

Show your work - not just the answer!

Provide your answers in a separate sheet of paper.

1. A fictional element is made up of two isotopes with masses 160. AMU (85.% abundance) and 162 AMU (15.% abundance). What is the average atomic weight?
2. Bromine has two isotopes of 78.918 AMU (50.69%) and 80.916 AMU (49.31%). What is the average atomic mass of Br?
3. The atomic weight of hydrogen is 1.008. What is the mass of one hydrogen atom in grams?
4. An atom contains two protons, two neutrons and two electrons. If the mass of a proton is 1.0073 AMU, the mass of a neutron is 1.0087 AMU and the mass of an electron is 0.00055 AMU, what is the mass of one of these atoms in grams?
5. How many Au atoms are there in 1.00 kg (5.08 mol) of gold?
6. How many tin atoms are there in 0.0178 moles of tin?
7. How many carbon dioxide molecules are there in 1.00 moles of carbon dioxide?
8. The atomic weight of silver is 107.9. How many silver atoms are there in 2.00 g of silver?
9. What is the molar mass of oxygen, O₂?
10. What is the molar mass of natural gas (methane), CH₄?
11. What is the molar mass of propane, C₃H₈?
12. A 10.00 g sample of iron oxide contains 7.78 g of iron. What is the mass percent iron in the sample?
13. What mass of N₂O₄ contains 1.00 g of N?
14. In the reaction $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$, how many moles of water is/are produced from each mole of oxygen?
15. In the reaction $2\text{P} + 5\text{Cl}_2 \rightarrow 2\text{PCl}_5$, how many moles of P will react exactly with 0.277 moles of chlorine?