

## <sup>1</sup>Mole Conversions Worksheet

### Section 1: Mass to Moles (5 Questions)

1. What is the number of moles in 25.0 g of sodium hydroxide (NaOH)?
2. How many moles are present in 100.0 g of calcium carbonate (CaCO<sub>3</sub>)?
3. Calculate the number of moles in 12.5 g of sulfuric acid (H<sub>2</sub>SO<sub>4</sub>).
4. Determine the number of moles in 40.0 g of potassium chloride (KCl).
5. Find the number of moles in 7.5 g of glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).

### Section 2: Moles to Mass (5 Questions)

6. What is the mass of 0.250 moles of magnesium oxide (MgO)?
7. Calculate the mass of 1.50 moles of ammonia (NH<sub>3</sub>).
8. What is the mass of 0.750 moles of nitric acid (HNO<sub>3</sub>)?
9. Determine the mass of 0.100 moles of copper(II) sulfate (CuSO<sub>4</sub>).
10. Find the mass of 2.00 moles of ethanol (C<sub>2</sub>H<sub>5</sub>OH).

### Section 3: Number of Particles to Moles (5 Questions)

11. How many moles are present in  $6.022 \times 10^{24}$  atoms of gold (Au)?
12. Calculate the number of moles in  $3.011 \times 10^{22}$  molecules of water (H<sub>2</sub>O).
13. How many moles are in  $1.204 \times 10^{25}$  ions of sodium (Na<sup>+</sup>)?
14. Determine the number of moles in  $9.033 \times 10^{23}$  molecules of carbon dioxide (CO<sub>2</sub>).
15. Find the number of moles in  $1.806 \times 10^{24}$  atoms of iron (Fe).

### Section 4: Moles to Number of Particles (5 Questions)

16. How many molecules are there in 0.500 moles of oxygen gas (O<sub>2</sub>)?

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<sup>1</sup> [Revision](#), [worksheets](#), [quizzes](#), [calculators](#)

17. Calculate the number of atoms in 1.25 moles of aluminum (Al).
18. How many ions are present in 0.750 moles of chloride ions (Cl<sup>-</sup>)?
19. Determine the number of molecules in 0.200 moles of methane (CH<sub>4</sub>).
20. Find the number of atoms in 2.50 moles of hydrogen gas (H<sub>2</sub>).

#### Section 5: Gas Volume to Moles (at STP) (5 Questions)

21. How many moles are present in 22.4 dm<sup>3</sup> of nitrogen gas (N<sub>2</sub>) at STP?
22. Calculate the number of moles in 11.2 dm<sup>3</sup> of hydrogen chloride gas (HCl) at STP.
23. How many moles are in 5.6 dm<sup>3</sup> of ammonia gas (NH<sub>3</sub>) at STP?
24. Determine the number of moles in 33.6 dm<sup>3</sup> of carbon monoxide gas (CO) at STP.
25. Find the number of moles in 16.8 dm<sup>3</sup> of sulfur dioxide gas (SO<sub>2</sub>) at STP.

#### Section 6: Moles to Gas Volume (at STP) (5 Questions)

26. What is the volume of 0.750 moles of argon gas (Ar) at STP?
27. Calculate the volume of 1.20 moles of helium gas (He) at STP.
28. What is the volume of 0.250 moles of oxygen gas (O<sub>2</sub>) at STP?
29. Determine the volume of 1.50 moles of carbon dioxide gas (CO<sub>2</sub>) at STP.
30. Find the volume of 0.90 moles of nitrogen gas (N<sub>2</sub>) at STP.

## Answer Key

#### Section 1:

1. 0.625 mol
2. 1.00 mol
3. 0.127 mol
4. 0.537 mol

5. 0.0416 mol

Section 2:

6. 10.1 g

7. 25.5 g

8. 47.3 g

9. 16.0 g

10. 92.1 g

Section 3:

11. 1.00 mol

12. 0.0500 mol

13. 2.00 mol

14. 1.50 mol

15. 3.00 mol

Section 4:

16.  $3.011 \times 10^{23}$  molecules

17.  $7.528 \times 10^{23}$  atoms

18.  $4.517 \times 10^{23}$  ions

19.  $1.204 \times 10^{23}$  molecules

20.  $3.011 \times 10^{24}$  atoms

Section 5:

21. 1.00 mol

22. 0.500 mol

23. 0.25 mol

24. 1.50 mol

25. 0.75 mol

Section 6:

26. 16.8 dm<sup>3</sup>

27. 26.9 dm<sup>3</sup>

28. 6.0 dm<sup>3</sup>

29. 33.6 dm<sup>3</sup>

30. 20.2 dm<sup>3</sup>