

## Colligative Properties



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- \_\_\_\_\_ – physical properties of solutions that are affected only by the \_\_\_\_\_ of particles NOT the \_\_\_\_\_ of the solute
- They include:
  1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
  4. \_\_\_\_\_
- In all of these we will be comparing a \_\_\_\_\_ to a \_\_\_\_\_

## Vapor Pressure Lowering

- \_\_\_\_\_ – the pressure exerted in a closed container by liquid particles that have escaped to the surface and entered the gas phase



## Vapor Pressure Lowering

- The vapor pressure of a mixture is \_\_\_\_\_ than a non volatile pure substance due to the fewer number of particles that are able to escape into the gas phase



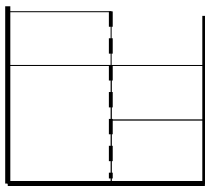
## Boiling Point Elevation

- \_\_\_\_\_ - point at which enough energy has been added to overcome the intermolecular forces that hold the solute in the solution
- The boiling point of a mixture is \_\_\_\_\_ than the boiling point of a pure substance

## Freezing Point Depression

- \_\_\_\_\_ - point where enough energy has been removed from the solution to slow the molecules down and increase intermolecular forces so the solution becomes a solid
- The freezing point of a mixture is \_\_\_\_\_ than the freezing point of a pure substance

## What is Osmosis?



- Suppose a salt solution and water are separated by a semipermeable membrane
- Water will move through the membrane from into the salt solution to equalize the concentrations on each side of the membrane.
- This is osmosis

## Osmotic Pressure

- Osmotic pressure is the pressure exerted on the semi permeable membrane by the movement of the water

