

Topical Review MCQ Practice Worksheet-
Chapter 7: Particulate Nature of Matter

Sucess Criteria
I am able to state that the motion of smoke particles are due to the random and continuous collision by atoms/molecules which are too small to be seen under the microscope.
I am able to use particulate nature of matter as a model to understand: 1) matter are made of tiny particles known as atoms & molecules. 2) These tiny particles are in constant & random motion.
I am able to describe the arrangement of particles in the following states: 1) Solid state - Particles are orderly arranged and they are very closely packed/very close together 2)Liquid state - Particles are disorderly/randomly arranged and they are closely packed/close together 3) Gaseous state- Particles are disorderly/randomly arranged and they are very far apart
I am able to describe the movement of particles in the following states: 1) Solid state - Particles vibrate about their fixed positions. 2)Liquid state - Particles moves randomly and slide past each other in low speed. 3) Gaseous state- Particles moves randomly in high speed.
I am able to use particulate nature of matter as a model to explain: a) Solids have fixed shape & fixed volume b) Liquids have fixed volume but indefinite shape c) Gases have indefinite shape & indefinite volume

1. Which statement about matter is true?

- A** Gas particles are the most numerous compared to solids or liquids per unit volume.
- B** Matter has mass and occupies space.
- C** Particles in a liquid are held together by weak forces of attraction.
- D** When a solid is heated, its particles increase in size.

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- 2 “Solids have a fixed volume.”

Which of the following best explains the above statement?

- A Solid particles are arranged in an orderly manner.
- B Solid particles are packed closely together with little empty spaces in between.
- C Solid particles vibrate in their fixed positions.
- D** There are strong attractive forces between the particles of solids.

- 3 Which statement about gas particles is **not** correct?

- A** The distance between the particles is very small.
- B The particles are held together by weak forces of attraction.
- C The particles have high kinetic energy.
- D The particles move randomly in all directions.

4. A sealed conical flask contains a substance in solid, liquid and gaseous states.

Which statement is correct?

- A A gas particle has a lower mass than a liquid particle.
- B Liquid particles move much slower than those in solids.
- C Liquid particles vibrate about their fixed positions.
- D** Solids have stronger forces of attraction between particles than those in liquids.

- 5 Why can air be pumped into tires without changing the volume of the tires?

- A Forces of attractions between particles are strong.
- B Particles of air lose energy and move more slowly in tires.
- C Particles of air decrease in size when more air is pumped into the tires.
- D** Distance between particles decreases when more air is pumped into the tires.

- 6 Q, R and S are the same substance in three different physical states.
The properties of Q, R and S are shown in the table below.

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characteristics	Q	R	S
compressible	yes	no	no
has fixed shape	no	yes	no
has fixed volume	no	yes	yes

Which of the following statements is true?

- A** Particles in Q experience the strongest forces of attraction.
- B** Particles in S are packed much closer than particles in R.
- C** Q has the lowest density.
- D** R is in the liquid state.

Sucess Criteria
I am able to state that during the contraction of substances, it is the distance between the atoms/molecules that decreases. The size of atoms/molecules does not change.
I am able to explain that the number of atoms/molecules will not change during expansion or contraction. Thus, the mass of the object will not change.

- 7 The liquid level in a thermometer rises when it is placed in a beaker of warm water.

Which of the following changes takes place in the liquid of the thermometer at a higher temperature?

- I The particles become further apart.
- II The particles expand in sizes.
- III There is an increase in number of particles.

- A** I only
- B** I and II only
- C** I, II and III
- D** II and III only

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Sucess Criteria
I am able to describe Brownian motion for tiny particles (eg smoke) suspended in fluid such as air
I am able to state that Brownian motion provides an experimental evidence that matter are made up of invisible tiny particles known as atoms & molecules
I am able to state that the motion of smoke particles are due to the random and continuous collision by atoms/molecules which are too small to be seen under the microscope.
I am able to use particulate nature of matter as a model to understand: 1) matter are made of tiny particles known as atoms & molecules. 2) These tiny particles are in constant & random motion.

8 Brownian motion proves that particles are in constant random motion.

Which is **not** an example of Brownian motion?

- A A drop of ink spreads in a beaker of water.
- B Dust particles appear to 'dance' in front of a light source.
- C** The wax of a candle melts as the candle burns.
- D The whole bus smells of durian if a passenger brings it on board.

9 Which phenomenon is caused by diffusion?

- A Pollen grains move randomly when suspended on water.
- B Water particles from surface of a dish of water enters the surrounding air.
- C** When a tea bag is placed in water, the water becomes brown.
- D Water enters a dry sponge when the sponge is submerged in water.

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Sucess Criteria
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- 10** When an iron rod is heated, it expands.
Which statement is true?

- A** The iron particles become bigger.
- B** The iron particles become more strongly attracted to one another.
- C** The mass of the iron rod does not change.
- D** The volume of the iron rod does not change.

- 11.** During cooling, what happens to a substance?

- A** Density remains unchanged.
- B** Mass changes.
- C** Volume and mass change.
- D** Volume changes.

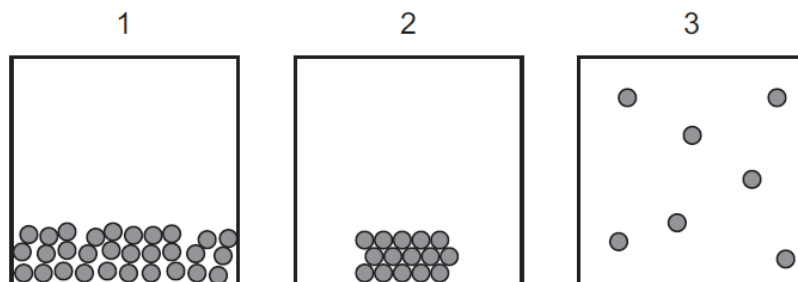
- 12** What happens to the particles of hot water when it cools down?

	speed	size
A	decreases	stays the same
B	decreases	decreases
C	increases	decreases

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D	increases	stays the same
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- 13** The diagrams show the particles present in a container.



Which two diagrams show the process of evaporation?

- A** 1 and 2
B 1 and 3
C 2 and 3
D 3 and 1
- 14** The table below shows the melting and boiling points of four substances, chlorine, gallium, potassium hydroxide and propanol.

substance	melting point / °C	boiling point / °C
chlorine	- 103.0	- 34.0
gallium	29.8	2403.0
potassium hydroxide	360.0	1327.0
propanol	- 89.0	82.0

Which substance is a liquid at a temperature of 25.0 °C?

- A** gallium
B chlorine
C propanol
D potassium hydroxide

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- 15** The table shows data about four substances.

Which substance has particles that are spread far apart at room temperature?

	melting point / °C	boiling point / °C
A	–114	–80
B	–7	59
C	750	1407
D	1610	2230