

MATHEMATICS 6

Answer Key

CHAPTER 1

1. \$12,960
2. a) 46, 377, 81, 120; b) 113, 150, 982, 109; c) 0.9, 6.5, 0.5, 0.11; d) 2, 1.3, 1.7, 2.2
3. a) 78,000, 2,015,528, 90.4; b) 975,694, 637,018, 193.75
4. a) 6400, 618, 960, 50; b) 45.2, 640, 0.47, 0.0564; c) 1.8, 4.2, 1.2, 0.4; d) 0.54, 0.035, 20, 200
5. a) 172,301, 1,320,660, 235,200; b) 750, 1.593, 1.4065; c) 45, 190, 127; d) 14.1, 653, 0.384
6. a) 12,515, 11,239, 44.43; b) 138.25, 651, 27
7. a) Yes; b) No; c) Yes; d) Yes; e) No; f) No
8. 1, 3, 5, 9, 15, 45
9. 410 km
10. 33 times
11. The car goes 7.5 km/h faster.
12. The first field's yield is 1.25 times greater.
13. Area: 261,000 m²; Perimeter: 2.06 km
14. a) 12; b) 1152; c) 2.592
15. 144 trucks
16. Answers may vary.
17. a) $MP = 2.4$ cm; b) $CD = 5.4$ cm
18. Answers may vary.
19. 55°, 90°, and 140°
20. 180°
21. 1.8 m³
22. a) 17,000 m; b) 6300 m; c) 800 m; d) 0.4 m; e) 0.15 m; f) 0.7 m; g) 0.43 m
23. a) 2,000,000 m²; b) 400,000 m²; c) 3 m²; d) 0.4 m²; e) 0.07 m²
24. a) 4,000,000 cm³; b) 3,200,000 cm³; c) 200,000 cm³; d) 7 cm³; e) 34 cm³; f) 4800 cm³; g) 700 cm³
25. a) 15,000 kg; b) 450 kg; c) 30 kg; d) 6.5 kg; e) 0.094 kg; f) 0.245 kg; g) 1.25 kg; h) 0.005 kg
26. a) 143,087; b) 18; c) 0
27. a) 33.6; b) 0.58; c) 16; d) 12.2
28. Approximately 16 times smaller
29. 0.1x + 3 tons; 6 tons; 13 tons
30. When will the cars meet? 10:45 a.m.
31. $2\frac{1}{2}$ hours
32. $\angle DOE$ is 20°, 70°, 110°, or 200°
33. a) 1, 2, 3, 4, 6, 9, 12, 18, 36; b) 22, 33, 44, 55, 66
34. a) Yes; b) No; c) Yes; d) Yes; e) Yes; f) No; g) Yes
35. a) Yes, No; b) No, Yes; c) Yes, No
36. a) 1; 1, 2; 1, 2, 4, 8; 1, 2, 3, 4, 6, 12; b) 1, 3; 1, 3, 9; 1, 3, 5, 15; 1, 3, 7, 21; c) 1, 5; 1, 2, 13, 26; 1, 29; 1, 2, 3, 5, 6, 15, 30; d) 1, 13; 1, 2, 11, 22; 1, 3, 9, 27; 1, 2, 4, 8, 16, 32

