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## Number Problems

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1. The sum of 2 numbers is 1211 and their difference is 283. Find the numbers.
2. The sum of 2 numbers is 249. Twice the larger plus 3 times the smaller is 591. Find the numbers.
3. When 6 times the larger of 2 numbers is added to 7 times the smaller the result is 114. Ten times the larger less 9 times the smaller is 66. Find the numbers.
4. Six times the larger of 2 numbers plus 5 times the smaller is 145. Eight times the larger increased by 4 times the smaller is 164. Find the numbers.
5. Seven times the smaller of 2 numbers plus 9 times the larger is 178. When 10 times the larger is increased by 11 times the smaller the result is 230. Find the numbers.
6. Seven times the larger of 2 numbers decreased by 5 times the smaller is 42. Nine times the larger increased by 8 times the smaller is 256. Find the numbers.
7. When the larger of 2 numbers is multiplied by 9 and added to 10 times the smaller, the result is 389. Seven times the larger diminished by 4 times the smaller is 67. Find the numbers.
8. The difference in 2 numbers is 92. When the larger is subtracted from 4 times the smaller the result is 151. Find the numbers.
9. The sum of 2 numbers is 188. The larger number is 24 more than 3 times the smaller. Find the numbers.
10. Two numbers have a difference of 123. The larger is 22 more than twice the smaller. Find the numbers.
11. Two numbers have a difference of 218. The larger is 140 less than twice the smaller. Find the numbers.
12. The sum of 2 numbers is 46. When 30 is subtracted from 5 times the smaller the result is 3 times the larger. Find the numbers.
13. A hockey team played a total of 41 games. The number of games lost was 10 less than one-half the number of games won. How many games were won?

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## Money Problems (quantity)

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14. Sam has a total of \$113 made up of \$2 bills and \$5 bills. If there are 31 bills in all, how many \$2 bills does he have?
15. Mary has \$300 made up of \$5 and \$10 bills. If there are 39 bills in all, how many \$5 bills does she have?
16. Pete has twice as many \$2 bills as \$5 bills. Together they total \$153. How many \$5 bills does he have?
17. I have 6 more \$5 bills than \$10 bills. In all, I have \$255. How many \$5 bills do I have?
18. The pop machine contained \$3.05 made up of dimes and quarters. There are 20 coins in all. How many dimes are there?
19. A parking meter contained 78 coins made up of dimes and nickels. The total value of the coins was \$5.20. How many dimes does it contain?
20. A vending machine contained dimes and quarters. The number of quarters is 7 more than twice the number of dimes. The coins have a total value of \$20.35. How many of each coin are there?
21. The athletic department bought a total of 29 basketballs and footballs at a cost of \$1000. If basketballs cost \$30 each and footballs \$40 each, how many footballs were bought?
22. A movie theatre sold twice as many adult tickets as student tickets. The total receipts were \$2299. If adult tickets cost \$7 and students \$5, how many of each were sold?
23. There were 296 tickets sold for the school athletic banquet. Adult tickets cost \$10, student tickets \$5. The receipts totalled \$1910. How many student tickets were sold?
24. The school bookstore ordered a total of 130 mathematics and history books. A math book costs \$9.50 and a history book \$8.10. If the total bill was \$1137.00 how many math books were bought?
25. Hans has some \$2 bills and \$5 bills which have a total value of \$81. If he replaced the \$2 bills with the same number of fives and the \$5 bills with the same number of tens, he would have \$175. How many \$2 bills does he have?
26. The gate receipts for a baseball game were \$57 000. Adult tickets sold for \$5.50 and students for \$2.50. If the game had been a playoff game ticket prices would have been increased by 50¢ each, the same crowd would have paid a total of \$63000. How many student tickets were sold?
27. The dance committee bought chips for 25¢ a bag and pop for 30¢ a can. The total bill was \$155. At the dance, chips sold for 35¢ a bag and pop for 40¢ a can. The dance committee sold all the pop and chips and realized a profit of \$55. How many cans of pop did they sell?

