

- 12** An air bubble of volume  $20 \text{ cm}^3$  is at the bottom of a lake 40 m deep where the temperature is  $4.0^\circ\text{C}$ .

The bubble rises to the surface which is at a temperature of  $20^\circ\text{C}$ .

Take the temperature of the bubble's air to be the same as that of the surrounding water.

Take the atmospheric pressure to be  $1.0 \times 10^5 \text{ Pa}$  and density of water to be  $1.2 \text{ g cm}^{-3}$ .

What is the volume of the bubble as it reaches the surface?

**A**  $3.7 \text{ cm}^3$

**B**  $100 \text{ cm}^3$

**C**  $120 \text{ cm}^3$

**D**  $570 \text{ cm}^3$