Q1 (a)   (approximate same size particles as each other and as liquid and gas) touching
*do **not** accept particles that overlap*

1

regular arrangement (filling the square)

1

(c)   solid

1

(d)   physical

1

(e)   particles have more kinetic energy

1

particles move faster

1

(f)   mass of the liquid

1

specific latent heat of vaporisation

1

(g)   2 × 4 200 × 80

1

672 000 (J)
*an answer of 672 000 (J) scores **2** marks*

1

Q2 (a)   range of speeds

1

moving in different directions
accept random motion

1

(b)   internal energy

1

(c)   density = mass / volume

1

(d)   0.00254 / 0.0141

1

0.18

1

*accept 0.18 with no working shown for the **2** calculation marks*

kg / m^3

1

[7]

Q3 (a) **solid**
<u>particles</u> vibrate about fixed positions

1

closely packed
accept regular

1

gas
<u>particles</u> move randomly
accept particles move faster
accept freely for randomly

1

far apart

1

(b)   amount of energy required to change the state of a substance from liquid to gas (vapour)

1

unit mass / 1 kg
dependent on first marking point

1

(c)   41000 **or** 4.1 × 10⁴ (J)
accept
41400 or 4.14 × 10⁴
correct substitution of
*0.018 × 2.3 × 10⁶ gains **1** mark*

2