Answers

Build-up Exercise 6A *(page 6.19)*

1. $2x^2 + 2x + 1$

2. $x^2 + 9x - 6$

3. $6x^2 + 9x$

4. $2x^3 - 3x^2 + 6x - 9$

5. $-7x^2 + 11x - 5$

6. $3x^3 - 6x^2 + 7x - 7$

7. $11x^2 + 11x + 4$

8. $7x^3 - 3x^2 + 5x + 5$

9. $15x^2 - 3x - 4$

10. $4x^3 + 7x^2 + 4x + 3$

11. $6x^3 - 9x^2 - 2x + 3$

12. $-5x^3 + 19x^2 + 41x - 55$

13. $35x^3 - 4x^2 + 10x + 4$

14. $-12x^4 + 20x^3 - 15x^2 - 15x + 18$

15. $6x^3 - 5x^2 - 21x + 10$

16. $12x^3 - 11x^2 - 9x + 15$

17. $15x^3 - 15x^2 + 14x + 10$

18. $40x^3 - 34x^2 + 28x - 22$

19. **(a)** $(3p - 4)x^3 + (-4p - 9)x^2 + (8p + 29)x - 36$

(b) $p = -\frac{9}{4}$, coefficient of $x = 11$

Build-up Exercise 6B *(page 6.20)*

20. Quotient $= \frac{3}{2}$, remainder $= \frac{5}{2}$

21. Quotient $= x - 6$, remainder $= 18$

22. Quotient $= x + 4$, remainder $= 33$

23. Quotient $= x^2 + x - 5$, remainder $= 17$

24. Quotient $= x + 3$, remainder $= -10$

25. Quotient $= 3x - 1$, remainder $= 1$

26. Quotient $= 2x - 2$, remainder $= 3$

27. Quotient $= 4x$, remainder $= 1$

28. Quotient $= x^2 + x - 4$, remainder $= 26$

29. Quotient $= -x^2 + x + 9$, remainder $= 17$

30. Quotient $= x + 1$, remainder $= -7x + 3$

31. Quotient $= x - 2$, remainder $= x - 2$

32. Quotient $= 2x^2 + x - 5$, remainder $= 16$

33. Quotient $= 3x^2 + 5x - 3$, remainder $= 2$

34. Quotient $= 2x^2 - 2x + 6$, remainder $= -9$

35. Quotient $= x^2 + 6x + 6$, remainder $= 1$

36. Quotient $= x + 1$, remainder $= -3$

37. Quotient $= 2x^2 - \frac{7}{2}x + \frac{11}{4}$, remainder $= -\frac{39}{4}$

38. Quotient $= -x + 2$, remainder $= -5x + 11$

39. Quotient $= -4x - \frac{5}{2}$, remainder $= 4x + \frac{7}{2}$

40. Quotient $= x$, remainder $= 6x - 4$

41. Quotient $= -3x$, remainder $= 11x + 5$

42. **(a)** $a = -1$, $b = 1$

(b) 1

43. **(a)** $p = 1$, $q = -2$

(b) Quotient $= x - 1$, remainder $= 0$

Build-up Exercise 6C *(page 6.21)*

44. $a = 3$, $b = -2$

45. $P = 5$, $Q = -16$

46. $4x^3 + 3x^2 - 5x + 3$

47. $6x^2 + 6x - 5$

48. $A = 9$, $B = 12$, $C = 4$

49. $A = 5$, $B = -4$

50. $A = 2$, $B = -7$, $C = 3$

51. $A = 4$, $B = -4$

