Algebra Word Problems Packet #1

On a separate sheet of paper, write your "Let" statement(s) to define the unknown. Solve each problem using an algebraic equation.

1. Twice a number is 500 more than six times the number. What is the number?

2. Three-sevenths of a number is 24. Find the number.

3. What number increased by ¼ of itself is equal to 30?

4. Find a number such that ¼ of the number is 50 less than $\dfrac{2}{3}$ of the number.

5. The denominator of a fraction exceeds the numerator of a fraction by 25. The value of the fraction is $\dfrac{3}{8}$. Find the fraction.

6. If 6 times a number is decreased by 6, the result is the same as when 3 times the number is increased by 12. Find the number.

7. If 3 times a number is increased by 22, the result is 14 less than 7 times the number. What is the number?

8. Separate 84 into two parts such that one part will be 12 less than twice the other.

9. The difference between two numbers is 24. Find the numbers if their sum is 88.

10. One number is 3 times another number. If 17 is added to each, the first resulting number is twice the second resulting number. Find the two numbers.

11. The larger of two numbers is 1 less than 3 times the smaller. If 3 times the larger is 5 more than 8 times the smaller, find the numbers.

12. The second of three numbers is one less than the first. The third number is 5 less than twice the second. If the third number exceeds the first number by 12, find the three numbers.

13. One number is 4 more than 5 times another number. If 6 is added to each, the first resulting number is three times the second resulting number. Find the two numbers.

14. When you started your homework assignment, your friend already had 6 exercises done. You can do about 3 exercises per minute, whereas your friend can only do 2 exercises per minute. How many minutes will it take you to catch up to your friend.

15. It took Thomas 25 minutes longer to do his math homework than to do his French homework. He spent a total of 2.25 hours on both subjects. How much time did he spend on math?

16. Jesse earns $6 an hour babysitting for his younger brother. His mom gave him $71 last week. This included his babysitting money and his $20 allowance. How many hours did Jesse babysit?

17. Carol and Cathy are each saving money for a vacation. Carol started with $25 and saves $7.50 a week. Cathy started with $10 and saves $10 a week. When will they have saved the same amount?

18. One weekend Bill earned 3 times as much as Jim. Tom earned $5 more than Jim. In all, they earned $60. How much did each earn?

19. The Maxwell children have hired a caterer to provide food for an anniversary party for their parents. The caterer has quoted a price of $96 per person and is asking for an advance payment of one-fourth of the total bill. If the advance payment is $1200, how many guests are invited to the party?

20. Three children each contributed toward a birthday present for their mother. The oldest contributed three times as much as the youngest, while the second oldest contributed 50 cents more than the youngest. If the present costs $10.50, how much did each contribute?

21. At a school game, student tickets were 50 cents each and adult tickets were $1 each. If the total receipts from 900 tickets were $500, how many tickets of each kind were sold?

22. A salesman sold 200 pairs of slippers. Some were sold at $6 per pair and the remainder were sold at $11 per pair. Total receipts from this sale were $1600. How many pairs of slippers were sold at $6 each?

23. At a recent job fair, there were $\frac{2}{3}$ as many inquiries about jobs in health care as in electronics and 50 less inquiries about teaching as electronics. A reported 430 inquiries were made about all three fields. How many inquiries were made about teaching?

24. TriCity Taxi Company charges $3 for the first mile and $0.20 for every tenth of a mile thereafter. If your trip is measured in tenths of a mile, how far can you ride in a TriCity Taxi for $12.

25. Adam can rent an apartment in the city and walk to work for $615 per month. He can rent an apartment in the suburbs for $500 per month and take the train to work for $5 per day. How many days will he have to work per month to make either choice equal financially?

26. A company needs a faster computer to enhance its e-business capabilities. The computer can be purchased for $1890 or rented for $900 plus $90 per month. What is the maximum number of months the computer could be kept so that it is cheaper to rent than to buy?

27. Jennifer's telephone service costs $30 per month plus $0.15 for each local call. Long distance calls are extra. Last month, her bill was $63.50, and it included $18.50 in long distance charges. How many local calls did she make?

28. *Better* taxi service charges $3.00 for the first mile plus $0.20 for each additional mile. *Best* taxi service charges $6.00 for the first two miles plus $0.10 for each additional mile. How many miles will a person travel in order to spend an equal amount of money using either service?

29. A video store offers two yearly pricing plans:
    A. $10.00 charge plus $2.50 for each movie rented.
    B. $4.00 charge (total) for the first 4 movies rented plus $3.00 per movie.
    How many movies will a person need to rent in order to spend an equal amount of money using either plan?

30. The marina parking lot charges $9.20 for the first hour and $1.20 for each additional hour. The main street parking lot charges $2.00 for the first hour and $1.80 for each additional hour. For how many hours will the two lots charge an equal amount of money?

