

1. You have a 26.98 g piece of aluminum.
 - a) How many moles are in 26.98 g of Al?

 - b) How many atoms are in 26.98 g of Al?

 - c) How many moles are in 5.00 g of Al?

 - d) How many atoms are in 5.00 g of Al?

2. You have a 20.00 g sample of chlorine gas.
 - a) How many moles of Cl_2 are in the 20.00 g sample?

 - b) How many molecules are in 20.00 g of Cl_2 ?

 - c) How many Cl atoms are in 20.00 g of Cl_2 ?

 - d) How many moles of Cl_2 are in a 5.00 g sample?

 - e) How many molecules of Cl_2 are in 5.00 g?

3. You have a 10.00 g dry sample of AlCl_3 .
- What is the molecular mass of AlCl_3 ?
 - How many moles of AlCl_3 are in the sample?
 - How many moles of Al^{3+} are in the sample?
 - How many moles of Cl^- are in the sample?
 - How many grams of Al^{3+} are in the sample?
 - How many grams of Cl^- are in the sample?
4. You dissolve 25.00 g of AlCl_3 in 1.0 kg of de-ionized H_2O .
- What is the mass percent of Al^{3+} and Cl^- in AlCl_3 ?
 - What is the mass percent of AlCl_3 in the whole aqueous solution (including the water)?
 - How many grams of Al^{3+} and Cl^- , respectively, are dissolved in solution?
 - What is the mass percent of the Al^{3+} and Cl^- ions in the whole aqueous solution (including the water)?

5. You have a flask containing 150. g of H_2O .
- How many moles of H_2O are in the flask?

 - How many molecules of H_2O are in 150. g?

 - What is the mass percent of H and O, respectively, in H_2O ?

 - How many grams of oxygen are in this water sample?