52. $P = 3$, $Q = 11$, $R = -6$

53. $A = 3$, $B = 4$, $C = -11$

54. $x^3 + 5x^2 + 3x - 5$

55. $a = -1$, $b = -4$, $c = -1$

56. $p = 0$, $q = 40$

57. $m = -7$, $n = -4$

58. **(a)** $f(x) = qx^2 + (13 - q)x - 6$

(b) $p = -6$, $q = 4$

(c) $\frac{3}{4}$, -3

59. **(a)** $x^3 + 8x^2 + 11x - 18$

(b) $2x^3 + 15x^2 + 21x - 30$

(c) Quotient $= 2x^2 + 9x - 6$, remainder $= -12$

Build-up Exercise 6D *(page 6.23)*

60. $f(1)$

61. $f(-\frac{1}{2})$

62. $f(-p)$

63. $f(\frac{1}{m})$

64. -7

65. -12

66. -13

67. 9

68. $-\frac{19}{4}$

69. -2

70. Yes

71. Yes

72. No

73. No

74. 8

75. -2

76. $1, -\frac{1}{2}$

77. $3, -2$

78. 1

79. $-\frac{25}{2}$

80. $-2, 1$

81. $-3, 5$

82. **(a)** 4 **(b)** $(x+1)(4x+3)(x-1)$

83. **(a)** -4 **(b)** $(2x-3)(x+1)^2$

84. **(a)** $p=5,\ q=4$ **(b)** $(x+1)(x+4)$

85. **(a)** $a=3,\ b=1$ **(b)** $(x-1)(x+2)(2x+1)$

86. $5x+21$

87. $-6x+19$

88. **(a)** $p=2,\ q=3$ **(b)** $3x+3$

89. **(a)** $a=1,\ b=-15$ **(b)** $-x+26$

90. **(a)** $f(1)=13,\ f(-1)=1$ **(b)** $m=5,\ n=3$

91. **(a)** $m=-9,\ n=-3$ **(b)** $(2x-1)(x-3)(x-1)$

92. **(b)** $2(x-3)(x+1)(x+4)$

93. **(a)** $(x-4)(x+1)$
(b) $a=-2,\ b=-4$
(c) $4, -1$

94. **(a)** $p=2,\ q=-5$ **(b)** $5, \frac{1}{2}, -3$

95. **(a)** $a=2,\ b=-3$ **(b)** $-1, \frac{3}{4}$

96. **(a)** $a=2,\ b=3$ **(b)** $\frac{1}{5}, 4$

97. **(a)** $6x^3-12x$
(b) **(ii)** $(3x-1)(x+1)(2x-5)$

98. **(a)** 2
(b) $(x+1)Q(x)+2$
(c) 7

Build-up Exercise 6E *(page 6.27)*

99. $(x+1)^2(x-2)$

100. $(x+1)(x+2)(x-3)$

101. $(x-1)(x+1)(x+5)$

102. $(x-1)^2(x+3)$

103. $(x-1)(x-2)(x+4)$

104. $(x+1)(x+2)(x+3)$

105. $(x+1)(x-1)(3x+4)$

106. $(x+1)(x+2)(2x+3)$

107. $(x+3)^2(2x-1)$

108. $(x-3)(x-4)(2x+1)$

109. $(x-2)(2x+3)(3x+2)$

110. $(x-3)(2x+3)(4x-1)$

111. Yes

112. No

113. **(a)** $(x-2)(2x+1)(2x+5)$ **(b)** $2, -\frac{1}{2}, -\frac{5}{2}$

114. **(a)** $(x-4)(x-5)(3x-1)$ **(b)** $4, 5, \frac{1}{3}$

115. **(a)** $(x+4)(2x+1)(4x-3)$ **(b)** $-4, -\frac{1}{2}, \frac{3}{4}$

116. $1, \frac{-3\pm\sqrt{29}}{2}$

117. $-2, \frac{-7\pm\sqrt{61}}{2}$

118. $\frac{1}{2}, \frac{5\pm\sqrt{53}}{2}$

119. $\frac{2}{3}, \frac{-1\pm\sqrt{33}}{4}$

