Answer Key

1. {1, 2, 41, 82 }
2. {1, 3, 29, 87 }
3. {1, 5, 17, 85 }
4. {1, 2, 43, 86 }
5. {1, 3, 9, 27, 81 }
6. {1, 3, 5, 15, 25, 75 }
7. {1, 2, 4, 19, 38, 76 }
8. {1, 2, 3, 6, 13, 26, 39, 78 }
9. {1, 2, 4, 5, 8, 10, 16, 20, 40, 80 }
10. { 31, 37, 41, 43, 47 }
11. $\frac{14}{35} \overset{\div 7}{\longrightarrow} \frac{2}{5}$ = 2/5
12. $\frac{12}{18} \overset{\div 2}{\longrightarrow} \frac{6}{9} \overset{\div 3}{\longrightarrow} \frac{2}{3}$ = 2/3
13. $\frac{39}{78} = \frac{1}{2}$ =1/2
14. $\frac{160}{960} = \frac{1}{6}$ =1/6
15. $\frac{160}{96} = \frac{5}{3}$ =5/3
16. $\frac{6}{8} = \frac{3}{4}$ =3/4
17. $\frac{12}{16} = \frac{3}{4}$ =3/4
18. $\frac{64}{144} = \frac{4}{9}$ =4/9
19. $\frac{50}{75} = \frac{2}{3}$ =2/3
20. $\frac{192}{640} = \frac{12}{40} = \frac{3}{10}$ =3/10
21. 15
22. 30
23. 4
24. 11
25. 18
26. 8
27. 40
28. 5
29. 12
30. 60
31. 0.018
32. 0.006
33. 0.014
34. 0.006
35. 0.009
36. 0.016
37. 0.009
38. 0.014
39. 0.0006
40. 0.0016
41. 16
42. 32
43. 64
44. 128
45. 256
46. 512
47. 27
48. 81
49. 243
50. 729
51. $\begin{array}{r} \frac{10}{15} \\ -\ \frac{1}{15} \\ \hline \end{array} = \frac{9}{15} = \frac{3}{5}$
52. $\begin{array}{r} 6\frac{15}{20} \\ -\ \frac{11}{20} \\ \hline \end{array} = 6\frac{4}{20} = 6\frac{1}{5}$
53. $\begin{array}{r} 3\frac{16}{30} \\ -\ \frac{25}{30} \\ \hline \end{array} = 2\frac{21}{30} = 2\frac{7}{10}$
54. $\begin{array}{r} \frac{20}{30} \\ -\ \frac{3}{30} \\ \hline \end{array} = \frac{17}{30}$
55. $\begin{array}{r} \frac{23}{24} \\ +\ \frac{16}{24} \\ \hline \end{array} = \frac{39}{24} = \frac{13}{8} = 1\frac{5}{8}$
56. $\begin{array}{r} \frac{28}{48} \\ -\ \frac{18}{48} \\ \hline \end{array} = \frac{10}{48} = \frac{5}{24}$
57. $\begin{array}{r} 3\frac{10}{12} \\ -\ \frac{9}{12} \\ \hline \end{array} = 3\frac{1}{12}$
58. $\begin{array}{r} \frac{22}{30} \\ +\ \frac{21}{30} \\ \hline \end{array} = 1\frac{13}{30}$
59. $2\times(3\frac{3}{4} + 8)$ = 23 1/2 (inches)
60. $35\frac{1}{2} + 20\frac{3}{4} + 15\frac{1}{8} = 70\frac{4+6+1}{8}$= 71 3/8 (pounds)
61. 2/3
62. 3/11
63. 4/23
64. 5/37
65. 6/11
66. 7/51
67. 8/25
68. 9/55
69. 9/25
70. 6
71. 108×(1 -2/9) = 84
72. 28/(1+2/5) = 20
73. 3×20 +4×5 +11×2 = 102
74. 32×(1 -1/8) = 28
75. 47- 12×(3+1/3) = 7
76. 8×(1 -1/4) = 6
77. 40/8×1 = 5

78. 3.5×6.00+3×2.00 = 27
79. 70/(1 -2/9) = 90
80. 84/(1 -1/7) = 98
81. 99×(1 -4/9) = 55
82. 5280×(1 -4/5) = 1056
83. 25×(1 -4/5) = 5
84. (a) π (b) 0.25π
85. 2×(10²)/25 = 8
86. Only 4 different letters: M, I, S, and P.
    5 colors to apply on 4 letters:
    5×4×3×2 = 120
87. $10001x = 10000x + x$
    x must be a 4-digit number.
88. X = 6

		6
		6
+	9	9
1	1	1

89. BHD = 284

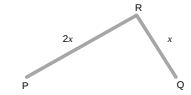
ABD	124	A=1
AHD	184	D=4
DAD	414	
HAB	812	H=8 B=2
BHD	284	

90. 537

	1	3	2
+	4	0	5
	5	3	7

	5	3	7
	3	0	1
+	2	4	5
	5	4	6

91. 4×0.6 = 2.4 min
    avg speed = $\frac{tot\ distance}{tot\ time} = \frac{1+1}{\frac{4}{60}+\frac{2.4}{60}} = \frac{120}{6.4} = \frac{150}{8} = \frac{75}{4}$
    = 18.75 mph

92. 

    Time needed by starting P:
    $\frac{2x}{3}+\frac{x}{5}$
    Time needed by starting Q:
    $\frac{2x}{5}+\frac{x}{3}$
    The difference of time
    $(\frac{1}{3}-\frac{1}{5})x = \frac{2}{3}$
    $\frac{2x}{15} = \frac{2}{3}$
    $2x = 10$
    $3x = 15$
93. A
    One dimensional direction, either going forward or backward.
    Only B B R B B R can be differentiated for the direction.
    If B B R is going forward, then R B B is going backward.
94. B + C = B ⇒ C = 0
    A+B+A = BC ⇒ B = 2 (≠ 1, why?)
    9 + 2 + 9 = 20
    A = 9
95. 9 roads listed below.
    AD, AF, AG
    BD, BG,
    CD, CE, CG
    EF