Chemical Reactions *answers follow at end*

Balancing Chemical Equations

1. What is the coefficient of oxygen gas after balancing the following equation?

$$\_\_P(s) + O_2(g) \rightarrow \_P_2O_3(s)$$

(a) 1
(b) 2
(c) 3
(d) 5
(e) none of the above

2. What is the coefficient of oxygen gas after balancing the following equation?

$$\_\_P(s) + \_\_O_2(g) \rightarrow \_\_P_2O_5(s)$$

(a) 1
(b) 2
(c) 4
(d) 5
(e) none of the above

3. What is the coefficient of phosphorus after balancing the following equation?

$$\_\_P(s) + O_2(g) \rightarrow \_P_2O_5(s)$$

(a) 1
(b) 2
(c) 4
(d) 5
(e) none of the above

4. What is the coefficient of nitrogen gas after balancing the following equation?

$$\_\_N_2(g) + \_\_H_2(g) \rightarrow \_\_NH_3(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

5. What is the coefficient of hydrogen gas after balancing the following equation?

$$\_\_N_2(g) + \_\_H_2(g) \rightarrow \_\_NH_3(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

6. What is the coefficient of ammonia gas after balancing the following equation?

$$\_\_N_2(g) + \_\_H_2(g) \rightarrow \_\_NH_3(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

7. What is the coefficient of chlorine gas after balancing the following equation?

$$\_\_Fe(s) + \_\_Cl_2(g) \rightarrow \_\_FeCl_3(s)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

8. What is the coefficient of carbon dioxide after balancing the following equation?

$$\_\_KHCO_3(s) \xrightarrow{\Delta} \_\_K_2CO_3(s) + \_\_H_2O(g) + \_\_CO_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

9. What is the coefficient of carbon dioxide after balancing the following equation?

$$\_\_Cr_2(CO_3)_3(s) \xrightarrow{\Delta} \_\_Cr_2O_3(s) + \_\_CO_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

10. What is the coefficient of oxygen gas after balancing the following equation?

$$\_\_AgClO_3(s) \xrightarrow{\Delta} \_AgCl(s) + O_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

11. What is the coefficient of oxygen gas after balancing the following equation?

$$\_\_LiNO_3(s) \xrightarrow{\Delta} \_\_LiNO_2(s) + \_\_O_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

12. What is the coefficient of oxygen gas after balancing the following equation?

$$\_\_HgO(s) \xrightarrow{\Delta} \_\_Hg(s) + \_\_O_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

13. What is the coefficient of oxygen gas after balancing the following equation?

$$\_\_H_2O_2(l) \xrightarrow{\Delta} \_H_2O(l) + O_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

14. What is the coefficient of silver metal after balancing the following equation?

$$\_\_Cu(s) + AgNO_3(aq) \rightarrow Cu(NO_3)_2(aq) + Ag(s)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

15. What is the coefficient of Cd metal after balancing the following equation?

$$\_\_Al(s) + \_\_Cd(C_2H_3O_2)_2(aq) \rightarrow \_\_Al(C_2H_3O_2)_3(aq) + \_\_Cd(s)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

16. What is the coefficient of nickel metal after balancing the following equation?

$$\_\_Fe(s) + \_\_Ni(NO_3)_2(aq) \rightarrow \_\_Fe(NO_3)_3(aq) + \_\_Ni(s)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

17. What is the coefficient of hydrogen gas after balancing the following equation?

$$\_\_Pb(s) + \_\_HNO_3(aq) \rightarrow \_\_Pb(NO_3)_4(aq) + \_\_H_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

18. What is the coefficient of hydrogen gas after balancing the following equation?

$$\_\_Co(s) + \_\_HCl(aq) \rightarrow \_\_CoCl_3(aq) + \_\_H_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

19. What is the coefficient of hydrogen gas after balancing the following equation?

$$\_\_Mn(s) + \_\_H_2SO_4(aq) \rightarrow \_\_MnSO_4(aq) + \_\_H_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

