

## Unit 2 Materials and their structure

**Question 1.** Marcus placed a substance in a beaker. He saw that the substance changed shape and took the shape of a beaker. What was the substance?

Tick (✓) one box.

Solid

Liquid

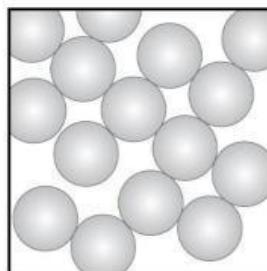
Gas

**Question 2** Give the chemical symbols for the following elements.

a Potassium \_\_\_\_\_

b Argon \_\_\_\_\_

**Question 3 a** Which state of matter is represented by this diagram?

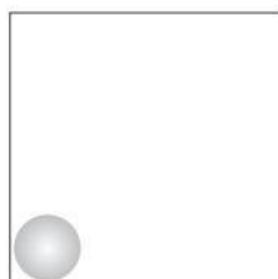


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b Complete this diagram to show the particles in solid ice.



**Question 4** What is the difference between a mixture and a compound?

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**Question 5** When you read the volume of a liquid in a measuring cylinder, how can you make sure you are reading it as accurately as possible?

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**Question 6** Complete the following passage using the list of words. You may use the words once, more than once, or not at all.

properties    warm    boil    melting point    water vapour    ice    cold

If you leave ice in a \_\_\_\_\_ place it melts and becomes liquid water. The temperature at which a solid melts is called the \_\_\_\_\_.

If you heat water until its temperature reaches 100°C, it will boil. Now, all of the water rapidly changes to \_\_\_\_\_. 100°C is the boiling point of water.

The temperatures at which a substance melts and boils are two of its \_\_\_\_\_.

**Question 7** Which of these statements about the Periodic Table is correct?

Tick (✓) one box.

The columns are called periods. The

columns are called groups.

The metals are found on the right of the table.

**Question 8**

Which state of matter has the strongest forces between its particles?

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**Question 9**

Name the state of matter that fits each description.

a. Particles do not touch one another \_\_\_\_\_

b. Particles are close together in a regular pattern \_\_\_\_\_

c. Particles are closely packed but not in a regular pattern \_\_\_\_\_

**Question 10**

Water in a puddle on a pathway disappears on a warm day.

Explain what happens to the water particles

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**Question 11** Which of these terms matches the two facts?

**precipitation**      **evaporation**      **condensation**      **groundwater**

a. This falls from clouds \_\_\_\_\_

b. Rain, snow and hail are forms this \_\_\_\_\_

c. This is what happens when water vapour cools down \_\_\_\_\_

d. This is a change from water vapour to a liquid \_\_\_\_\_

e. When this happens, liquid water changes to water vapour \_\_\_\_\_

f. Water from rivers and the ocean is taken up into the atmosphere \_\_\_\_\_

**Question 12**

Which of the following is a property of gases only?

**Tick one box.**

- Has a fixed volume.
- Takes the shape of the container it is in.
- Can be compressed.
- Can be poured.

**Question 13** Which elements are present in the following compounds?

a CaO \_\_\_\_\_

b Copper sulfate \_\_\_\_\_

c Sodium nitrate \_\_\_\_\_

d HCl \_\_\_\_\_

**Question 14**

Write the correct name for each hazard symbol. Choose from this list.

toxic



flammable



corrosive



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Explain the differences between a compound of iron and sulfur, and a mixture of iron and sulfur.

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**Question 15** What temperature is:

a 20°C higher than 5°C \_\_\_\_\_ [1]

b 20°C lower than 5°C? \_\_\_\_\_ [1]

**Question 16** Water has a number of changes of state during the water cycle.

a. Complete these sentences to describe how liquid water evaporates from oceans and rivers. [3]

The particles in liquid water are touching one another but not in a regular pattern. The particles can vibrate and can slide past one another.

As the temperature \_\_\_\_\_, heat energy transfers to the particles. The particles vibrate and move \_\_\_\_\_.

Eventually, some particles have enough energy to escape the weak forces holding the particles together. These particles escape as a \_\_\_\_\_ and move into the atmosphere.

### **Question 17**

Name the change of state described below.

The particles in snow and ice are arranged in a regular pattern and are held together by strong forces. The particles can vibrate but not move from their position. As the temperature increases, heat energy from the surroundings is transferred to the particles and they vibrate more. Eventually, the particles gain enough energy to overcome the strong forces holding them in place and they start to slide past one another.

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