37. 2, 3, 4, 6, 8, and 12 children
38. a) Yes; b) No; c) Yes; d) No; e) Yes; f) Yes; g) No
39. a) 6, 9, 12; b) 10, 15, 20; c) 16, 24, 32; d) 20, 30, 40; e) 24, 36, 48; f) 60, 90, 120; g) 160, 240, 320; h) 200, 300, 400; i) 2000, 3000, 4000
40. a) Yes, No; b) Yes, No; c) Yes, No
41. 18, 27, 36, 45, 54, 63, 72, 81, 90, and 99
42. 2: 0, 2, 4, 6, or 8; 5: 0 or 5; 10: 0
43. The smallest factor of a number is always 1; the largest factor is always the number itself.
44. The smallest multiple of a number is the number itself; there is no largest multiple of a number.
45. 1, 2, 3, 5, 6, 10, 15, 30, 37, 74, 111, 185, 222, 370, 555, 1110
46. $x = \{54, 60, 66, 72, 78, 84, 90\}$
47. 2115, 6345
48. See text
49. a) 430, 95, 1300, 605, 90, 175, 800, 34,000; b) 430, 1300, 90, 800, 34,000
50. a) 2040, 6785, 8815; b) 1000, 3650, 7260 (Answers may vary)
51. Even: 82, 18,008, 300, 1,000,000, and 554; Odd: 37, 5023, and 421
52. a) 360, 492, 784, 996; b) 105, 211, 479, 583 (Answers may vary)
53. a) 568, 1932, 5300, 1026, 579,314; b) 654, 100,600, 87,302,608
54. No
55. a) No; b) Yes
56. a) 5, 10, 15, 20, 25, 30, 35, 40; b) 10, 20, 30, 40
57. a) 502, 720, 222; b) 700, 205, 555; c) 250, 520, 570 (Answers may vary)
58. 450, 610, 890, 900. Conclusion: Numbers divisible by 2 and 5 are also divisible by 10.
59. See text
60. a) 9, 9, 18, 12, 20, 18; b) 27, 16, 9, 10, 18, 27;
Divisible by 9: 135, 207, 396, 9234, 5688, 3006, 42,732, and 8,500,770
61. 231, 801, 1002, 9684, 9081, 21,708
62. a) No, No; b) Yes, No; c) Yes, Yes
63. a) 1800; b) 5787; c) 441; d) 3888
64. a) Yes; b) No, because 4731 is divisible by 3 but not by 9
65. a) Not necessarily; b) Yes
66. Smallest: 1; Largest: 18
67. a) 30, 33, 36, 39; 36; b) 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69; 36, 45, 54, 63
c) 123, 126, 129, 132, 135, 138, 141, 144, 147; 126, 135, 144
68. a) 555; 558; b) 111; not possible; c) 363; 666
69. 4014, 4113, 4212, 4311, 4410, 4518, 4617, 4716, 4815, 4914
70. 24, 30, 36, 42, 48. All are also divisible by 6.
71. 345, 435, 465, 555, 645

Ind. Assign. I

A–C. See text;

D. Prime: 2, 3, 5, 17, 43; Composite: 4, 6, 12, 60;

E. Prime: 7, 11, 19, 29, 31; Composite: 9, 14, 27

72. a) 2, 3, 5, 7; b) 11, 13, 17, 19; c) 31, 37
73. Prime: 197, 239, 617, 929; Composite: 207, 813, 943
74. 271, 269, 263, 257, 251, 241, 239, 233, 229, 227, 223, 211, 199, 197
75. a) 2, 3, 5, 7, 11; b) 29, 31, 37, 41, 43, 47; c) 151, 157, 163, 167, 173, 179
76. 2 is the only even prime number. All other even numbers are divisible by two and therefore not prime.
77. The sum of three consecutive numbers cannot be prime. In fact, it will always be divisible by 3.
78. 28
79. $\frac{1}{18}, \frac{5}{18}, \frac{9}{18}, \frac{13}{18}, \frac{17}{18}$
80. Proper fractions: $\frac{17}{30}, \frac{5}{13}, \frac{9}{14}$; Improper fractions:
 $\frac{94}{12}\left(7\frac{5}{6}\right), \frac{36}{9}(4), \frac{234}{100}\left(2\frac{17}{50}\right), \frac{77}{8}\left(9\frac{5}{8}\right), \frac{197}{19}\left(10\frac{7}{19}\right)$
81. 4 quarters; 8 quarters; 20 quarters
82. a) 129, 7.8, 127, $\frac{5}{6}$; b) 45, 2, 4.2, $\frac{3}{8}$; c) 960, $\frac{1}{9}$, 9.7, $\frac{11}{25}$
83. a) 4187; b) 22.68
84. 12 grams
85. See text
86. 8: $2 \cdot 2 \cdot 2$; 10: $2 \cdot 5$; 12: $2 \cdot 2 \cdot 3$; 14: $2 \cdot 7$; 17: 17; 18: $2 \cdot 3 \cdot 3$; 20: $2 \cdot 2 \cdot 5$; 25: $5 \cdot 5$; 27: $3 \cdot 3 \cdot 3$; 31: 31
87. a) $2 \cdot 2 \cdot 2 \cdot 3$; b) $2 \cdot 5 \cdot 13$; c) $2 \cdot 2 \cdot 3 \cdot 5$; d) $2 \cdot 2 \cdot 2 \cdot 11$; e) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$; f) $2 \cdot 2 \cdot 3 \cdot 5 \cdot 11$; g) $2 \cdot 5 \cdot 5 \cdot 5$; h) $2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$;
 i) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$; j) $2 \cdot 2 \cdot 2 \cdot 5 \cdot 5$
88. Composite: 63 ($3 \cdot 3 \cdot 7$), 72 ($3 \cdot 3 \cdot 8$), 85 ($5 \cdot 17$), 160 ($2 \cdot 2 \cdot 2 \cdot 2 \cdot 5$), 204 ($2 \cdot 2 \cdot 3 \cdot 17$); Prime: 71, 101, 127, 181
89. a) 6; b) 60; c) 8 (Answers may vary)
90. a) 1, 2, 4, 7, 14, 28; b) 1, 2, 4, 8, 16, 32; c) 1, 2, 5, 10, 25, 50; d) 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
91. a) 1, 3, 5, 15, 39, 65, 195; b) 1, 2, 4, 14, 22, 28, 44, 77, 154, 308
92. a) $2 \cdot 2 \cdot 3 \cdot 5 \cdot 5 \cdot 5$; b) $3 \cdot 13 \cdot 19$; c) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 7 \cdot 11$; d) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$
93. a) 1, 2, 3, 5, 6, 10, 15, 30, 34, 51, 85, 102, 170, 255, 510;
 b) 1, 3, 5, 7, 11, 15, 21, 33, 35, 55, 77, 165, 231, 385, 1155;
 c) 1, 2, 3, 4, 6, 8, 9, 12, 18, 19, 24, 36, 38, 57, 72, 76, 114, 152, 171, 228, 342, 456, 684, 1368
94. 15, 35, 143, 323, 899, 1763, 3599, 5183
95. a) $770 = 2 \cdot 5 \cdot 7 \cdot 11$; b) $315 = 3 \cdot 3 \cdot 5 \cdot 7$
96. See text
97. a) GCF: 4; b) GCF: 3; c) GCF: 2; d) GCF: 2
98. a) 3; b) 1 (Mutually prime); c) 2; d) 23; e) 1 (Mutually prime)
99. a) GCF: 15; b) GCF: 6; c) GCF: 6; d) GCF: 28; e) GCF: 18
100. a) 11; b) 69; c) 8; d) 20; e) 8; f) 12; g) 15; h) 120; i) 120
101. a) 8 ways; b) 6 ways; c) 4 ways
102. See text
103. a) 4; b) 6; c) 15; d) 6
104. Five ways; 12 groups
105. 246, 264, 426, 462, 624, 642; GCF: 6
106. See text
107. 20, 30, 40 (Answers may vary.)