20. What is the coefficient of sodium metal after balancing the following equation?

$$\_\_Na(s) + \_\_H_2O(l) \rightarrow \_\_NaOH(aq) + \_\_H_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

21. What is the coefficient of water after balancing the following equation?

$$\_\_Li(s) + \_\_H_2O(l) \rightarrow \_\_LiOH(aq) + \_\_H_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

22. What is the coefficient of hydrogen gas after balancing the following equation?

$$\_\_Ca(s) + \_\_H_2O(l) \rightarrow \_\_Ca(OH)_2(aq) + \_\_H_2(g)$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) none of the above

23. What is the coefficient of AgCl after balancing the following equation?

$$\_\_AlCl_3(aq) + \_\_AgNO_3(aq) \rightarrow \_\_Al(NO_3)_3(aq) + \_\_AgCl(s)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

24. What is the coefficient of NaCl after balancing the following equation?

$$\_\_CrCl_3(aq) + \_\_Na_2CO_3(aq) \rightarrow \_\_Cr_2(CO_3)_3(s) + \_\_NaCl(aq)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

25. What is the coefficient of KNO_3 after balancing the following equation?

$$\_\_Au(NO_3)_3(aq) + K_2CrO_4(aq) \rightarrow \_Au_2(CrO_4)_3(s) + KNO_3(aq)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

26. What is the coefficient of water after balancing the following equation?

$$\_\_H_2SO_4(aq) + \_\_NaOH(aq) \rightarrow \_\_Na_2SO_4(aq) + \_\_H_2O(l)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

27. What is the coefficient of water after balancing the following equation?

$$\_\_HC_2H_3O_2(aq) + \_\_Ca(OH)_2(aq) \rightarrow \_\_Ca(C_2H_3O_2)_2(aq) + \_\_H_2O(l)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

28. What is the coefficient of water after balancing the following equation?

$$\_\_H_3PO_4(aq) + \_\_Ba(OH)_2(aq) \rightarrow \_\_Ba_3(PO_4)_2(s) + \_\_H_2O(l)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

Classifying Chemical Reactions

29. Which of the following types of chemical reactions is illustrated below?

$$N_2(g) + H_2(g) \rightarrow NH_3(g)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

30. Which of the following types of chemical reactions is illustrated below?

$$SO_2(g) + O_2(g) \rightarrow SO_3(g)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

31. Which of the following types of chemical reactions is illustrated below?

$$KHCO_3(s) \xrightarrow{\Delta} K_2CO_3(s) + H_2O(g) + CO_2(g)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

32. Which of the following types of chemical reactions is illustrated below?

$$KClO_3(s) \xrightarrow{\Delta} KCl(s) + O_2(g)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

33. Which of the following types of chemical reactions is illustrated below?

$$Zn(s) + HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

34. Which of the following types of chemical reactions is illustrated below?

$$Sr(s) + H_2O(l) \rightarrow Sr(OH)_2(aq) + H_2(g)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

35. Which of the following types of chemical reactions is illustrated below?

$$AlCl_3(aq) + AgNO_3(aq) \rightarrow Al(NO_3)_3(aq) + AgCl(s)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

36. Which of the following types of chemical reactions is illustrated below?

$$FeBr_3(aq) + AgNO_3(aq) \rightarrow Fe(NO_3)_3(aq) + AgBr(s)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

37. Which of the following types of chemical reactions is illustrated below?

$$H_2SO_4(aq) + NaOH(aq) \rightarrow Na_2SO_4(aq) + H_2O(l)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

38. Which of the following types of chemical reactions is illustrated below?

$$HClO_4(aq) + KOH(aq) \rightarrow KClO_4(aq) + H_2O(l)$$

(a) combination
(b) decomposition
(c) single replacement
(d) double replacement
(e) neutralization

