

Video worksheet – The mole

1. How many moles of CO_2 molecules are present in 4.4 grams of pure CO_2 ?
2. Consider a 19.5 gram sample of copper hydroxide.
 - a. How many moles of $\text{Cu}(\text{OH})_2$ particles are present in 19.5 grams of pure $\text{Cu}(\text{OH})_2$?
 - b. How many mole of atoms are present in this mass of $\text{Cu}(\text{OH})_2$?
3. What is the formula mass of a substance given that 0.33 mol of this substance has a mass of 64.0 grams?
4. What is the formula mass of a substance given that 93.0 grams of the pure substance contains 3.01×10^{23} molecules of the substance?

5. Calculate the number of molecules in 3 moles of a substance CO_2 .
6. Find the mass of 0.5 moles of sodium chloride (NaCl). (58.44 g/mol)
7. How many moles are there in 88 grams of carbon dioxide (CO_2)
8. Calculate the number of molecules in 16 grams of oxygen gas (O_2 , 32 g/mol)
9. Identify an unknown carbonate if 21.2 grams of the pure carbonate contains 0.200 mol of the substance.
*Hint – find the formula mass of the carbonate first.
10. How many atoms are in 0.25 moles of water (H_2O , 18 g/mol)?
11. A sample contains 3.61 grams of a compound which represents 0.1 mols.
Calculate the molar mass of the compound.

12. You have 0.2 moles of an unknown gas weighing 4.4 grams. Calculate its molar mass and identify the gas if the possible options are hydrogen (H_2), nitrogen (N_2), or oxygen (O_2).
13. A 5.00 gram sample of a compound contains 0.0833 mols. What is the molar mass, and could the compound be sulfur (S_8) with molar mass of 256 g/mol?
14. Consider a 0.75 mol sample of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$).
- Calculate the number of molecules of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) present.
 - Calculate the total mole of atoms present in the glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) sample.