2 (a) Fig. 2.1 shows a liquid in a cylindrical container.
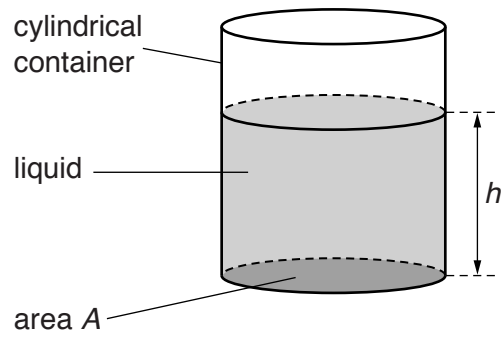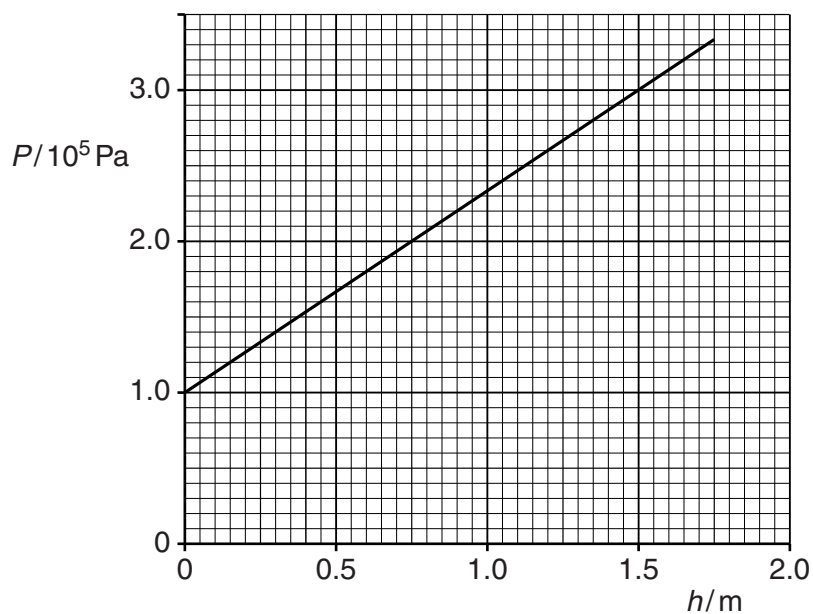

Fig. 2.1

The cross-sectional area of the container is A. The height of the column of liquid is h and the density of the liquid is ρ.

Show that the pressure p due to the liquid on the base of the cylinder is given by

$$p = \rho g h.$$

[3]

(b) The variation with height *h* of the total pressure *P* on the base of the cylinder in **(a)** is shown in Fig. 2.2.

Fig. 2.2

(i) Explain why the line of the graph in Fig. 2.2 does not pass through the origin (0,0).

....

....[1]

(ii) Use data from Fig. 2.2 to calculate the density of the liquid in the cylinder.

density = ... $kg\,m^{-3}$ [2]

[Total: 6]

                                                                                   [Turn over