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### Money Problems (price)

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28. A sports club charges an initiation fee and monthly fee. At the end of 5 months a member had paid a total of \$170, and at the end of 10 months she had paid a total of \$295. What was the initiation fee?
29. A tennis club charges an annual fee and an hourly fee for court time. One year, Tony played for 39 h and paid \$384. Sandra played for 51 h and paid \$456. find the annual fee and the hourly fee.
30. When 20 bolts are placed in a box the total mass is 340 g. When there are 48 bolts in the box the total mass is 760 g. Find the mass of the box and the mass of each bolt.
31. A crate of 36 equally sized grapefruit has a total mass of 4 kg. When 12 grapefruit are removed the total mass becomes 3 kg. Find the mass of the crate and the mass of a grapefruit.
32. The cost of renting a car depends on the number of days it is rented and the distance it is driven. The cost for one day and 240 km is \$39, and the cost for three days and 800 km is \$125. What is the cost per day and the cost per kilometre?
33. The cost of 4 L of oil and 50 L of gasoline is \$42.50. the cost of 3 L of oil and 35 L of gasoline is \$30.30. Find the cost of 1 L of oil and 1 L of gasoline.
34. When Eunice rented a car for 3 days and drove 160 km, the charge was \$124. When she rented the same car for 5 days and drove 400 km, the charge was \$240. What was the charge per day and the charge per kilometre?
35. For a school play, Janis sold 6 adult tickets and 15 student tickets, and collected \$48. Peter sold 8 adult tickets and 7 student tickets, and collected \$38. Find the cost of adult and student tickets.
36. Lorraine buys 6 cheap golf balls and 4 expensive ones for \$12.50. Bob buys 4 cheap and 3 expensive balls for \$9.00. What are the prices of the two kinds of balls?

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### Dimension Problems

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37. The length of a rectangle is 85 m longer than the width. If the perimeter is 402 m, find the dimensions of the rectangle.
38. The length of a rectangle is 4 times the width. If the perimeter is 400 m, find the dimensions of the rectangle.
39. The length of a rectangle is 5 m more than 7 times the width. If the perimeter is 74 m, find the dimensions of the rectangle.
40. A storeroom is in the shape of a rectangle. The width is 3 m less than one-half the length. If the perimeter is 60 m, find the dimensions of the room.
41. The perimeter of a rectangle is 140 m. If the length were tripled and the width cut in half the perimeter would be 370 m. Find the dimensions of the original rectangle.

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### Age Problems

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42. The sum of Mary's age and her father's age is 67. Three times Mary's age, increased by 7 is her father's age. How old is Mary?
43. Sam's father is 3 times as old as he is. In 6 years the sum of their ages will be 68. How old is Sam?
44. If you double Lucien's age and then subtract 6 you have Paul's age. Two years ago the sum of their ages was 29. How old is Lucien?
45. Twice Sally's age increased by 3 times Sue's age is 103. Five times Sally's age decreased by 4 times Sue's age is 16. How old will Sally be 10 years from now?
46. One half of Bob's age plus one third of Terry's age is 24. One fifth of Bob's age less one ninth of Terry's age is 3. How old is Terry?

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### Investment Problems

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47. Mary invested \$1000, part at 8%/a and the remainder at 9%/a. After one year her total interest from these investments was \$84. How much did she invest at each rate?
48. Pierre invested \$8000, part at 9%/a and the remainder at 10%/a. After one year his total interest from these investments was \$740. How much did he invest at each rate?
49. The student council invested \$6000, part at 7.5%/a and the remainder at 8.5%/a. The total interest, after one year, from these investments was \$480. How much was invested at each rate?
50. Joe invested two sums of money, part at 8%/a and the remainder at 7%/a. After one year the interest from these investments totalled \$380. If he had reversed the investments, his interest would have been \$370. What was his total original investment?
51. Jill invested \$2000, part at 12%/a and the remainder at 8%/a. At the end of one year the amounts of interest from each investment were equal. How much was invested at each rate?

52. Fritz invested \$3000, part at 8%/a and the remainder at 7%/a. At the end of one year the interest from the 8% investment was \$60 more than the interest from the 7% investment. How much was invested at each rate?
53. How would you invest \$6400, part at 8%/a and the remainder at 6%/a so that at the end of one year the interest from the 8% investment will be double the interest from the 6% investment?

