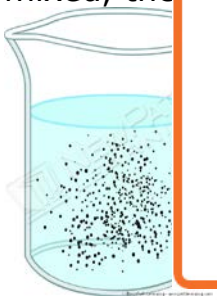
MIXTURES, SOLUTIONS AND COMPOUNDS

Mixtures, unlike **compounds,** are the physical combination of different substances. **Solutions** are a type of mixture with at least one **solute** and a **solvent**. In a solution, finely dissolved particles of a solute are dissolved by the solvent. Typically, the solvent is a liquid but in some cases, such as brass, the solvent can be a solid. Brass is a mixture of zinc and copper.

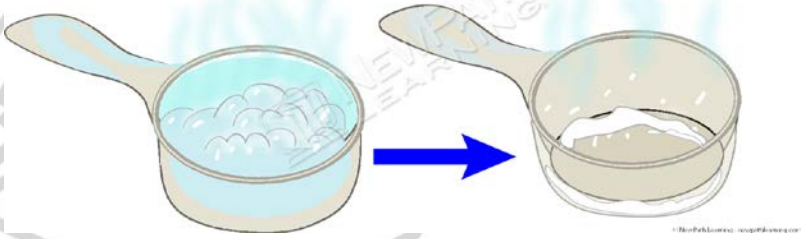
Lesson Checkpoint:
What are the two components of a solution?

Colloids are a type of mixture where particles that have not dissolved are too small to be seen but large enough to be filtered and to scatter light. A good example of this would be milk.

In a **suspension**, like pepper and water, the particles are large enough to be seen. Ultimately, if a suspension is not continuously mixed, the



In a **solution** such as salt water, the particles of solute move away from each other and become surrounded by solvent. The particles of solute break away from each other to the extent that they can no longer be seen. We know that there is salt in ocean water but we can't see it. If this water was boiled, the water would evaporate and the salt particles would gather again to be seen.



The dissolved particles of a solution tend to lower the freezing point of a solvent and to raise its boiling point. When salt is put on wintry roads, it makes it tougher for the water to freeze. This is because the salt particles interfere with the water molecules as they try to organize into ice. In the case of boiling, water molecules try to escape from the solution but, once again, the salt particles interfere with the motion of these water molecules.

Lesson Checkpoint: How do dissolved particles of a solute affect the solution's boiling and freezing points?

Some solutions are considered to be **concentrated** while others are considered to be **dilute**. The **concentration** of a solution is the amount of solute in a given amount of solvent. If the amount of solvent is kept the same, adding more solute makes the solution more concentrated. A **concentrated** solution has a lot of solute in it whereas a **dilute** solution has much less. The way to dilute a concentrated solution would be to add more solvent.

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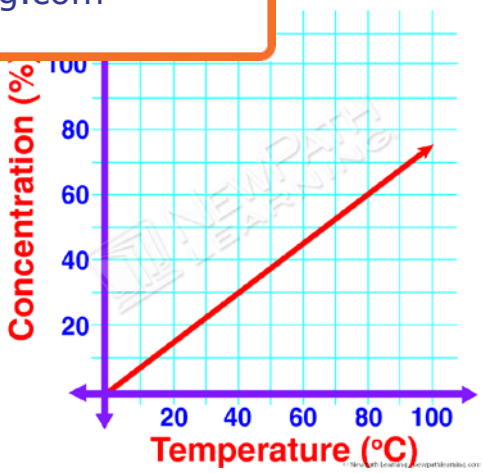
soluble. On the other hand, if it doesn't dissolve at all it is said to be **insoluble**. Several factors affect solubility. These include temperature, pressure and the nature of the solvent.



Most people know that one of the best ways to get a solute dissolved in water is to heat it. This speeds up the break up of the solute molecules. Pressure affects the solubility of gases in liquids. When a bottle of soda is first opened, the reduction of pressure sometimes allows the gas to escape and create quite a mess. Finally, we know that certain solvents can't dissolve particular solutes. While gasoline will take certain kinds of paint off of a surface, water can't. Oppositely, some kinds of paint require water to remove them, not gasoline.