

Chapter 15

STUDY GUIDE

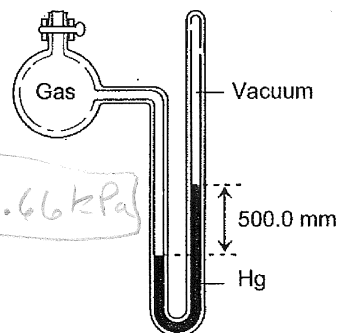
15.1 PRESSURE

Write T for true or F for false. If a statement is false, replace the underlined word or phrase with one that will make the statement true, and write your correction in the blank.

- | | |
|--------------|--|
| <u>True</u> | 1. All matter is composed of <u>small particles</u> . |
| <u>False</u> | 2. Particles that make up matter are always <u>stationary</u> . <i>moving</i> |
| <u>True</u> | 3. Collisions between particles of matter are perfectly elastic because there is <u>no change</u> in the total kinetic energy of the particles before and after the collision. |
| <u>False</u> | 4. Under ordinary conditions, each molecule of a gas undergoes a few <u>million</u> collisions each second. <i>billion</i> |
| <u>False</u> | 5. A barometer is an <u>open-arm</u> manometer used to measure atmospheric pressure. <i>closed</i> |
| <u>False</u> | 6. Standard atmospheric pressure is <u>one pascal</u> . <i>atmosphere</i> |

Complete the statement or answer the question.

7. What is one pascal?
Is equal to one newton per sq. meter N/m^2
8. In using any manometer, what measurement must you make?
Height of the mercury (difference)
9. What physical property of the liquid in a manometer must you know?
Density
10. Why is the measurement of gas pressure with a closed-arm manometer independent of the atmospheric pressure?
Atmosphere is NOT present inside the system
11. Standard atmospheric pressure will support a column of mercury 760 mm high.
12. One kilopascal equals 7.501 mm Hg.
13. A closed-arm mercury manometer is shown being used to measure the pressure of a gas in a closed container. What is the pressure of the gas in kilopascals?



$$\frac{500.0 \text{ mmHg}}{7.501 \text{ mmHg}} = 66.66 \text{ kPa}$$

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15.2 MOTION AND PHYSICAL STATES

Answer the following questions.

1. Complete the following table comparing the three common states of matter.

State of matter	Shape	Volume
solid	<i>Fixed (definite)</i>	definite
<i>liquid</i>	assumes the shape of its container	<i>definite</i>
gas	<i>assume the shape of cont.</i>	<i>variable</i>

2. What two factors determine the average speed of the particles in a gas?

mass and Temperature

3. Define absolute zero.

No movement of particles - No temp. energy

4. In which direction does energy flow between two objects at different temperatures?

High temp to low temp

5. What is the SI unit of temperature?

Kelvin

6. What is absolute zero on the Celsius temperature scale?

-273°C

7. What equation can be used to convert Celsius temperatures (°C) to Kelvin temperatures (K)?

$K = ^\circ C + 273$

8. Convert the following temperatures to the Kelvin scale.

a. 15°C *288 K*

b. -100°C *173 K*

c. 0°C *273 K*

9. Convert the following temperatures to the Celsius scale.

a. 0 K *-273°C*

b. 100 K *-173°C*

c. 722 K *449°C*

10. What is the difference between heat and temperature?

*Temp is a measure of average KE of particles
Heat is the energy (concept)*