

Molar Calculations, Part II

- Choose the false statement.
[A] $1 \text{ mol} = 6.02 \times 10^{23} \text{ amu}$ [B] 1 mol of carbon atoms weighs 12.0 g
[C] Fluorine is a diatomic gas [D] $6.02 \times 10^{23} \text{ atoms} = 1 \text{ mol of atoms}$
[E] $6.02 \times 10^{23} \text{ hydrogen atoms weigh } 1.008 \text{ g}$
- One mole of oxygen atoms represents
[A] 32.0 g [B] $6.02 \times 10^{23} \text{ atoms}$ [C] 16 atoms [D] 1.00 g [E] none of these
- Which represents the greatest number of atoms?
[A] 50.0 g Cu [B] 50.0 g Al [C] 50.0 g Zn [D] 50.0 g Fe [E] all the same
- Which represents the greatest mass?
[A] 1.0 mol Fe [B] 1.0 mol Zn [C] 1.0 mol Cu
[D] 1.0 mol Al [E] all the same
- How many atoms of calcium are present in 80.0 g of calcium?
[A] 3.32×10^{-24} [B] 2 [C] 6.02×10^{23} [D] 1.20×10^{24} [E] none of these
- Calculate the molar mass of a sample if a single molecule weighs $5.34 \times 10^{-23} \text{ g}$.
[A] 32.2 g/mol [B] $5.34 \times 10^{-23} \text{ g/mol}$ [C] 12.0 g/mol
[D] $1.13 \times 10^{46} \text{ g/mol}$ [E] none of these
- A chemical mole
[A] is a large molecule [B] contains 6.02×10^{23} particles
[C] is no longer useful to chemistry [D] was a kind of material
[E] contains an undetermined number of ions
- What is the mass of one atom of copper in grams?
[A] $1.06 \times 10^{-22} \text{ g}$ [B] 58.9 g [C] 63.5 g [D] 52.0 g [E] 65.4 g
- Calculate the mass of 20.0 moles of He.
[A] 1.00 [B] 6.02×10^{23} [C] 1.20×10^{25} [D] 5.00 [E] 80.1

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10. How many atoms are there in 58.7 g of nickel?
[A] 28 [B] 1 [C] 6.02×10^{23} [D] 1.204×10^{23} [E] none of these
11. One mole of water weighs
[A] 18 mL [B] 3 g [C] 1 g [D] 10 g [E] 18 g
12. A 20.0-g sample of Ca contains how many calcium atoms?
[A] 6.02×10^{23} atoms [B] 40.1 atoms [C] 0.500 atoms
[D] 20.0 atoms [E] 3.0×10^{23} atoms
13. 0.314 mol of a diatomic molecule has a mass of 22.26 g. Identify the molecule.
[A] I₂ [B] F₂ [C] Br₂ [D] Cl₂ [E] none of these
14. 18.7 kg of Zn represents how many grams?
15. 18.7 kg of Zn represents how many milligrams?
16. 18.7 kg of Zn represents how many moles?
17. What is the molar mass of nitroglycerin, C₃H₅(NO₃)₃?
[A] 199 g/mol [B] 165 g/mol [C] 309 g/mol
[D] 227 g/mol [E] none of these
18. How many molecules of O₂ are there in 4.0 mol of O₂?
[A] 2.4×10^{24} [B] 64 [C] 128 [D] 6.6×10^{-24} [E] 1.9×10^{25}
19. Calculate the mass of 9.13×10^{19} molecules of HCl.
20. 6.00 g of water contains how many molecules of water?
[A] 3.00 [B] 0.333 [C] 4.20×10^{23} [D] 3.61×10^{24} [E] 2.10×10^{23}