Combination Reactions

39. What is the predicted product from the following combination reaction?

$$Li(s) + O_2(g) \xrightarrow{\Delta}$$

(a) LiO
(b) Li_2O
(c) LiO_2
(d) Li_2O_3
(e) Li_3O_2

40. What is the predicted product from the following combination reaction?

$$Ca(s) + O_2(g) \xrightarrow{\Delta}$$

(a) CaO
(b) Ca_2O
(c) CaO_2
(d) Ca_2O_3
(e) Ca_3O_2

41. What is the predicted product from the following combination reaction?

$$Al(s) + O_2(g) \xrightarrow{\Delta} \rightarrow$$

(a) AlO
(b) Al_2O
(c) AlO_2
(d) Al_2O_3
(e) Al_3O_2

42. What is the predicted product from the following combination reaction?

$$K(s) + Cl_2(g) \xrightarrow{\Delta} \rightarrow$$

(a) KCl
(b) K_2Cl
(c) KCl_2
(d) KCl_3
(e) K_3Cl

43. What is the predicted product from the following combination reaction?

$$Sr(s) + Br_2(l) \xrightarrow{\Delta} \rightarrow$$

(a) SrBr
(b) Sr_2Br
(c) $SrBr_2$
(d) Sr_2Br_3
(e) Sr_3Br_2

44. What is the predicted product from the following combination reaction?

$$Zn(s) + I_2(s) \xrightarrow{\Delta} \rightarrow$$

(a) ZnI
(b) ZnI_2
(c) Zn_2I
(d) Zn_2I_3
(e) Zn_3I_2

45. What is the formula of the predicted product from heating magnesium metal and nitrogen gas?
    (a) MgN
    (b) MgN_2
    (c) Mg_2N
    (d) Mg_2N_3
    (e) Mg_3N_2

46. What is the formula of the predicted product from heating potassium metal and powdered phosphorus?
    (a) KP
    (b) KP_3
    (c) K_3P
    (d) K_2P_3
    (e) K_3P_2

47. What is the formula of the predicted product from heating cadmium metal and powdered sulfur?
    (a) CdS
    (b) Cd_2S
    (c) CdS_2
    (d) Cd_2S_3
    (e) Cd_3S_2

Decomposition Reactions (

48. What are the predicted products from the following decomposition reaction?

$$LiHCO_3(s) \xrightarrow{\Delta}$$

    (a) Li, H_2, and CO_2
    (b) Li, H_2O, and CO_2
    (c) Li_2CO_3, H_2, and CO_2
    (d) Li_2CO_3, H_2O, and CO_2
    (e) Li_2CO_3 and H_2O

49. What are the predicted products from the following decomposition reaction?

$$Zn(HCO_3)_2(s) \xrightarrow{\Delta}$$

(a) Zn, H_2, and CO_2
(b) Zn, H_2O, and CO_2
(c) $ZnCO_3$, H_2, and CO_2
(d) $ZnCO_3$, H_2O, and CO_2
(e) $ZnCO_3$ and H_2O

50. What are the predicted products from the following decomposition reaction?

$$Al(HCO_3)_3(s) \xrightarrow{\Delta}$$

(a) Al, H_2, and CO_2
(b) Al, H_2O, and CO_2
(c) $Al_2(CO_3)_3$, H_2, and CO_2
(d) $Al_2(CO_3)_3$, H_2O, and CO_2
(e) $Al_2(CO_3)_3$ and H_2O

51. What are the predicted products from the following decomposition reaction?

$$Fe(HCO_3)_3(s) \xrightarrow{\Delta}$$

(a) Fe, H_2O, and CO_2
(b) $FeCO_3$, H_2, and CO_2
(c) $FeCO_3$, H_2O, and CO_2
(d) $Fe_2(CO_3)_3$, H_2O, and CO_2
(e) $Fe_2(CO_3)_3$, H_2, and CO_2

52. What are the predicted products from the following decomposition reaction?

$$Cu_2CO_3(s) \xrightarrow{\Delta}$$

(a) Cu and CO_2
(b) Cu_2O and CO
(c) Cu_2O and CO_2
(d) CuO and CO
(e) CuO and CO_2

