Mole Problems Worksheet

Answer the following questions.

1) How many grams are in 4.5 moles of Li_2O?

2) How many moles are in 3.4×10^{23} molecules of H_2SO_4?

3) How many molecules are in 25.0 grams of NH_3?

4) How many molecules are in 23.0 moles of oxygen?

5) How many grams is 1.25 moles of potassium bromide?

6) How many atoms are present in 3.50 grams of gold?

7) How many moles are in 5.55×10^{33} molecules of H_2SO_4?

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Answers

1) How many grams are in 4.5 moles of Li_2O?

134.55 grams

1 mole of Li_2O = 29.9 grams

4.5 moles of Li_2O = 29.9 x 4.5 grams = 134.55 grams

2) How many moles are in 3.4×10^{23} molecules of H_2SO_4?

0.56 moles

1 mole = 6.023×10^{23} (Avogadro's Number)

Number of moles in 3.4×10^{23} molecules of H_2SO_4 = 0.56 moles

3) How many molecules are in 25.0 grams of NH_3?

8.85×10^{23} molecules

1 mole = 6.023×10^{23} (Avogadro's Number)

1 mole of NH_3 = 17 grams of NH_3

Number of molecules present in 25 grams of NH_3 = $6.023 \times 10^{23} \times (25/17) = 8.85 \times 10^{23}$

4) How many molecules are in 23.0 moles of oxygen?

1.38×10^{25} molecules

1 mole = 6.023×10^{23} (Avogadro's Number)

Number of molecules present in 23 moles of O_2 = $6.023 \times 10^{23} \times 23 = 1.38 \times 10^{25}$

5) How many grams is 1.25 moles of potassium bromide?

149 grams

The weight of 1.25 moles of KBr = 1.25 x 119 grams = 148.75 grams ~ 149 grams

6) How many atoms are present in 3.50 grams of gold?

1.07×10^{22} atoms

The number of atoms present in 3.5 g of Au = $6.023 \times 10^{23} \times (3.5/196.97) = 1.07 \times 10^{22}$

7) How many moles are in 5.55×10^{33} molecules of H_2SO_4?

9.2×10^{9}

Number of moles in 5.55×10^{33} molecules of H_2SO_4 = $5.55 \times 10^{33} / 6.023 \times 10^{23}$ =

$0.92 \times 10^{10} = 9.2 \times 10^{9}$