

Molar Mass and Mass–Mole Conversion

Student Worksheet | g09_u07_w26

I can: calculate molar mass and convert mass/moles with dimensional analysis and significant figures.
Frozen values: Classroom calculation values from `audits/atomic_masses_v2024.1.json`, derived from CIAAW/IUPAC Standard Atomic Weights 2024 (accessed 2026-07-26). H 1.008, C 12.011, N 14.007, O 15.999, Na 22.990, Mg 24.305, S 32.06, Cl 35.45, Ca 40.078, Cu 63.546. Show atom ledger or factor-label setup; round only at the end.

1. Calculate the molar mass of H_2O .

2. Calculate the molar mass of CO_2 .

3. Calculate the molar mass of NaCl .

4. Calculate the molar mass of MgO .

5. Calculate the molar mass of CaCl_2 .

6. Calculate the molar mass of NH_3 .

7. Calculate the molar mass of H_2SO_4 .

8. Calculate the molar mass of $\text{Ca}(\text{NO}_3)_2$.

9. Calculate the molar mass of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

10. Convert 18.015 g H_2O to mol H_2O .

11. Convert 36.03 g H_2O to mol H_2O .

12. Convert 0.500 mol CO_2 to g CO_2 .

13. Convert 2.00 mol NaCl to g NaCl.

14. Convert 10.0 g MgO to mol MgO.

15. Convert 0.250 mol CaCl_2 to g CaCl_2 .

16. Convert 5.00 g CO_2 to mol CO_2 .

17. Convert 49.04 g H_2SO_4 to mol H_2SO_4 .

18. Convert 0.125 mol NH_3 to g NH_3 .

19. Convert 3.00×10^{22} formula units $\text{Ca}(\text{NO}_3)_2$ to g $\text{Ca}(\text{NO}_3)_2$ using $6.02214076 \times 10^{23}$ formula units/mol.

20. Convert 12.5 g $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ to mol hydrate.