108. a) 4, 8, 12, 16; LCM: 4; b) 15, 30, 45, 60; LCM: 15;
c) 12, 24, 36, 48; LCM: 48. d) 10, 20, 30, 40; LCM: 10; e) 100, 200, 300, 400; LCM: 100
109. a) 30; b) 72; c) 210; d) 90; e) 48; f) 180; g) 69; h) 84
110. 6 and 7; 9 and 16; 20 and 27 (Answers may vary); LCM is the product of the numbers.
111. 12 m
112. See text
113. a) 900; b) 1080; c) 4620; d) 12; e) 36; f) 150; g) 2760
114. 5 turns; 11 turns
115. 60 guards
116. a) 45° ; b) 30° ; c) 60° ; d) 30° ; e) 135° ; f) 40°
117. 18 quarts
118. a) 435, 7.99; b) 47.1, 20.2; c) 40, 24.96
119. a) $5s$, $10x$; b) $12t$, $8y$; c) $50x$, $44a$; d) $2.4x$, $0.51a$
120. 46.7 kg, 45.1 kg, and 58.3 kg
121. See text
122. 56: 1, 2, 4, 7, 8, 14, 28, 56; 72: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
123. a) 1, 2, 3; b) 1; c) 1, 2, 11; d) 1, 2, 3, 5, 9, 10; e) 1, 2, 7
124. 1, 2, 3, 6, 9, 18
125. See text
126. 26, 52, 78
127. 110 (Answers may vary)
128. $6984 \div 18 = 388$
129. See text
130. a) 38, 2340, 65,400; b) 75, 2340, 1,074,393, 65,400; c) 75, 2340, 65,400; d) 2340, 1,074,393; e) 2340, 65,400
131. No, because the digits do not add up to a multiple of 9.
132. See text
133. a) $2 \cdot 3 \cdot 7$; b) $2 \cdot 2 \cdot 19$; c) $2 \cdot 2 \cdot 2 \cdot 11$; d) $3 \cdot 3 \cdot 5 \cdot 11$
134. See text
135. a) 6; b) 21; c) 18; d) 72; e) 42; f) 200
136. 120 pencils
137. 29 teams; 5 boys and 3 girls