primary coil} = \text{potential difference across secondary coil} \times \text{current in secondary coil}$$

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