

SECTION 2.1 | MATTER HAS OBSERVABLE PROPERTIES.

2.1 Reading Study Guide A

BIG IDEA Matter has properties that can be changed by physical and chemical processes.

KEY CONCEPT Matter has observable properties.

Vocabulary

physical property a characteristic of a substance that can be observed without changing the substance

density a measure of how much matter is in a given volume of a substance

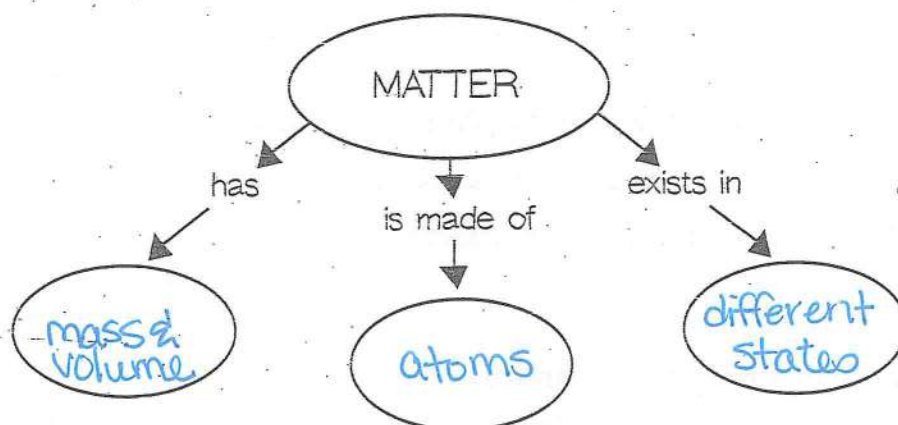
physical change a change in any physical property of a substance

chemical property a property that describes how a substance combines with another to form a new substance

chemical change the change of one substance into another substance

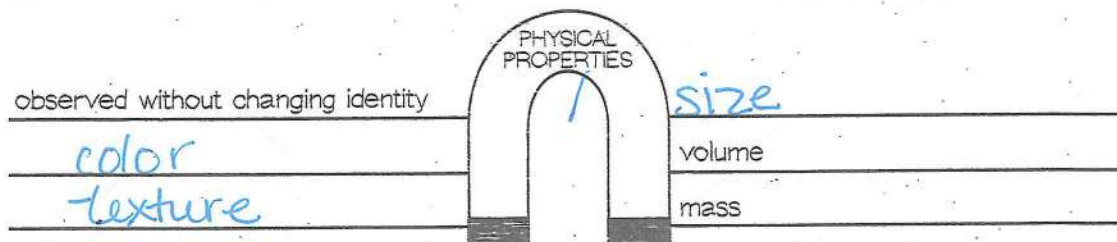
Review

- Fill in the concept map for *matter*.

**Take Notes**

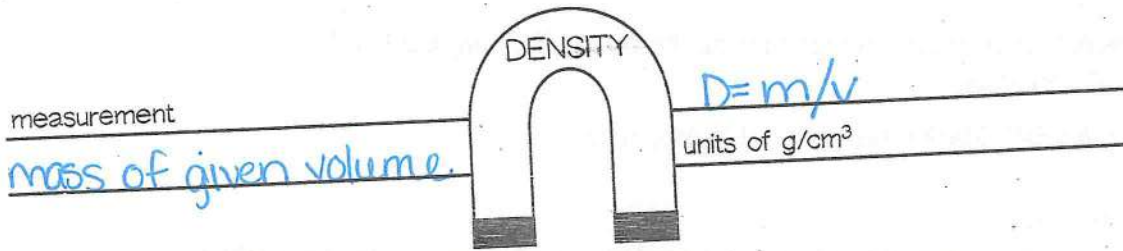
- Physical properties describe a substance.

- Fill in the magnet word diagram for the main idea shown.



A. Physical Properties and Density

3. Fill in the magnet word diagram for the main idea shown.



4. The formula for density is $D = m/V$. What is the density of a wooden board that has a mass of 400 g and a volume of 500 cm^3 ?

$$400\text{g} / 500\text{cm}^3 = 0.8\text{g/cm}^3$$

B. Physical Changes

5. Fill in the main-idea web for the main idea shown.

In a physical change, the substance itself does not change.

A change of state is an example of a physical change.

A physical change is a change in any physical property of a substance.

Example wool made into sweater.

