

Solutions to Worksheet 1

1. Each hydrogen molecule contains 2 atoms, thus 1 mole of molecules contains 2 moles of atoms.
2. Each H₂O molecule contains 3 atoms, thus 0.5 mole of H₂O molecules contains 1.5 moles of atoms. There are $1.5N_A$ molecules.
$$1.5 \times 6.02 \times 10^{23} = 9.06 \times 10^{23}$$
3. $M_{Mn} = 54.94 \text{ g/mol}$, $M_O = 16.00 \text{ g/mol}$.
$$M_{MnO_2} = M_{Mn} + 2 M_O = 54.94 + 2 \times 16.00 = 86.94 \text{ g/mol}$$
4. $SnO_2 + 2 H_2 \rightarrow Sn + 2 H_2O$