

*Important Things to Know - Do Not Skip Over these 2 Sections
READ and REMEMBER*

Kinetic Theory of Matter:

- Molecules are always *moving*. This is known as the *kinetic* theory of matter.
- We measure this kinetic energy with a thermometer as *temperature*.
- The greater the material's internal energy, the higher the temperature of that material.
- *Heat* is the energy flow between objects of different temperature.
- Heat and temperature are NOT the same.
- *Brownian motion* describes how visible particles are seen moving due to invisible molecules bumping into them.

Phases of Matter:

Solid

- matter that has definite volume and shape.
- The molecules are packed together tightly and move slowly.

Liquid

- matter that has definite volume but not shape.
- Since the molecules of a liquid are loosely packed and move with greater speed,
- a liquid can flow and spread.

Gas

- matter that has indefinite volume or shape.
- Molecules of a gas are so loosely arranged and move so rapidly that they will fill their container.

Phase Change Descriptions:

Melting

the change from _____ to _____.

Freezing

the change from _____ to _____.

Evaporation

the change from _____ to _____.

Condensation

the change from _____ to _____.

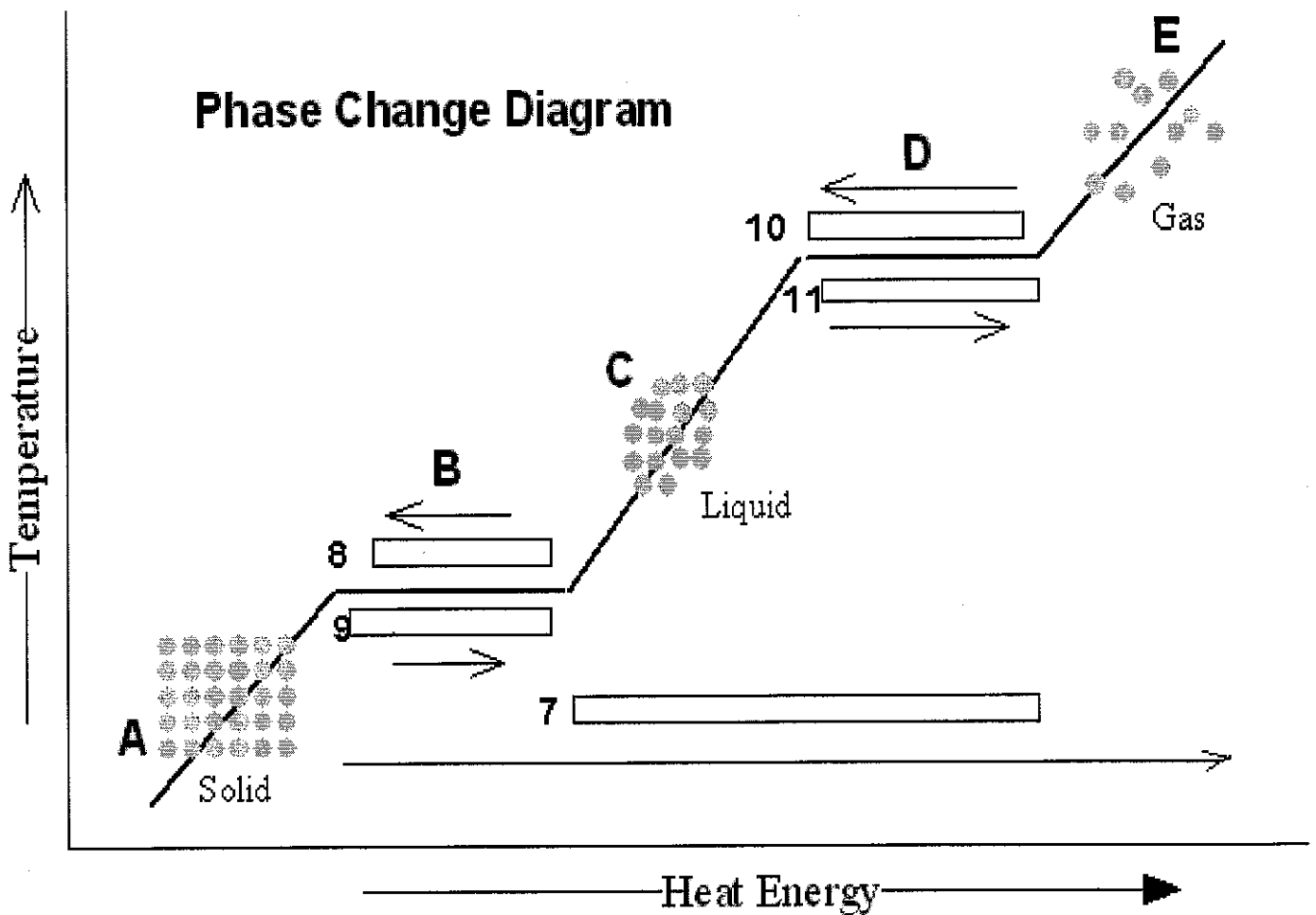
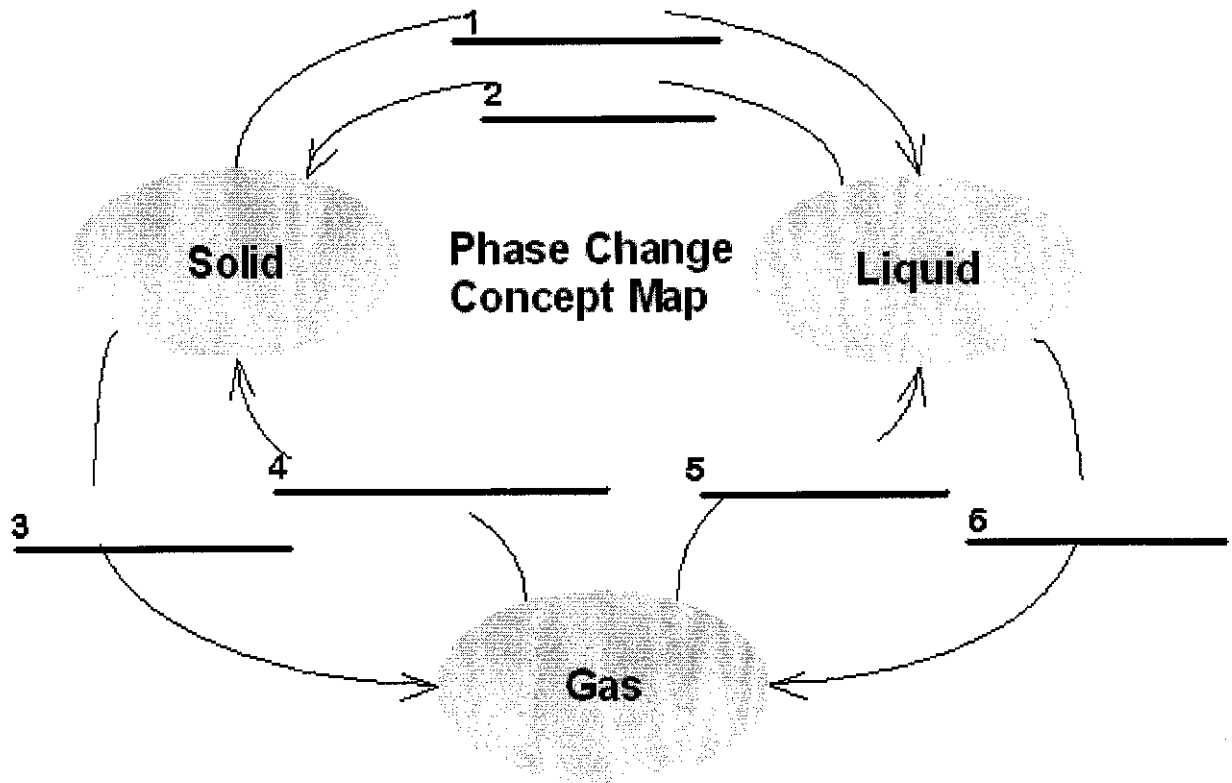
Sublimation

the change from _____ to _____.