II. Chemical properties describe how substances form new substances.

6. Why is the ability to burn defined as a chemical property instead of a physical property?

Substances change to something new; ash

A-B. Chemical Properties and Changes and Signs of a Chemical Change

7. List and describe four signs of a chemical change.

change in temp, color change, gas bubbles, solid formed (precipitate)

SECTION

CHANGES OF STATE ARE PHYSICAL CHANGES.

2.2 Reading Study Guide A

BIG IDEA Matter has properties that can be changed by physical and chemical processes.

KEY CONCEPT Changes of state are physical changes.

Vocabulary

melting process by which a solid becomes a liquid

melting point temperature at which a substance melts

freezing process by which a liquid becomes a solid

freezing point temperature at which a liquid becomes a solid; same as melting point

evaporation process by which a liquid becomes a gas

sublimation process by which a solid changes directly to a gas

boiling process by which a liquid becomes a gas and produces bubbles

boiling point temperature at which a liquid boils

condensation process by which a gas changes state to become a liquid

Review

1. For each sentence, circle the word that completes the sentence correctly.

Chemical changes (produce/do not produce) new substances.

Physical changes (produce/do not produce) new substances.

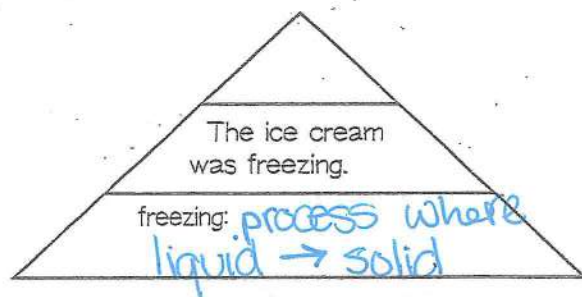
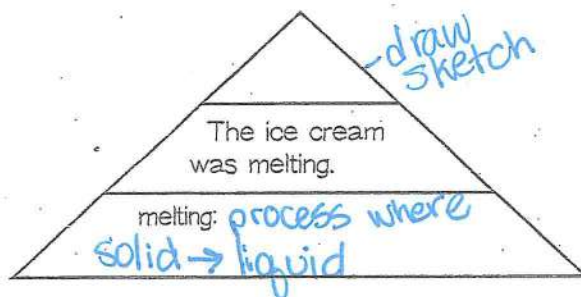
Take Notes

- I. Matter can change from one state to another.
 - II. Solids can become liquids, and liquids can become solids.
2. Give two examples of liquids that can change to solids.

water → ice ; molten iron → cooled solid iron

A-B. Melting and Freezing

3. Fill in the word triangle diagrams for *melting* and *freezing*.



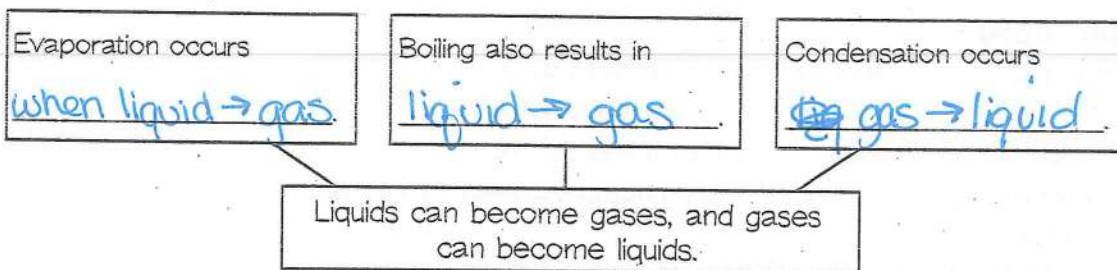
4. What happens when the temperature of a solid reaches its melting point?
 What happens when the temperature of a liquid reaches its freezing point?

Solid melts

liquid freezes

III. Liquids can become gases, and gases can become liquids.

5. Fill in the main-idea web for *gases* and *liquids*.



A-B. Evaporation, Boiling, and Condensation

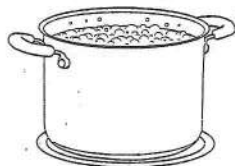
6. How are boiling, evaporation, and sublimation the same?

all three involve change to gas

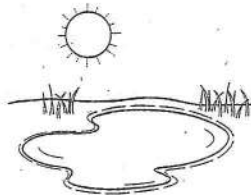
7. Below each picture, write *evaporation*, *condensation*, *boiling*, or *melting*.



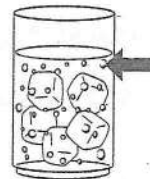
A. melting



B. boiling



C. evaporation



D. condensation

SECTION

PROPERTIES ARE USED TO IDENTIFY SUBSTANCES.

