Mole Calculation Worksheet

1)   How many moles are in 40.0 grams of water?

2)   How many grams are in 3.7 moles of Na_2O?

3)   How many atoms are in 14 moles of cadmium?

4)   How many moles are in 4.3×10^{22} molecules of H_3PO_4?

5)   How many molecules are in 48.0 grams of NaOH?

6)   How many grams are in 4.63×10^{24} molecules of CCl_4?

Solutions

1) How many moles are in 40.0 grams of water?

40.0 g H_2O x $\dfrac{1 \text{ mole } H_2O}{18.01 \text{ g } H_2O}$ = 2.22 mole H_2O

2) How many grams are in 3.7 moles of Na_2O?

3.7 moles Na_2O x $\dfrac{62 \text{ g } Na_2O}{1 \text{ mole } Na_2O}$ = 230 g Na_2O

3) How many atoms are in 14 moles of cadmium?

14 mole Cd x $\dfrac{6.022 \times 10^{23} \text{ atoms Cd}}{1 \text{ mole Cd}}$ = 8.4 x 10^{23} atoms Cd

4) How many moles are in 4.3 x 10^{22} molecules of H_3PO_4?

4.3 x 10^{22} molecules H_3PO_4 x $\dfrac{1 \text{ mole } H_3PO_4}{6.022 \times 10^{23} \text{ molecules } H_3PO_4}$ = 7.1 x 10^{-2} moles H_3PO_4

5) How many molecules are in 48.0 grams of NaOH?

48.0 molecules NaOH x $\dfrac{1 \text{ mole NaOH}}{40 \text{ g NaOH}}$ x $\dfrac{6.022 \times 10^{23} \text{ molecules NaOH}}{1 \text{ mole NaOH}}$

= 7.23 x 10^{23} molecules NaOH

6) How many grams are in 4.63 x 10^{24} molecules of CCl_4?

4.63 x 10^{24} molecules CCl_4 x $\dfrac{1 \text{ mole } CCl_4}{6.022 \times 10^{23} \text{ molecules } CCl_4}$ x $\dfrac{153.8 \text{ g } CCl_4}{1 \text{ mole } CCl_4}$ = 1180 g CCl_4