









Molarity Simulation

Molarity ...PhET → Play with the Sims → Chemistry → Molarity [Run Now!](#)

First, determine the **saturation concentration** of each of the solutions, that is, how concentrated can you get each solution before the solution is saturated.

Solution	Saturation concentration	Solution	Saturation concentration
 Cobalt (II) nitrate		 Potassium chromate	
 Cobalt chloride		 Nickel (II) chloride	
 Potassium dichromate		 Copper sulfate	
 Gold (III) chloride		 Potassium permanganate	

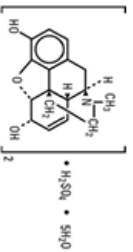
Calculating Molarity - use the sim to check your work

Moles of Compound (mol)	Liters of Solution (L)	Molarity of Solution (M)	Moles of Compound (mol)	Liters of Solution (L)	Molarity of Solution (M)
.53	.79			.78	.59
.86	.34		.88		1.8
1.0	.20		3.5	8.4	
.67	.67			6.4	8.5

Medical Concentration Calculations - now try these on your own

(Fold the problems in quarters and glue the backside here)

1. The structure, formula and molecular weight of morphine, a powerful pain reliever, is shown below. Various dosages are available for IV administration. Consider an 8 mg per mL syringe (one of the mid-range amounts available). What is the molarity of the morphine in the syringe?



Molecular Weight is 758.83

3. D5W (dextrose in water) is another IV fluid that can be used when a patient needs additional water but not additional sodium. Like normal saline, it can also be used to administer medications. How many grams of glucose ($C_6H_{12}O_6$) are added to water to make 250 mL of the 0.277 M glucose that's required for this IV?

2. "Normal saline", used in hospital IV bags to hydrate patients and deliver medications, contains 0.9 grams of NaCl per 100 mL of solution. What is the molarity of normal saline?

4. Magnesium sulfate ("mag") is used during pregnancy or just after delivery to prevent seizures due to preeclampsia, slow pre-term labor, and prevent injuries to a preterm baby's brain. It is delivered through an IV, and dosing is based on body weight. The medicine comes in 1 gram per 2 mL vials. This must be diluted in at least 50 mL of D5W during administration. What is the maximum molarity of the mag (after dilution) that can be administered?