53. What are the predicted products from the following decomposition reaction?

$$PbCO_3(s) \xrightarrow{\Delta}$$

(a) Pb and CO_2
(b) PbO and CO
(c) PbO and CO_2
(d) PbO_2 and CO
(e) PbO_2 and CO_2

54. What are the predicted products from the following decomposition reaction?

$$Fe_2(CO_3)_3(s) \xrightarrow{\Delta}$$

(a) Fe and CO_2
(b) FeO and CO
(c) FeO and CO_2
(d) Fe_2O_3 and CO
(e) Fe_2O_3 and CO_2

55. What are the predicted products from the following decomposition reaction?

$$NaClO_3(s) \xrightarrow{\Delta}$$

(a) Na and CO_2
(b) Na, Cl_2, and O_2
(c) NaCl and H_2O
(d) NaCl and O_2
(e) NaCl and CO_2

56. What are the predicted products from the following decomposition reaction?

$$Zn(ClO_3)_2(s) \xrightarrow{\Delta}$$

(a) Zn and CO_2
(b) Zn, Cl_2, and O_2
(c) $ZnCl_2$ and H_2O
(d) $ZnCl_2$ and O_2
(e) $ZnCl_2$ and CO_2

57. What are the predicted products from the following decomposition reaction?

$$Al(ClO_3)_3(s) \xrightarrow{\Delta}$$

(a) Al and CO_2
(b) Al, Cl_2, and O_2
(c) $AlCl_3$ and H_2O
(d) $AlCl_3$ and O_2
(e) $AlCl_3$ and CO_2

Single-Replacement Reactions (

58. What are the products from the following single–replacement reaction?

$$Zn(s) + CuSO_4(aq) \rightarrow$$

(a) Cu and $ZnSO_4$
(b) Cu and $ZnSO_3$
(c) CuO and $ZnSO_4$
(d) CuO and $ZnSO_3$
(e) no reaction

59. What are the products from the following single–replacement reaction?

$$Cd(s) + AgNO_3(aq) \rightarrow$$

(a) Ag and $Cd(NO_3)_2$
(b) Ag and $Cd(NO_2)_2$
(c) Ag_2O and $Cd(NO_3)_2$
(d) Ag_2O and $Cd(NO_2)_2$
(e) no reaction

60. What are the products from the following single–replacement reaction?

$$Al(s) + Pb(NO_3)_2(aq) \rightarrow$$

(a) Pb and $Al(NO_3)_3$
(b) Pb and $Al(NO_2)_3$
(c) PbO and $Al(NO_3)_3$
(d) PbO and $Al(NO_2)_3$
(e) no reaction

61. What are the products from the following single–replacement reaction?

$$Mg(s) + H_2SO_4(aq) \rightarrow$$

(a) MgO and H_2SO_3
(b) MgO and H_2S
(c) $MgSO_4$ and H_2
(d) $MgSO_4$ and H_2O
(e) no reaction

62. What are the products from the following single–replacement reaction?

$$Zn(s) + HNO_3(aq) \rightarrow$$

(a) ZnO and HNO_2
(b) $Zn(NO_2)_2$ and H_2
(c) $Zn(NO_3)_2$ and H_2
(d) $Zn(NO_3)_2$ and H_2O
(e) no reaction

63. What are the products from the following single–replacement reaction?

$$K(s) + H_2O(l) \rightarrow$$

(a) K_2O and H_2
(b) K_2O and H_2O
(c) KOH and H_2
(d) KOH and H_2O
(e) no reaction

64. What are the products from the following single–replacement reaction?

$$Ba(s) + H_2O(l) \rightarrow$$

(a) BaO and H_2
(b) BaO and H_2O
(c) $Ba(OH)_2$ and H_2
(d) $Ba(OH)_2$ and H_2O
(e) no reaction

Solubility Rules

65. Which of the following solid compounds is soluble in water?
    (a) Na_2CO_3
    (b) $CuC_2H_3O_2$
    (c) $AgNO_3$
    (d) all of the above
    (e) none of the above

