SOLUBILITY IN WATER

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- Solids usually have a higher solubility in water at higher temperatures.
- Gases always have a higher solubility in water at lower temperatures. (halogens and oxygen are only slightly soluble in water but because they are so reactive, even in small concentrations they are often very important in solution reactions)
- Polar liquids usually have a higher solubility in water at higher temperatures.
- Nonpolar liquids do not dissolve in water to any large degree but instead form a separate layer. These liquids are said to be immiscible with water.
- Some liquids made up of small polar molecules with the ability to form hydrogen bonds dissolve completely in water and are said to be miscible in water.
- Elements [that do not react with water] generally have a low solubility in water.
- Water dissolves both ionic and polar molecular substances
- Non polar solvents like acetone or carbon tetrachloride dissolve nonpolar substances
- Alcohols, like soaps have both polar and nonpolar ends and can dissolve both polar and nonpolar substances

Note: there are always exceptions to these generalized statements