Deposition

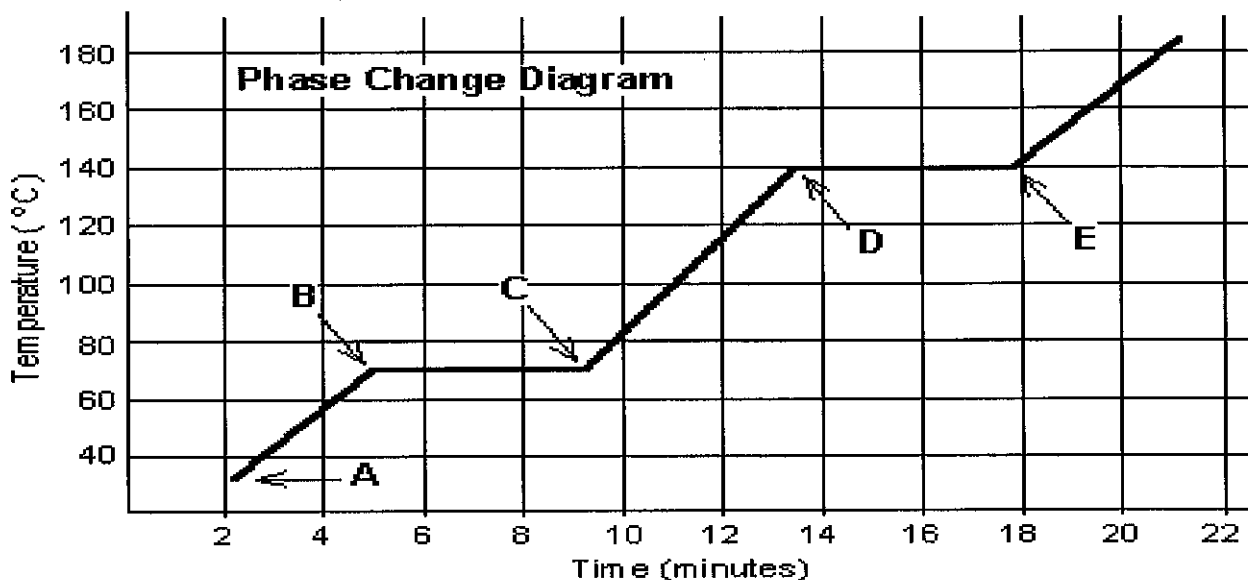
the change from _____ to _____.

Fill in the phase changes in the blank provided.



Phase Change Worksheet

The graph was drawn from data collected as a substance was heated at a constant rate. Use the graph to answer the following questions.



At **point A**, the beginning of observations, the substance exists in a solid state. Material in this phase has _____ volume and _____ shape. With each passing minute, _____ is added to the substance. This causes the molecules of the substance to _____ more rapidly which we detect by a _____ rise in the substance. At **point B**, the temperature of the substance is _____°C. The solid begins to _____. At point C, the substance is completely _____ or in a _____ state. Material in this phase has _____ volume and _____ shape. The energy put to the substance between minutes 5 and 9 was used to convert the substance from a _____ to a _____. This heat energy is called the **latent heat of fusion**. (An interesting fact.)

Between 9 and 13 minutes, the added energy increases the _____ of the substance. During the time from **point D to point E**, the liquid is _____. By **point E**, the substance is completely in the _____ phase. Material in this phase has _____ volume and _____ shape. The energy put to the substance between minutes 13 and 18 converted the substance from a _____ to a _____ state. This heat energy is called the **latent heat of vaporization**. (An interesting fact.) Beyond **point E**, the substance is still in the _____ phase, but the molecules are moving _____ as indicated by the increasing temperature.

Which of these three substances was likely used in this phase change experiment?

Substance	Melting point	Boiling point
Bolognium	20 °C	100 °C
Unobtainium	40 °C	140 °C
Foosium	70 °C	140 °C
