2358, the digits must add to 9, 9, 9, and 10. The change would be $76.42. When you hear an amount like $23.58, think that the dollars add to 99 and the cents add to 100. With $23.58, 23 + 76 = 99 and 58 + 42 = 100. When making change from $20, the idea is essentially the same, but the dollars add to 19 and the cents add to 100.

As you practice mental addition and subtraction, remember to work one digit at a time and look for opportunities to use complements that turn hard addition problems into easy subtraction problems and vice versa. ■

Important Term

complement: The distance between a number and a convenient round number, typically, 100 or 1000. For example, the complement of 43 is 57 since 43 + 57 = 100.

Suggested Reading

Benjamin and Shermer, *Secrets of Mental Math: The Mathemagician's Guide to Lightning Calculation and Amazing Math Tricks*, chapter 1.

Julius, *More Rapid Math Tricks and Tips: 30 Days to Number Mastery.*

———, *Rapid Math Tricks and Tips: 30 Days to Number Power.*

Kelly, *Short-Cut Math.*

Problems

Because mental addition and subtraction are the building blocks to all mental calculations, plenty of practice exercises are provided. Solve the following mental addition problems by calculating from left to right. For an *added* challenge, look away from the numbers after reading the problem.

1. 52 + 7

2. 93 + 4

3. 38 + 9

4. 77 + 5

5. 96 + 7

6. 40 + 36

7. 60 + 54

8. 56 + 70

9. 48 + 60

10. 53 + 31

11. 24 + 65

12. 45 + 35

13. 56 + 37

14. 75 + 19

15. 85 + 55

16. 27 + 78

17. 74 + 53

18. 86 + 68

19. 72 + 83

Do these 2-digit addition problems in two ways; make sure the second way involves subtraction.

20. 68 + 97

21. 74 + 69

22. 28 + 59

23. 48 + 93

Try these 3-digit addition problems. The problems gradually become more difficult. For the harder problems, it may be helpful to say the problem out loud before starting the calculation.

24. 800 + 300

25. 675 + 200

26. 235 + 800

27. 630 + 120

28. 750 + 370

29. 470 + 510

30. 980 + 240

31. 330 + 890

32. 246 + 810

33. 960 + 326

34. 130 + 579

35. 325 + 625

36. 575 + 675

37. 123 + 456

38. 205 + 108

39. 745 + 134

40. 341 + 191

41. 560 + 803

42. 566 + 185

43. 764 + 637

Do the next few problems in two ways; make sure the second way uses subtraction.

44. 787 + 899

45. 339 + 989

46. 797 + 166

47. 474 + 970

Do the following subtraction problems from left to right.

48. 97 – 6

49. 38 – 7

50. 81 – 6

51. 54 – 7

52. 92 – 30

53. 76 – 15

54. 89 – 55

55. 98 – 24

Do these problems two different ways. For the second way, begin by subtracting too much.

56. 73 – 59

57. 86 – 68

58. 74 – 57

59. 62 – 44

Try these 3-digit subtraction problems, working from left to right.

60. 716 – 505

61. 987 – 654

62. 768 – 222

63. 645 – 231

64. 781 – 416

Determine the complements of the following numbers, that is, their distance from 100.

65. 28

66. 51

67. 34

68. 87

69. 65

70. 70

71. 19

72. 93

Use complements to solve these problems.

73. 822 – 593

74. 614 – 372

75. 932 – 766

76. 743 – 385

77. 928 – 262

78. 532 – 182

79. 611 – 345

80. 724 – 476

Determine the complements of these 3-digit numbers, that is, their distance from 1000.

81. 772

82. 695

83. 849

84. 710

85. 128

86. 974

87. 551

Use complements to determine the correct amount of change.

88. $2.71 from $10

89. $8.28 from $10

90. $3.24 from $10

91. $54.93 from $100

92. $86.18 from $100

93. $14.36 from $20

94. $12.75 from $20

95. $31.41 from $50

The following addition and subtraction problems arise while doing mental multiplication problems and are worth practicing before beginning Lecture 3.

96. 350 + 35

97. 720 + 54

98. 240 + 32

99. 560 + 56

100. 4900 + 210

101. 1200 + 420

102. 1620 + 48

103. 7200 + 540

104. 3240 + 36

105. 2800 + 350

106. 2150 + 56

107. 800 – 12

108. 3600 – 63

109. 5600 – 28

110. 6300 – 108

Solutions for this lecture begin on page 89.