

THE MOLE & THE AVOGADRO CONSTANT



Name Form

1) How many moles are there in each of the following?

- a) 72 g of Mg
- b) 4 kg of CuO
- c) 39 g of Al(OH)₃
- d) 1 tonne of NaCl
- e) 20 mg of Cu(NO₃)₂

2) What is the mass of each of the following?

- a) 5 moles of Cl₂
- b) 0.2 moles of Al₂O₃
- c) 0.01 moles of Ag
- d) 0.002 moles of (NH₄)₂SO₄
- e) 0.3 moles of Na₂CO₃·10H₂O

3) Complete the table to show how many moles of the following are in 11 g of carbon dioxide.

Moles of	CO ₂ molecules	C atoms	O atoms

4) Complete the table to show how many moles of the following are in 5.1 g of aluminium oxide.

Moles of	Al ₂ O ₃	Al ³⁺ ions	O ²⁻ ions

5) An experiment was carried out to find the M_r of vitamin C (ascorbic acid). It was found that 1 g contains 0.00568 moles of Vitamin C molecules. Calculate the M_r of vitamin C.

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6) Use the following data to calculate the mass of the particles shown.

$$\text{Mass of proton} = 1.6726 \times 10^{-24} \text{ g}$$

$$\text{Mass of electron} = 9.1094 \times 10^{-28} \text{ g}$$

$$\text{Mass of neutron} = 1.6749 \times 10^{-24} \text{ g}$$

$$\text{Avogadro constant} = 6.0221 \times 10^{23}$$

- a) Calculate the mass of a ¹H atom.
- b) Calculate the mass of an ¹H⁺ ion.
- c) Calculate the mass of a ³H atom.