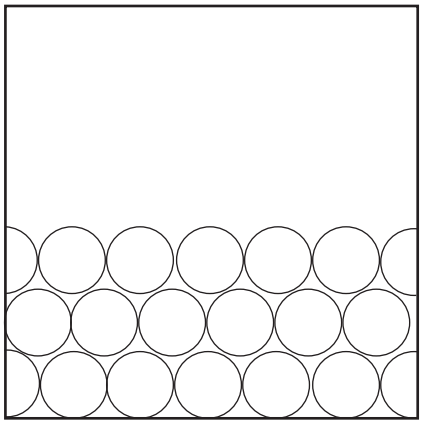
Answer ALL questions.

1 This question is about liquid nitrogen.

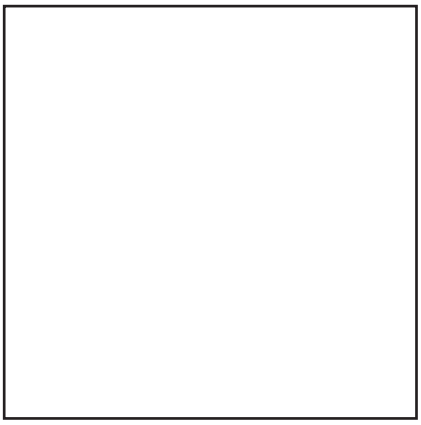
(a) (i) The diagram shows the arrangement of particles in solid nitrogen.

Draw the arrangement of particles in liquid nitrogen.

(2)



solid



liquid

(ii) Describe the motion of the particles in liquid nitrogen.

(1)

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.....

(b) A teacher uses this method to find the density of liquid nitrogen.

- measure the mass of a container
- pour liquid nitrogen into the container
- measure the total mass of the container and the liquid nitrogen
- read the volume of the liquid nitrogen from the scale on the side of the container

(i) Give a safety precaution the teacher should take when pouring the liquid nitrogen.

(1)

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(ii) State the name of the apparatus that the teacher should use to measure the mass of the container.

(1)

.....

(iii) The table shows the teacher's results.

mass of container in g	75
mass of container + liquid nitrogen in g	149
volume of liquid nitrogen in cm^3	88

Calculate the mass of liquid nitrogen in the container.

(1)

mass = ... g

(iv) State the formula linking density, mass and volume.

(1)

(v) Calculate the density of the liquid nitrogen.

Give a suitable unit.

(3)

density = ... unit = ...

(c) Over time, the liquid nitrogen warms up and changes state from a liquid into a gas.

Describe the changes to the arrangement and motion of particles when the liquid nitrogen changes state.

(3)

(Total for Question 1 = 13 marks)