

MOLE CALCULATIONS

Answer all the questions below.

1. Calculate the number of moles in:

- 80g of calcium
- 24g of carbon
- 208g of chromium
- 28g of iron
- 11.9g of tin
- 1.33g of caesium

2. Calculate the mass of the following:

- 3 moles of calcium
- 20 moles of carbon
- 2.5 moles of aluminium
- 0.5 moles of iron
- 0.25 moles of lead
- 5 moles of sodium.
- 3 moles of oxygen gas (O_2)
- 2 moles of nitrogen gas (N_2)
- 2.5 moles of sulfuric acid (H_2SO_4)

Use the 3 formulae below to answer all the questions. Don't forget to check your answers when you're done.

$$n = m \div M_r$$

OR

$$n = m \div A_r$$

$$m = n \times M_r$$

$$M_r = m \div n$$

Where:

n = number of moles

m = mass

M_r = relative formula mass

3. Calculate the number of moles in:

- a. 64g of oxygen gas (O_2)
- b. 56g of nitrogen gas (N_2)
- c. 49g of sulfuric acid (H_2SO_4)
- d. 350g of calcium carbonate ($CaCO_3$)
- e. 6.35g of iodine (I_2)

Trickier moles calculations.....

4. Calculate the number of moles in 100g of:

- a. carbon dioxide (CO_2)
- b. water (H_2O)
- c. sodium hydroxide ($NaOH$)
- d. glucose ($C_6H_{12}O_6$)

5. Calculate the mass of:

- a. 3 moles water.
- b. 5 moles of carbon dioxide
- c. 12.5 moles of glucose ($C_6H_{12}O_6$)
- d. 2 moles of methane (CH_4)

6. Calculate the number of moles in:

- a. 1.5 tonnes of iron oxide (Fe_2O_3) (1 tonne = 100kg)
- b. 450kg of glucose.

Answers

1. Calculate the number of moles in: use the formula $n = m \div A_r$ to answer these questions

- a. 80g of calcium 2 moles
- b. 24g of carbon 2 moles
- c. 208g of chromium 4 moles
- d. 28g of iron 0.5 moles
- e. 11.9g of tin 0.1 moles
- f. 1.33g of caesium 0.01 moles

2. Calculate the mass of the following: use the formula $m = n \times A_r$ or $m = n \times A_r$ to answer these questions

- a. 3 moles of calcium 120g
- b. 20 moles of carbon 240g
- c. 2.5 moles of aluminium 67.5g
- d. 0.5 moles of iron 56g
- e. 0.25 moles of lead 51.75g
- f. 5 moles of sodium. 115g
- g. 3 moles of oxygen gas (O_2) 96g
- h. 2 moles of nitrogen gas (N_2) 56g
- i. 2.5 moles of sulfuric acid (H_2SO_4) 245g

3. Calculate the number of moles in: use the formula $n = m \div M_r$ or $n = m \div A_r$ to answer these questions

- a. 64g of oxygen gas (O_2) 2 mole
- b. 56g of nitrogen gas (N_2) 2 moles
- c. 49g of sulfuric acid (H_2SO_4) 0.5 moles
- d. 350g of calcium carbonate ($CaCO_3$) 3.5 moles
- e. 6.35g of iodine (I_2) 0.025 moles

Trickier moles calculations.....

4. Calculate the number of moles in 100g of: use the formula $n = m \div M_r$ to answer these questions

- a. carbon dioxide (CO_2) 2.27 moles
- b. water (H_2O) 5.5 moles
- c. sodium hydroxide ($NaOH$) 2.5 moles
- d. glucose ($C_6H_{12}O_6$) 0.55 moles

5. Calculate the mass of: use the formula $m = n \times M_r$ to answer these questions

- a. 3 moles water. 54g
- b. 5 moles of carbon dioxide 220g
- c. 12.5 moles of glucose ($C_6H_{12}O_6$) 2250g
- d. 2 moles of methane (CH_4) 32g

6. Calculate the number of moles in: use the formula $n = m \div M_r$ to answer these questions

- a. 1.5 tonnes of iron oxide (1 tonne = 100kg) 9375 moles
- b. 450kg of glucose. 2500 moles