120. No

Build-up Exercise 6F *(page 6.28)*

121. H.C.F. $=12$, L.C.M. $=216$

122. H.C.F. $=14$, L.C.M. $=1\,176$

123. H.C.F. $=ac$, L.C.M. $=a^2b^3c^2$

124. H.C.F. $=6xyz^2$, L.C.M. $=36x^3yz^3$

125. H.C.F. $=2(x-3)$, L.C.M. $=56(x+2)(x-2)(x-3)^2$

126. H.C.F. $=6(p-2)(p+1)(p+3)$,
L.C.M. $=60(p-2)^2(p+1)^3(p+3)^2$

127. H.C.F. $=2ab$, L.C.M. $=240a^3b^4c^3$

128. H.C.F. $=x+4$, L.C.M. $=20x^2(x+1)^2(x-3)^3(x+4)^3$

129. H.C.F. $=2x+3$, L.C.M. $=(x-6)(2x+3)(3x-2)$

130. H.C.F. $=5x-6$, L.C.M. $=(x+7)(2x-3)(5x-6)$

131. H.C.F. $=x+2$, L.C.M. $=2(x+2)(x-5)(x^2-2x+4)$

132. H.C.F. $=x+3$, L.C.M. $=3(x+3)(2x+7)(x^2-3x+9)$

133. H.C.F. = $x+1$, L.C.M. = $(x-1)(x+1)^2(x+2)(2x-1)$

134. H.C.F. = $(x+3)^2$, L.C.M. = $(x-1)(x+1)(x+3)^2$

135. H.C.F. = $x+2$, L.C.M. = $(x+1)(x+2)^2(x+3)$

136. H.C.F. = $(x-1)(x+4)$, L.C.M. = $(x-1)^2(x+2)(x+4)^2$

137. H.C.F. = $2x+1$, L.C.M. = $(x+2)^2(2x+1)^3$

138. H.C.F. = $(x-2)(x+3)$,
L.C.M. = $(x-2)(x+3)(2x-1)(2x+1)(3x-1)$

139. $a^2b^4c^2$

140. y^3z^5

141. **(a)** H.C.F. = $x+1$, L.C.M. = $x(x+1)^2(x+3)(2x+3)$
(b) $x(x+1)^3(x+3)(2x+3)$
(c) They are identical.
(d) $(x+1)^2(x+2)(x+3)(2x+3)$

Build-up Exercise 6G *(page 6.30)*

142. $\frac{5}{2y}$

143. $\frac{y}{3x}$

144. $\frac{x-2y}{x}$

145. $\frac{3(x-y)}{x+y}$

146. $\frac{x-4}{x-7}$

147. $\frac{2(x+3)}{x+2}$

148. $\frac{x+4}{x-3}$

149. $\frac{x+2}{2}$

150. $\frac{(x-6)(x-2)}{(x+2)^2}$

151. $\frac{2(x+2)}{3x+10}$

152. $\frac{2x+1}{3x+2}$

153. 1

154. $\frac{x-8}{x+y}$

155. $\frac{y-4}{y+7}$

156. $\frac{(x-3)^2}{(x-2)(x+2)}$

157. $\frac{3x+1}{3x+4}$

158. $\frac{4(y-2x)}{x}$

159. $\frac{2x+1}{(x+1)(x^2-3x+9)}$

160. $\frac{2}{(x+1)(x+5)}$

161. $\frac{5}{(x+3)(2x+1)}$

162. $\frac{3}{(x+4)(x+7)}$

163. $\frac{19}{(2x+3)(3x-5)}$

164. $A=2$, $B=-1$

165. $A=3$, $B=-1$

166. $\frac{7x-6}{(2x-1)(3x-2)}$

167. $\frac{2x+1}{(x+3)(2x-1)}$

168. $\frac{x+1}{x+5}$

169. $\frac{x(x+3)}{x+2}$

170. $\frac{3x-1}{2x+1}$

171. $\frac{3x-4}{x+2}$

172. $\frac{5}{(x+3)(2x+1)}$

173. $-\frac{5}{(x+3)(x+4)}$

174. $A=\frac{1}{12}$, $B=-\frac{1}{12}$, $C=\frac{1}{3}$