### Mixture Problems

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54. Jelly beans and mints, worth \$2.10/kg and \$2.70/kg respectively, were mixed to make 500 kg of mixture which sold for \$2.52/kg. How many kilograms of mints were used?
55. Coffee that sells for \$36 /kg is mixed with coffee that sells for \$24/kg to make 1200 kg of coffee that will sell for \$28/kg. How many kilograms of each type of coffee were used?
56. A hardware store manager mixes nails that sell for \$1.10/kg and nails that sell for \$1.20/kg to get 100 kg of nails that he puts in 1 kg bags. He sells each bag for \$1.14. How many kilograms of each type of nail does he use?
57. A merchant mixes tea that sells for \$2.20/kg with tea that sells for \$2.40/kg to get 200 kg of mixture that sells for \$2.28/kg. How many kilograms of each type of tea did he use?
58. A department store manager decided to mix cashews and pecans to get 400 kg of nuts that sell for \$3.36/kg. If cashews sell for \$3.20/kg and pecans \$3.60/kg, how many kilograms of each type of nut did he use?
59. A store manager mixes tea worth \$1.50/kg and tea worth \$1.90/kg to make 200 kg of tea that sells for \$1.67/kg. How many kilograms of each type of tea does he use?

### Concentration of Solutions

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60. How many kilograms of 30% salt solution by mass and 40% salt solution by mass should be mixed to form 200 kg of 37% salt solution by mass?
61. A lab technician wants to make 500 kg of 28% alcohol solution by mixing 40% alcohol solution and 20% alcohol solution. How many kilograms of each type should be used?
62. A chemist mixes hydrochloric acid solutions of 30% strength and 40% strength to get 100kg of hydrochloric acid solution of 34% strength. How many kilograms of each should be used?
63. How many kilograms of 9% silver alloy and 12% silver alloy should be combined to make 500 kg of 10.8% silver alloy?
64. How many kilograms of 35% salt solution and 45% salt solution should be mixed to make 500 kg of 43% salt solution?
65. A chemistry student must combine 20% alcohol solution and 40% alcohol solution to make 100 kg of 36% alcohol solution. How many kilograms of each should be used?

### Travel Problems

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66. Jack drove at 50km/h from Smithville to Dry Gulch. From Dry Gulch to Streetsville he drove at 80 km/h. The whole trip was 550 km and took 8 h. How far is it from Dry Gulch to Streetsville?
67. It took Maria 9 h to drive the 580 km between Devils Basin and Tumbleweed. The first part of the trip was through mountains and she averaged 60 km/h. Once out of the mountains, she averaged 70 km/h the rest of the way. How many hours did she spend driving through the mountains?
68. Fred took 7 h to drive from Cheyenne to Boothill, a total distance of 485 km. He drove most of the way at 80 km/h, but was slowed to 30 km/h for a time by a dust storm during the trip. How many hours did he spend driving through the dust storm?
69. It took the football team 5 h to travel from Titledown to Toronto, a total distance of 1320 km. Part of the trip was by bus and the remainder by plane. The bus averaged 40 km/h and the plane 600 km/h. How many hours were spent travelling by bus?
70. It is 395 km from Ski Valley to Vancouver. Sam made the trip in 6 h, travelling by bus and train. The train averaged 70 km/h and the bus 60 km/h. How much time was spent travelling by train?
71. The distance from the highway to Lake Snow was 160 km and Jacques made the trip in 11 h. For the first part of the journey he used a snowmobile and travelled at 20 km/h. The last part of the trip was made on skis, where he averaged 10 km/h. How far did he travel on skis?
72. Sarah spent 2 h more travelling by train than she did by bus. The train averaged 70 km/h and the bus 50 km/h. The total distance travelled was 740 km. How far did she travel by bus?
73. Flying against the wind, an aircraft made a 360 km trip in 2 h. The return trip took 1.5 h with both the speed of the wind and the airspeed of the aircraft unchanged from the first trip. Find the speed of the wind.
74. It took John 8 h to row 40 km upstream. The return trip, with the aid of the current, took 5 h. Find the speed of the current.