2.3 Reading Study Guide A

BIG IDEA Matter has properties that can be changed by physical and chemical processes.

KEY CONCEPT Properties are used to identify substances.

Review

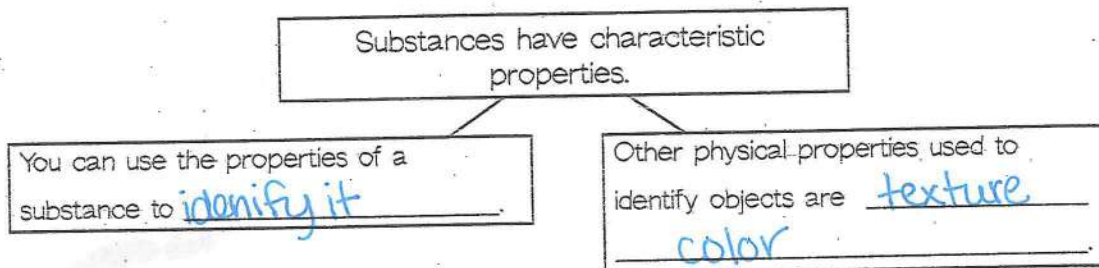
1. If the sentence is true, write *T*. If it is false, change the underlined word to make it true.

Matter cannot change from one state to another. can

Changes in state require electric changes. energy

Take Notes

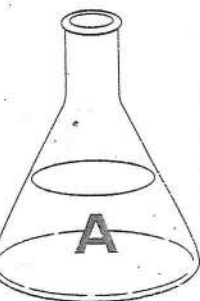
1. **Substances have characteristic properties.**
2. Fill in the main-idea web for the main idea shown.

**A. Identifying Unknown Substances**

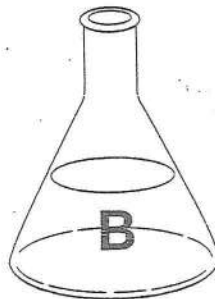
3. If you didn't know what something was, what are some of the properties you might observe?

color, odor, texture, density, boiling pt, melting pt.

4. A student has two vials of clear liquids, as shown below. She knows that one of the two vials contains pure water. The other vial does not. For each vial, she observes the properties listed for it. Which vial is water? How do you know?



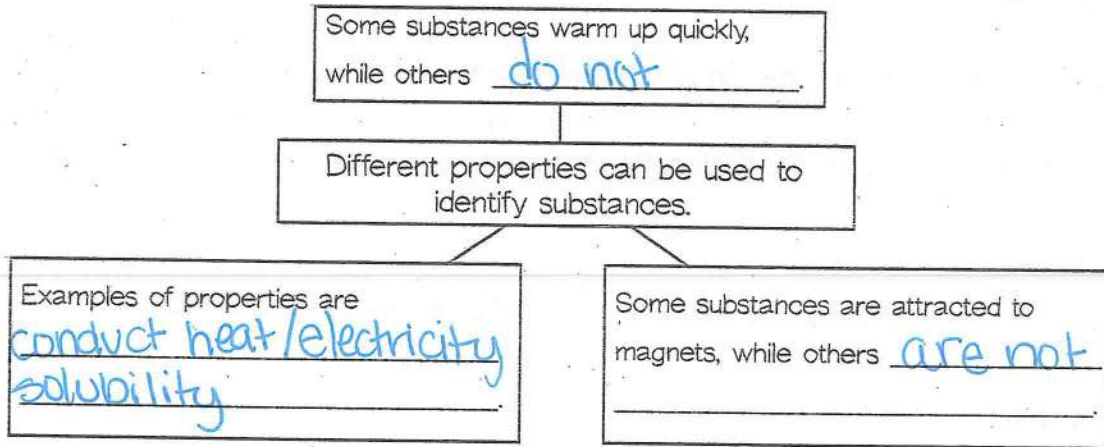
strong odor
slippery texture
clear in color
boiling point 135°C



no odor
wet, but not slippery texture
clear in color
boiling point 100°C

B. Properties Used For Identifying Substances

5. Fill in the main-idea web for the main idea shown.

**II. Mixtures can be separated by using the properties of the substances in them.**

6. Give two examples of how mixtures can be separated by using the properties of the substances in them.

steel f/ aluminum using magnetic

solid f/ liquid by filtration ex: sugar f/ H₂O evaporation

7. The tray below contains sawdust mixed with steel nails. You want to use the sawdust, but you need to get the nails out first. Describe two methods that you could use to separate the nails from the sawdust.

pour ~~tray~~ through sifter/filter, pick nails out manually, others possible

