

Unit 2 • Moles, Molecules, & Molar Masses

Mole Calculations - Difficulty Level 1

$$1 \text{ mole} = 6.02 \times 10^{23} \text{ molecules} = 22.4 \text{ L (@ STP)}$$

1. Calculate the mass of 1.58 moles CH_4 . [molar mass $\text{CH}_4 = 16.00 \text{ g/mol}$]
 G: 1.58 moles CH_4
 D: ? g CH_4

$$1.58 \text{ moles } \text{CH}_4 \times \text{_____} =$$

2. What volume will 7.29 moles of CO_2 gas occupy at STP?
 G: 7.29 moles CO_2
 D: ? L CO_2

$$7.29 \text{ moles } \text{CO}_2 \times \text{_____} =$$

3. How many molecules are there in a 0.00583 mole sample of H_2O ?
 G: 0.00583 moles H_2O
 D: ? molecules H_2O

$$0.00583 \text{ moles } \text{H}_2\text{O} \times \text{_____} =$$

4. What mass of CO_2 gas occupies a volume of 100. Liters at STP? [molar mass $\text{CO}_2 = 44.01 \text{ g/mol}$]
 G: 100. Liters CO_2
 D: ? g CO_2

$$100. \text{ Liters } \text{CO}_2 \times \text{_____} \times \text{_____} =$$

5. How many molecules are in a 35.0 gram sample of H_2O ? [molar mass $\text{H}_2\text{O} = 18.02 \text{ g/mol}$]
 G: 35.0 g H_2O
 D: ? molecules H_2O

$$35.0 \text{ g } \text{H}_2\text{O} \times \text{_____} \times \text{_____} =$$

6. What volume will 5.25×10^{22} molecules of CH_4 occupy at STP?
 G: 5.25×10^{22} molecules CH_4
 D: ? L

$$5.25 \times 10^{22} \text{ molecules } \text{CH}_4 \times \text{_____} \times \text{_____} =$$

Unit 2 • Moles, Molecules, & Molar Masses

Mole Calculations - Difficulty Level 2

$$1 \text{ mole} = 6.02 \times 10^{23} \text{ molecules} = 22.4 \text{ L (@ STP)}$$

1. Calculate the mass of 2.19 moles CH_4 . [molar mass $\text{CH}_4 = 16.0 \text{ g/mol}$]

G:

D:

$$\times \text{—————} =$$

2. What volume will 2.22 moles of CO_2 gas occupy at STP?

G:

D:

$$\times \text{—————} =$$

3. How many molecules are there in a 0.127 mole sample of H_2O ?

G:

D:

$$\times \text{—————} =$$

4. What mass of CO_2 gas occupies a volume of 395 Liters at STP? [molar mass $\text{CO}_2 = 44.0 \text{ g/mol}$]

G:

D:

$$\times \text{—————} \times \text{—————} =$$

5. How many molecules are in a 0.250 gram sample of H_2O ? [molar mass $\text{H}_2\text{O} = 18.0 \text{ g/mol}$]

G:

D:

$$\times \text{—————} \times \text{—————} =$$

6. What volume will 3.01×10^{22} molecules of CH_4 occupy at STP?

G:

D:

$$\times \text{—————} \times \text{—————} =$$

Unit 2 • Moles, Molecules, & Molar Masses

Mole Calculations - Difficulty Level 3

1 mole = 6.02×10^{23} molecules = 22.4 L (@ STP)

- Calculate the mass of 7.23 moles CH_4 . [molar mass $\text{CH}_4 = 16.0 \text{ g/mol}$]
G:
D:
- What volume will 9.35 moles of CO_2 gas occupy at STP?
G:
D:
- How many molecules are there in a 0.0752 mole sample of H_2O ?
G:
D:
- What mass of CO_2 gas occupies a volume of 10.8 Liters at STP? [molar mass $\text{CO}_2 = 44.0 \text{ g/mol}$]
G:
D:
- How many molecules are in a 1.44 gram sample of H_2O ? [molar mass $\text{H}_2\text{O} = 18.0 \text{ g/mol}$]
G:
D:
- What volume will 1.21×10^{24} molecules of CH_4 occupy at STP?
G:
D: