
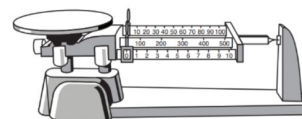


N	102 Describing Matter	
	OBJECTIVES 1. Define matter 2. Describe the characteristics of the three states of matter 3. Name the phase changes that matter undergoes 4. Distinguish between endothermic and exothermic reactions 5. Describe the energy changes that accompany phase changes	

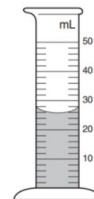
102.1 Matter

1a. Define matter.

1b. Define mass.



1c. Define volume.



102.2 States of Matter

2. Draw particle diagrams to show the three states of matter, and describe their properties below.

Solid	Liquid	Gas

Property	Solids	Liquids	Gases
Shape			
Volume			
Particles & Examples			

102.3 Phase Change

3. What are the phase changes that matter undergoes?

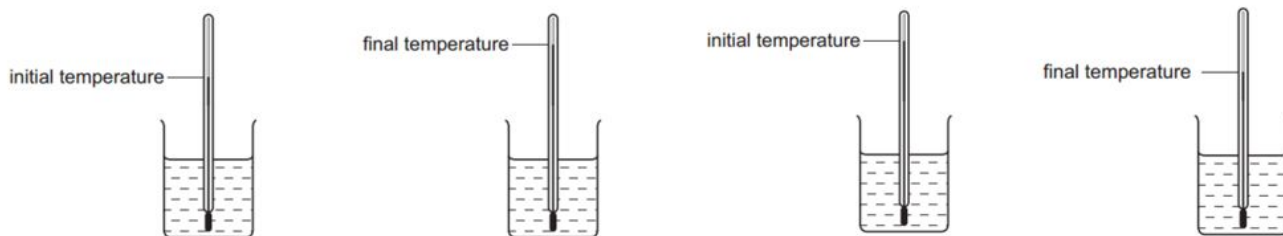
Solid

Liquid

Gas

102.4 Endothermic and Exothermic Reactions

4. Distinguish between exothermic and endothermic reactions.



Exothermic	Endothermic

102.5 Phase Changes

5. Identify the energy changes (endothermic or exothermic) that matter undergoes as it changes states.

Solid

Liquid

Gas

102 Concept Check Describing Matter

1. Matter is defined as any substance that has

- (1) mass and length
- (2) mass and volume
- (3) length and volume
- (4) length and height

2. Which sample of CO_2 has definite shape and definite volume?

- (1) $\text{CO}_2(\text{aq})$
- (2) $\text{CO}_2(\text{g})$
- (3) $\text{CO}_2(\text{l})$
- (4) $\text{CO}_2(\text{s})$

3. In which process does a solid change directly into a vapor?

- (1) condensation
- (2) sublimation
- (3) deposition
- (4) vaporization

4. Which grouping of three phases of bromine is listed in order from left to right for increasing distance between bromine molecules?

- (1) gas, liquid, solid
- (2) liquid, solid, gas
- (3) solid, gas, liquid
- (4) solid, liquid, gas

5. Which phase change represents sublimation?

- (1) $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{s})$
- (2) $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{g})$
- (3) $\text{I}_2(\text{s}) \rightarrow \text{I}_2(\text{g})$
- (4) $\text{I}_2(\text{s}) \rightarrow \text{I}_2(\text{l})$

6. Which process is exothermic?

- (1) vaporization of water
- (2) melting of copper
- (3) condensation of ethanol vapor
- (4) sublimation of iodine

7. Which phase change is accompanied by the release of heat?

- (1) $\text{H}_2\text{O}(\text{s}) \rightarrow \text{H}_2\text{O}(\text{g})$
- (2) $\text{H}_2\text{O}(\text{s}) \rightarrow \text{H}_2\text{O}(\text{l})$
- (3) $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{g})$
- (4) $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{s})$

1.	2.	3.	4.	5.	6.	7.
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