CHECK YOUR LEARNING

Suggested Answers

1. Answers will vary; however, students should identify that it would be useful to list all the elements below the equation and keep track of how many of each element exists.
2. A skeleton equation is a chemical equation that does not show the relative amounts of reactants and products. A balanced chemical equation uses coefficients to show the relative amounts of reactants and products in order to show that there is the same number of atoms of element products as there are in the reactants.
3. **(a)** $2\ HI \rightarrow H_2 + I_2$
   (b) There are two molecules of both hydrogen and iodine as products in this equation. To balance the equation so this was possible, a coefficient of 2 had to be added to the reactant.
4. **(a)** A subscript is the number of atoms in a molecule. For example, some molecules are diatomic, like oxygen. They will have a formula which represents this (O_2). A coefficient is a number placed in front of the formulas in an equation to help balance the equation. A coefficient shows how many of the entire substance exist.
   (b) You can only change the coefficient as you balance an equation. The subscripts are essentially part of the molecule and cannot be changed. An example is H_2O, which is water, and which can only be written as H_2O.
5. **(a)** $2KI \rightarrow 2K + I_2$
   (b) $Mg + 2AgNO_3 \rightarrow 2Ag + Mg(NO_3)_2$
   (c) $Na + 2H_2O \rightarrow H_2 + 2\ NaOH$
   (d) $Pb(NO_3)_2 + 2NaCl \rightarrow PbCl_2 + 2NaNO_3$
6. **(a)** $2C_8H_{18} + 25\ O_2 \rightarrow 16CO_2 + 18H_2O$
   (b) There are 8 molecules of carbon dioxide formed.
7. **(a)** balanced as written
   (b) $2K + Br_2 \rightarrow 2KBr$
   (c) $2H_2O_2 \rightarrow 2H_2O + O_2$
   (d) $4Na + O_2 \rightarrow 2Na_2O$
   (e) $N_2 + 3H_2 \rightarrow 2NH_3$
   (f) balanced as written
   (g) $CaSO_4 + 2KOH \rightarrow Ca(OH)_2 + K_2SO_4$
   (h) $Ba + 2HNO_3 \rightarrow H_2 + Ba(NO_3)_2$
   (i) $H_3PO_4 + 3NaOH \rightarrow 3H_2O + Na_3PO_4$
   (j) $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$
   (k) $Al_4C_3 + 12H_2O \rightarrow 3CH_4 + 4Al(OH)_3$
   (l) $FeBr_3 + 3Na \rightarrow Fe + 3NaBr$
   (m) $2Fe + 3H_2SO_4 \rightarrow 3H_2 + Fe_2(SO_4)_3$
   (n) $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$
8. **(a)** $(NH_4)_2Cr_2O_7 \rightarrow N_2 + 4H_2O + 2CrO_3$
   Ammonium Dichromate → Nitrogen gas + Water + Chromium Oxide
   (b) The final mass of the solid product is 1.5 grams.