

In the Molarity sim, you can change the moles of solute and the volume of solution (water) using sliders to make solutions with different concentrations. Numerical values can be hidden for understanding qualitative relationships, or shown for calculations or data collection.

### Notes on the model:

**Solution Volume:** Solution volume is the combined volume of water and solute, and is limited to the range of 0.2-1.0 L so that students can explore some solutions for the full concentration range of 0-5 molar, without saturation.

**Solubility Data:** Solutions become saturated when more moles are added than can be dissolved in the indicated volume of water (solution volume) at 25 °C.

Exceptions:

$\text{AuCl}_3$  and Drink mix solubility values are from data at 20 °C.

Drink mix is assumed to have the same solubility of sucrose.



### Insights into student use / thinking:

In interviews, students who had not recently covered the concept of Molarity as a unit of concentration were not sure what it was. We recommend using the sim to help students figure out the qualitative relationships between Molarity, moles, and liters, before having them use it to do quantitative problems or data collection.

This sim demonstrates saturation but does not explain why different solutes have different solubility values. The concepts of saturation and solubility may be advanced for introductory level students, however students in interviews connected saturation to the idea of having “more solute than water can dissolve”. The Drink mix example provides a real-world link to this concept to help students connect it to the chemical examples.

### Suggestions for sim use:

- For tips on using PhET sims with your students see: [Guidelines for Inquiry Contributions](#) and [Using PhET Sims](#)
- For activities and lesson plans written by the PhET team and other teachers, see our [For Teachers](#) page.
- The simulations have been used successfully with homework, lectures, in-class activities, or lab activities. Use them for introduction to concepts, learning new concepts, reinforcement of concepts, as visual aids for interactive demonstrations, or with in-class clicker questions.
- If you are doing a lecture demonstration, set your screen resolution to 1024x768 so the simulation will fill the screen and be seen easily.