66. Which of the following solid compounds is soluble in water?
    (a) $CaCO_3$
    (b) $PbSO_4$
    (c) $AlPO_4$
    (d) all of the above
    (e) none of the above

67. Which of the following solid compounds is soluble in water?
    (a) $NiCO_3$
    (b) $PbCrO_4$
    (c) Ag_3PO_4
    (d) CuS
    (e) $Ba(OH)_2$

68. Which of the following solid compounds is insoluble in water?
    (a) $PbCl_2$
    (b) Hg_2I_2
    (c) $BaSO_4$
    (d) all of the above
    (e) none of the above

69. Which of the following solid compounds is insoluble in water?
    (a) Li_2CO_3
    (b) $AgC_2H_3O_2$
    (c) $Cu(NO_3)_2$
    (d) all of the above
    (e) none of the above

70. Which of the following solid compounds is insoluble in water?
    (a) $(NH_4)_2CO_3$
    (b) K_2CrO_4
    (c) $BaSO_4$
    (d) Na_2S
    (e) $Sr(OH)_2$

Double-Replacement Reactions (

71. What are the products from the following double–replacement reaction?

$$AgNO_3(aq) + NaCl(aq) \rightarrow$$

    (a) Ag_3N and $NaClO_3$
    (b) $AgCl$ and $NaNO_2$
    (c) $AgCl$ and $NaNO_3$
    (d) $AgClO_3$ and $NaNO_2$
    (e) $AgClO_3$ and $NaNO_3$

72. What are the products from the following double–replacement reaction?

$$BaCl_2(aq) + K_2SO_4(aq) \rightarrow$$

    (a) BaS and $KClO_4$
    (b) $BaSO_3$ and KCl
    (c) $BaSO_3$ and $KClO_4$
    (d) $BaSO_4$ and KCl
    (e) $BaSO_4$ and $KClO_4$

73. What are the products from the following double–replacement reaction?

$$AgNO_3(aq) + Li_3PO_4(aq) \rightarrow$$

    (a) Ag_3P and $LiNO_3$
    (b) Ag_3PO_3 and $LiNO_2$
    (c) Ag_3PO_3 and $LiNO_3$
    (d) Ag_3PO_4 and $LiNO_2$
    (e) Ag_3PO_4 and $LiNO_3$

Neutralization Reactions

74. What are the predicted products from the following neutralization reaction?

$$HCl(aq) + NH_4OH(aq) \rightarrow$$

(a) NH_3Cl and H_2O
(b) NH_3Cl and O_2
(c) NH_4Cl and H_2O
(d) NH_4Cl and O_2
(e) no reaction

75. What are the predicted products from the following neutralization reaction?

$$HC_2H_3O_2(aq) + Ca(OH)_2(aq) \rightarrow$$

(a) $CaCO_3$ and H_2O
(b) $Ca(HCO_3)_2$ and H_2
(c) $Ca(HCO_3)_2$ and H_2O
(d) $Ca(C_2H_3O_2)_2$ and H_2
(e) $Ca(C_2H_3O_2)_2$ and H_2O

76. What are the predicted products from the following neutralization reaction?

$$HNO_3(aq) + Ba(OH)_2(aq) \rightarrow$$

(a) Ba_3N_2 and H_2O
(b) $Ba(NO_2)_2$ and H_2
(c) $Ba(NO_2)_2$ and H_2O
(d) $Ba(NO_3)_2$ and H_2
(e) $Ba(NO_3)_2$ and H_2O

77. What are the products from the complete neutralization of sulfuric acid with aqueous sodium hydroxide?
(a) $Na_2S(aq)$ and $H_2O(l)$
(b) $NaHSO_3(aq)$ and $H_2O(l)$
(c) $NaHSO_4(aq)$ and $H_2O(l)$
(d) $Na_2SO_3(aq)$ and $H_2O(l)$
(e) $Na_2SO_4(aq)$ and $H_2O(l)$

