

3. Properties of Substances and Mixtures

Starter Quiz · 课前小测

AP Chemistry

Name: _____ Score: _____

- Which is the strongest intermolecular force?
☐ hydrogen bonding
☐ dipole-dipole
☐ London dispersion
- Diamond is very hard with a very high melting point. It is a...
☐ covalent-network solid
☐ molecular solid
☐ metallic solid
- In which state are particles far apart and moving fast and freely?
☐ gas
☐ solid
☐ liquid
- Find P for 1 mol in 2 L at 300 K ($R = 0.0821$), in atm (1 decimal).
_____ atm
- Temperature is a measure of the particles' average...
☐ kinetic energy
☐ mass
☐ charge
- Real gases deviate most from ideal behaviour at...
☐ high pressure and low temperature
☐ low pressure and high temperature
☐ they never deviate
- Dissolve 2 mol of solute to make 4 L of solution. The molarity (in M)?
_____ M
- With $\varepsilon = 100$, $b = 1$ cm, and $A = 0.5$, the concentration (in M)?
_____ M

- All molecules experience London dispersion forces.

☐ True ☐ False

- During a phase change, the temperature stays constant.

☐ True ☐ False

AP Chemistry1. **hydrogen bonding**

Hydrogen bonding (H to N, O, or F) is the strongest of the three.

2. **covalent-network solid**

One giant lattice of strong covalent bonds makes it hard and high-melting.

3. **gas**

Gas particles are widely spaced and move freely.

4. **12.3 atm**

$$P = nRT/V = (1)(0.0821)(300)/2 \approx 12.3 \text{ atm.}$$

5. **kinetic energy**

Temperature tracks the average kinetic energy of the particles.

6. **high pressure and low temperature**

Crowded (high P) and slow (low T) is where volume and attractions matter.

7. **0.5 M**

$$M = \text{moles/liters} = 2/4 = 0.5 \text{ M.}$$

8. **0.005 M**

$$c = A/(\varepsilon b) = 0.5/(100 \times 1) = 0.005 \text{ M.}$$

9. **True**

Temporary uneven electron clouds occur in every molecule.

10. **True**

Added heat breaks attractions instead of raising the temperature.