

1. A chemical reaction calls for 0.250 moles of table salt (sodium chloride). How many grams of table salt are needed? (*Answer = 14.6 g*)
2. A chemical reaction calls for 0.750 moles of potassium chloride. How many grams of potassium chloride are needed?
3. How many moles of ammonium nitrate are in 29.63 grams? (*Answer = 0.3700 mol*)
4. How many moles of lithium sulfate are in 35.45 grams?
5. The density of water is 1 g/mL. Therefore, 1 mL = 1g; 500 mL = 500 g. During discussions about the particle theory of matter, you probably have heard science teachers talking about particles (atoms, molecules, ions, formula units) by making statements like, "Particles of matter are so small that there are billions of them in a cup of water, a piece of chalk, etc."
  - a. Is this an exaggeration?
  - b. How many particles (molecules) of water are in 500.0 mL? (*Answer  $1.67 \times 10^{25}$  molecules*)
6. How many molecules of water are in 1L? 2L? Is there a pattern or connection that can be made relating number of particles to amount of water present?
7. How many particles (formula units) of silver nitrate are there if a sample is measured to have a mass of 5.39 g? (*Answer =  $1.91 \times 10^{22}$  formula units*)
8. Sometimes, additional conversion factors are needed for units. A recipe in a bakery calls for  $2.85 \times 10^{25}$  particles of baking soda (sodium hydrogen carbonate). How many kilograms of baking soda would this be? (*Answer = 3.98 kg*)
9. A tablet of Tylenol contains 251 mg of its active ingredient acetaminophen,  $C_8H_9NO_2$ . How many molecules of acetaminophen are there?