78. What are the products from the complete neutralization of carbonic acid with aqueous potassium hydroxide?
    (a) $K_2CO_3(aq)$ and $H_2O(l)$
    (b) $KHCO_3(aq)$ and $H_2O(l)$
    (c) $KHCO_4(aq)$ and $H_2O(l)$
    (d) $KC_2H_3O_2(aq)$ and $H_2O(l)$
    (e) $K_2C_2H_3O_2(aq)$ and $H_2O(l)$

79. What are the products from the complete neutralization of phosphoric acid with aqueous lithium hydroxide?
    (a) $LiH_2PO_4(aq)$ and $H_2O(l)$
    (b) $Li_2HPO_4(aq)$ and $H_2O(l)$
    (c) $Li_3PO_4(aq)$ and $H_2O(l)$
    (d) $LiHPO_4(aq)$ and $H_2O(l)$
    (e) $Li_2PO_4(aq)$ and $H_2O(l)$

Combustion Reactions

80. Methane, CH_4, can be used as fuel in an automobile to reduce pollution. What is the coefficient of oxygen in the balanced equation for the reaction?

$$\_\_CH_4(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + H_2O(g)$$

    (a) 1
    (b) 2
    (c) 3
    (d) 4
    (e) none of the above

81. Ethane, C_2H_6, burns to give carbon dioxide and water. What is the coefficient of oxygen in the balanced equation for the reaction?

$$\_\_C_2H_6(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + \_H_2O(g)$$

    (a) 5
    (b) 7
    (c) 10
    (d) 14
    (e) none of the above

82. Propane, C_3H_8, is flammable and used in rural areas where natural gas is not available. What is the coefficient of oxygen in the balanced equation for the combustion of propane?

$$\_\_C_3H_8(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + H_2O(g)$$

(a) 1
(b) 5
(c) 7
(d) 10
(e) none of the above

83. Butane, C_4H_{10}, is flammable and used in butane lighters. What is the coefficient of oxygen in the balanced equation for the combustion of butane?

$$\_\_C_4H_{10}(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + H_2O(g)$$

(a) 9
(b) 13
(c) 18
(d) 26
(e) none of the above

84. Octane, C_8H_{18}, is a major component in gasoline. What is the coefficient of oxygen in the balanced equation for the combustion of octane?

$$\_\_C_8H_{18}(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + H_2O(g)$$

(a) 17
(b) 25
(c) 34
(d) 50
(e) none of the above

85. Ethanol, C_2H_5OH, is made from fermenting grain and can be blended with gasoline to make "gasohol." If the combustion of "gasohol" produces carbon dioxide and water, what is the coefficient of oxygen in the balanced equation?

$$\_\_C_2H_5OH(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + \_H_2O(g)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

86. Methanol, CH_3OH, is derived from natural gas and can be blended with gasoline to make "gasohol." If the combustion of "gasohol" produces carbon dioxide and water, what is the coefficient of oxygen in the balanced equation?

$$\_\_CH_3OH(g) + \_\_O_2(g) \xrightarrow{\text{spark}} \_\_CO_2(g) + H_2O(g)$$

(a) 1
(b) 2
(c) 3
(d) 6
(e) none of the above

Answer Key

1. C
2. D
3. C
4. A
5. C
6. B
7. C
8. A
9. C
10. C
11. A
12. A
13. A
14. B
15. C
16. C
17. B
18. C
19. A
20. B
21. B
22. A
23. C
24. D
25. D
26. B
27. B
28. D
29. A
30. A
31. B
32. B
33. C
34. C
35. D
36. D
37. E
38. E
39. B
40. A
41. D
42. A
43. C
44. B
45. E
46. C
47. A
48. D
49. D
50. D
51. D
52. C
53. C
54. E
55. D
56. D
57. D
58. A
59. A
60. A
61. C
62. C
63. C
64. C
65. D
66. E
67. E
68. D
69. E
70. C
71. C
72. D
73. E
74. C
75. E
76. E
77. E
78. A
79. C
80. B
81. B
82. B
83. B
84. B
85. C
86. C