## Word Problems

Date: \_\_\_\_\_

75. An aircraft flying into the wind can make an 1100 km trip in 2 h. The same aircraft can make the same trip in 1 h 50 min if flown with the wind. Find the speed of the wind.
76. Sue left Montreal driving at 30 km/h. Sally left 2 h later and travelled the same road at 40 km/h. At what distance from Montreal will Sally overtake Sue?
77. After robbing the bank, the James boys left Winchester on horseback at 20 km/h. The posse was slow getting organized and didn't start the chase until 1 h had passed. By having fresh horses, they managed to travel at 25 km/h. How far from Winchester did the posse overtake the James boys?

**Digit Problems**

78. The sum of the digits of a 2 digit number is 11. The difference between the number and the number formed by reversing the digits is 27. Find the number.
79. A secret agent, being a mathematician, transmitted an important 2-digit locker number in the following manner. "The difference in the digits is 4. The sum of the number and the number formed by reversing the digits is 132." Find the locker number.
80. The sum of the digits of a 2-digit number is 9. If the number is doubled and then increased by 18 the result is the number with the digits reversed. Find the number.
81. The tens digit of a two-digit number is 6 more than the ones digit. The sum of the number, and the number formed by reversing the digits, is 88. Find the number.
82. The sum of the digits of a two-digit number is 7. The number formed by reversing the digits is two more than double the original number. Find the original number.
83. The sum of the digits of a two-digit number is 6. The number formed by reversing the digits is equal to three times the ones digit of the new number. Find the original number.
84. In a three-digit number, the hundreds digit is equal to the tens digit, and is 2 more than the ones digit. The number formed by reversing the digits is 19 times the sum of the digits. Find the original number.

**Answers:**

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|-------------|-------------------------|---------------------------|---------------------|
| 1. 747,464  | 22. 121s,242a           | 43. 14                    | 64. 100:35%–400:45% |
| 2. 156,93   | 23. 210                 | 44. 13                    | 65. 20:20%–80:40%   |
| 3. 12,6     | 24. 60                  | 45. 30                    | 66. 400             |
| 4. 15,11    | 25. 13                  | 46. 27                    | 67. 5               |
| 5. 12,10    | 26. 3000                | 47. \$600:8%–\$400:9%     | 68. 1.5             |
| 6. 16,14    | 27. 350                 | 48. \$6000:9%–\$2000:10%  | 69. 3               |
| 7. 21,20    | 28. \$45                | 49. \$3000:7½%–\$3000:8½% | 70. 3.5             |
| 8. 173,81   | 29. \$150               | 50. \$5000                | 71. 60              |
| 9. 147,41   | 30. 40 g, 15 g          | 51. \$1200:8%–\$800:12%   | 72. 250             |
| 10. 224,101 | 31. 1 kg, 0.083 kg      | 52. \$1800:8%–\$1200:7%   | 73. 30              |
| 11. 576,358 | 32. \$15/day; \$0.10/km | 53. \$3840:8%–\$2560:6%   | 74. 1.5             |
| 12. 25,21   | 33. \$2.75/L; \$0.63/L  | 54. 350                   | 75. 25              |
| 13. 34      | 34. \$28/day; \$0.25/km | 55. 400:\$36–800:\$24     | 76. 240             |
| 14. 14      | 35. \$3; \$2            | 56. 60:\$1.10–40:\$1.20   | 77. 100             |
| 15. 18      | 36. \$0.75; \$2         | 57. 120:\$2.20–80:\$2.40  | 78. 74              |
| 16. 17      | 37. 143,58              | 58. 240 cas — 160 pec     | 79. 48 or 84        |
| 17. 21      | 38. 160,40              | 59. 115:\$1.50–85:\$1.90  | 80. 27              |
| 18. 13      | 39. 33,4                | 60. 60:30%–140:40%        | 81. 71              |
| 19. 26      | 40. 22,8                | 61. 200:40%–300:20%       | 82. 25              |
| 20. 31d,69q | 41. 60,10               | 62. 40:40%–60:30%         | 83. 51              |
| 21. 13      | 42. 15                  | 63. 200:9%–300:12%        | 84. 331             |