Calculate the vapor pressure of a solution prepared by mixing 79.0 grams of formaldehyde (CH_2O) with 400.0 grams of water at 22 °C. The vapor pressure of pure water at this temperature is 19.8 mmHg and the density is 1.00 g/mL.

Number

mmHg

What type of solid is predicted for each of the following types of substances?

$CaCl_2$

- Ionic
- Metallic
- Molcular

Sn

- Ionic
- Metallic
- Molecular

PCl_3

- Ionic
- Metallic
- Molecular

If the reaciton below has a rate law of Rate = $k[A]^2$

$$A + 2B \longrightarrow C + 2D$$

The reaction is _____ order with respect to A,

- zero
- first
- second
- third
- fourth

_____ order with respect to B

- zero
- first
- second
- third
- fourth

and _____ order overal

- zero
- first
- second
- third
- fourth

Incorrect.

A reactant follows second order kinetics with a rate constant of k = 0.0470 $M^{-1} \cdot min^{-1}$. Calculate the half-live when initial concentration is 4.00 M.

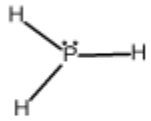
Number

29.5 **min**

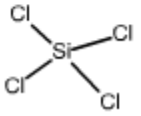
Which of the following statements are true?

- If the amount of solvent increases, the concentration decreases.
- The solubility of a solid solute usually decreases with temperature.
- The outer part of a micelle is hydrophobic.
- Two of these are true
- All of these are true
- None of these are true

What is the primary intermolecular force for the following compounds



- Dipole-dipole
- Dispersion
- Hydrogen-bonding



- Dipole-dipole
- Dispersion
- Hydrogen-bonding

If plotting reactant concentration over time is only linear when you take the natural log of the concentration, the reaction is probably _____ order with respect to that reactant.

- zero
- first
- second
- third
- fourth
- fifth

What is the osmotic pressure of a 0.200 solution at 31 °C (assuming the solute doesn't dissociate).

Number [redacted] atm

An aqueous solution of H_2SO_4 has a concentration of 5.20 M and a density of 1.83 g/mL Convert this concentration to units of molality.

Number [redacted] m

A solution contains 4.75 moles of a compound dissolved in 589.0 g of water. Calculate the *change* in boiling point (*not* the new boiling point) when the compound is...

$FeCl_2$

Number ° C

PCl_3

Number ° C

Write the chemical equation for a reaction with the following relative rates:

$$Rate = \frac{1}{2}\frac{-\Delta[A]}{\Delta t} = \frac{1}{4}\frac{\Delta[B]}{\Delta y} = \frac{\Delta[C]}{\Delta t}$$

[redacted]

A solution is prepared by dissolving 50.0 grams of KCl in 500.0 grams of water. The density of this solution was 1.17 g/mL. Express the concentration in the following units

Mass percentage

Number % (w/w)

molarity

Number M

Determine the rate law for the reaciton following reaction

$$A + B \longrightarrow C + D$$

given the following data

Trial	[A]	[B]	Rate
1	0.350	0.500	0.0700
2	0.350	1.00	0.140
3	0.700	0.500	0.280

- Rate = $k[A][B]^2$
- Rate = $k[A][B]$
- Rate = $k[B]^2$
- Rate = $k[A]^2$
- Rate = $k[B]$
- Rate = $k[A]$
- Rate = $k[A]^2[B]$

An aqueous solution of $MnCl_2$ has a concentration of 30.4 %(w/w) and a density of 1.05 g/mL. Convert this concentration to units of molarity.

Number

M

Identify the following properties

The attraction between different types of particles

- Viscosity
- Surface Tension
- Adhesion
- Cohesion

A liquid's resistance to spreading out.

- Viscosity
- Surface Tension
- Cohesion
- Adhesion

Which of the following statements are true?

- The larger a molecule, the less polarizable it is.
- For substances in a gaseous state, their intermolecular forces are much weaker than their kinetic energy.
- A nonpolar substance can form an induced dipole by getting near a polar molecule
- Two of these are true
- All of these are true
- None of these are true

Freshly squeezed orange juice usually contains small pieces of solid pulp floating in it, which would make this a _____ colloid.

- aerosol
- emulsion
- foam
- gel
- sol

Calculate the average rate of a reaction if the product concentration increases 0.85 M in 5.8 seconds.

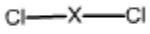
Number

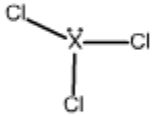
M/ s

The following compounds are based on an unknown nonmetal X (though you know it's *not* N, O, or F). Arrange the following in increasing order of their predicted boiling points:

HX, XCl_2, XCl_3

- $HX<XCl_2<XCl_3$
- $XCl_2<XCl_3<HX$
- $XCl_3<HX<XCl_2$
- $XCl_2<HX<XCl_3$
- $XCl_3<XCl_2<HX$
- $HX<XCl_3<XCl_2$





A closed flask contains water and carbon monoxide gas at 5.30 atm and 25 °C. Calculate the solubility of the gas.

Number

M

A solution is prepared by dissolving 45.0 grams of KCl in 375.0 grams of water. Express the concentration in the following units

molality

Number

m

mole fraction

Number

A reactant follows first order kinetics with k = 0.650 s^{-1}. If the initial concentration is 3.50 M, how long would it take for the concentration to drop to 0.60 M?

Number

s