GCSE Physics B (Twenty First Century Science)

J259/02 Depth in physics (Foundation Tier)

Question Set 18

1* Kai is doing experiments in the laboratory to determine the density of the two different liquids, **E** and **F**.

He uses a measuring cylinder placed on a balance.

He then pours different volumes of liquid **E** into the measuring cylinder, and records the balance reading, as shown in **Fig. 1.1**. The balance reading is equal to the total mass of the measuring cylinder and the liquid.

He then empties the measuring cylinder, and repeats the same procedure with liquid **F**.
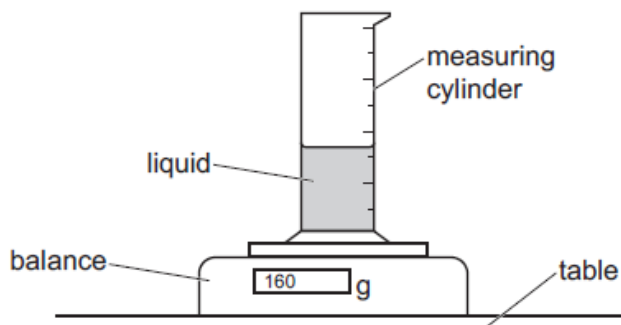

Fig. 1.1

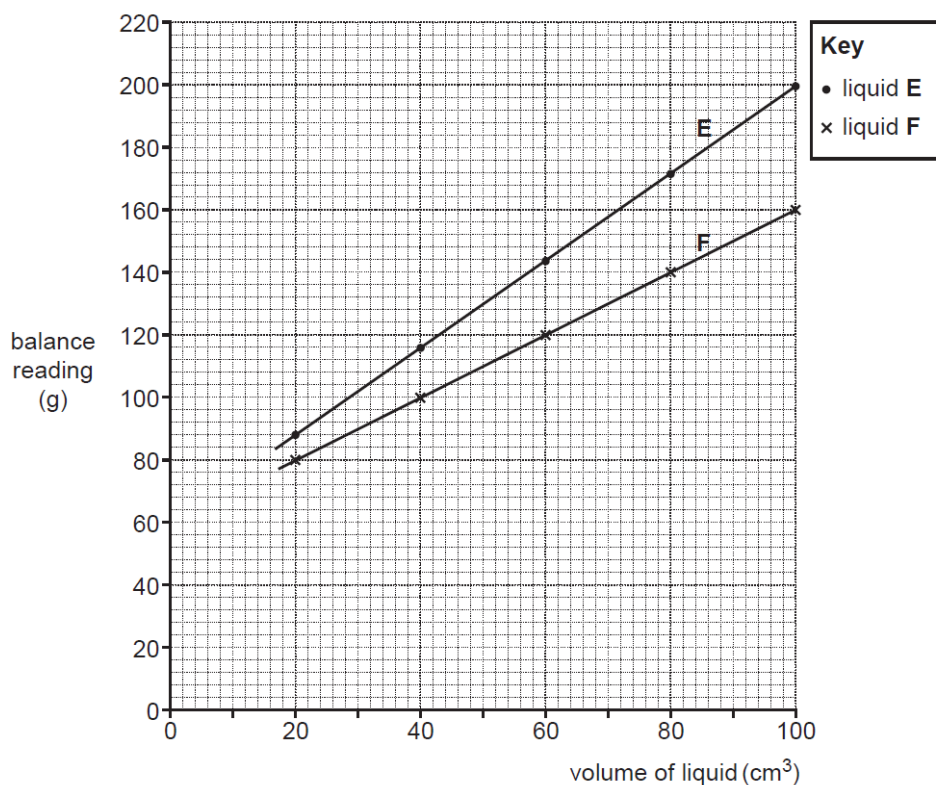Kai's results are shown in **Fig. 1.2**.

Fig. 1.2

Compare the density of the liquids **E** and **F**.

Your answer should include calculations and a detailed analysis of **Fig. 1.2**.
Use the equation: density = mass ÷ volume

[6]

From the straight line graph, we can see that gradient = $\frac{m}{v}$ = density and y-intercept = mass of the beaker. By extrapolating the lines, we can estimate the mass of beaker to be 60g. As gradient for line E is greater, it has a higher density.

$$E \text{ density} = \frac{144-116}{60-40} = 1.4 \, g/cm^3$$

$$F \text{ density} = \frac{120-100}{60-40} = 1 \, g/cm^3$$

Total Marks for Question Set 18: 6