3 **(a)** Using a simple kinetic model of matter, describe the structure of a solid.

.....

.....

..... [2]

**(b)** The specific latent heat of vaporisation is much greater than the specific latent heat of fusion for the same substance.
Explain this, in terms of the spacing of molecules.

.....

.....

..... [1]

**(c)** A heater supplies energy at a constant rate to 0.045 kg of a substance. The variation with time of the temperature of the substance is shown in Fig. 3.1. The substance is perfectly insulated from its surroundings.

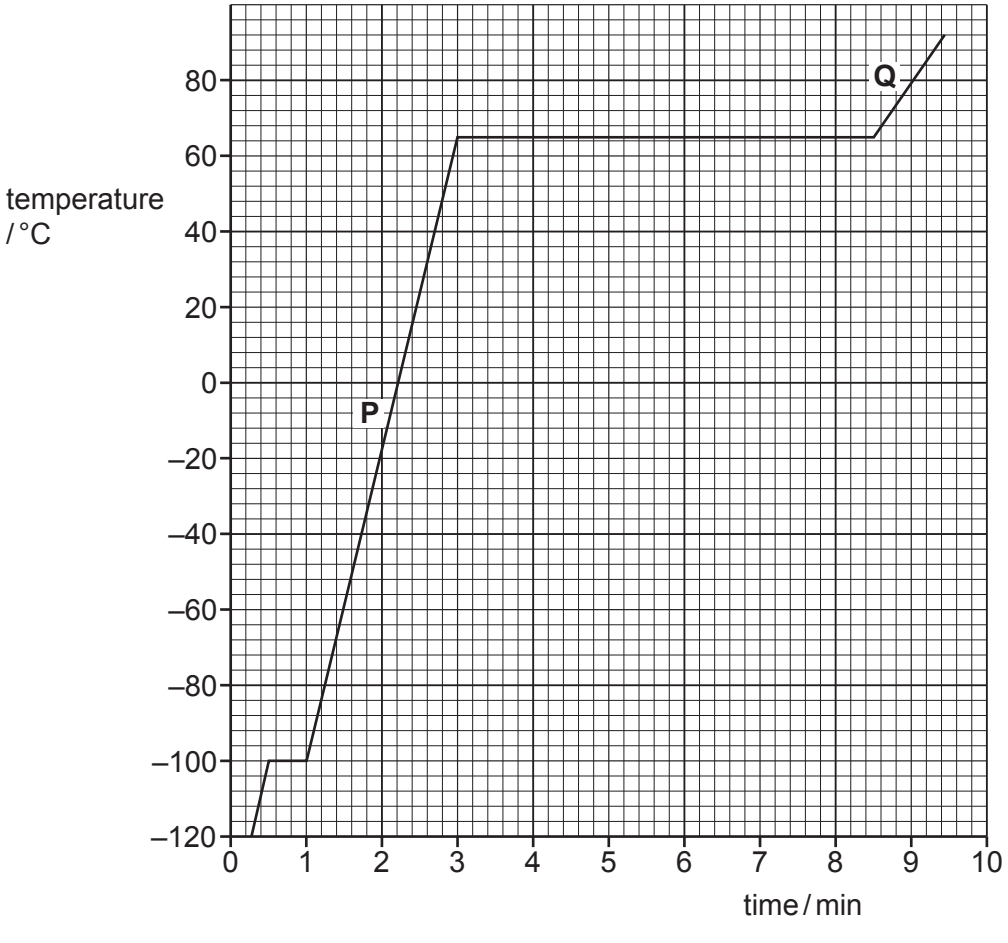


**Fig. 3.1**

**(i)** Determine the temperature at which the substance melts.

temperature = ..... °C [1]

**(ii)** The power of the heater is 150 W.
Use data from Fig. 3.1 to calculate, in $kJ\,kg^{-1}$, the specific latent heat of vaporisation $L$ of the substance.

$L$ = ..... $kJ\,kg^{-1}$ [3]

**(iii)** Suggest what can be deduced from the fact that section **Q** on the graph is less steep than section **P**.

.....

..... [1]

[Total: 9]