31. Jamie needs to lease a car. At Big City Nissan, Jamie can lease an Altima for $3,000 down plus $420 per month. Big City will also give her the first two months of her lease free. At Rye Town Nissan, they offer her the same car for $3960 down plus $400 per month. Rye Town will give her the first four months free. After how many months would both deals cost the same?

32. Find two consecutive integers such that twice the smaller diminished by the larger is 71.

33. The sum of three consecutive even numbers is 294. What are the numbers?

34. The sum of three consecutive integers is -24. What are the integers?

35. The sum of four consecutive odd integers is 32. What are the integers?

36. The sum of four consecutive numbers is 74. What are the numbers?

37. The sum of four consecutive even numbers is 60. What are the numbers?

38. Find three consecutive integers such that the sum of the first and the third is 40.

39. Find three consecutive integers such that twice the smallest is 12 more than the largest.

40. Find three consecutive even integers such that the sum of the smallest and twice the second is 8 more than the third.

41. Find three consecutive integers such that the sum of the second and third exceeds half of the first by 33.

42. Is it possible to find 3 consecutive odd integers whose sum is 59?

43. Mrs. Saunders can clean the windows of her house in 3 hours. Her daughter can clean the windows in 6 hours. How long will it take them to clean the windows if they work together?

44. A driver can deliver his newspapers in 80 minutes. His friend can take care of the same route in 2 hours. How long would it take them to do the job together?

45. One pipe can fill a tank in 8 minutes, a second can fill it in 12 minutes and a third can fill it in 24 minutes. If the tank is empty how long will it take the three pipes, operating together, to fill it?

46. Two printing presses, working together, can complete a job in 2 hours. If one press requires 6 hours to do the job alone, how many hours would the second press need to complete the job alone?

47. One supplementary angle is 5 more than six times the other angle. What is the measure of each angle?

48. One complementary angles measures 18 less than five times the other angle. What is the measure of each angle?

49. If the perimeter of an equilateral triangle is 24 inches, find a side of the triangle.

50. Each of the equal sides of an isosceles triangle is 4 times the third side. The perimeter of the triangle is 144 inches. Find the sides of the triangle.

51. The perimeter of a triangle is 73 inches. If the second side is 5 inches longer than twice the first side, and the third side is 4 inches less than three times the first side, how long is each side?

52. The length of a rectangle is three times the difference of the width and two. If the perimeter of the rectangle is 60 cm, what is the length of the rectangle?

53. A rectangular playground is enclosed by 440 feet of fencing. If the length of the playground is 20 feet less than 3 times the width, find the dimensions of the playground.

54. The lengths of the sides of a triangle are represented by three consecutive even integers. If the perimeter of the triangle is 96 feet, find the lengths of its sides.

55. The length of a rectangle exceeds 3 times its width by 1 inch. If the length of the rectangle is diminished by 3 inches and the width is doubled, a new rectangle is formed whose perimeter is 46 inches. Find the dimensions of the original rectangle.

56. Each side of a regular hexagon is 4 inches less than a side of a square. The perimeter of the hexagon is equal to the perimeter of the square. Find a side of the hexagon and a side of the square.

57. Find the area of the triangle below if the area of the rectangle is 120 square inches.
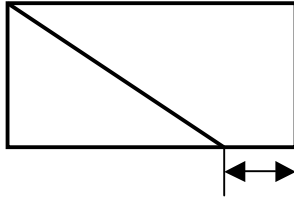
58. The length of a rectangle is 8 inches more than its width. If the length is increased by 4 inches and the width remains the same, the area increases by 24 sq in. Find the original dimensions of the rectangle.

59. In 8 years Jamie will be three times as old as she is now. How old is she now?

60. Mattie is twice as old as Pat. Jon is twice as old as Mattie. In 4 years the sum of their ages will be 61. How old is each person?

61. The difference between Jon's age and Sue's age is 18 years. If Jon is six years more than five times Sue's age, how old is each person?

62. The Smith family has a set of triplets and a set of twins. If the triplets are four years younger than the twins, and the sum of their ages is 68, how old are the triplets?

63. Jamie is 3 years less than three times Jessie's age. In five years the sum of their ages will be 59. How old are they now?

64. In five years the sum of Don's and Dan's ages will be 34. Don's age now is 8 years less than three times Dan's age. How old is Don?

65. The total of the ages of three students is 38. If the youngest student is 7 years younger than the oldest student, and the middle student is 4 years older than the youngest student, how old is each student?

66. A man is 35 years old, and his son is 7 years old. In how many years will the father be 3 times as old as his son will be then?

67. Jan has 6 more dimes than quarters. If the value of the dimes is the same as the value of the quarters, how many dimes and quarters does Jan have?

68. I have 7 more nickels than dimes. If the value of the nickels and dimes is the same, how many of each coin do I have?

69. Alex broke open his piggy bank. He had 30 more dimes than nickels and 8 more quarters than nickels. The value of the quarters is exactly the same as the value of the sum of the dimes and nickels. How many of each coin does Alex have?

70. Mr. Price deposited $170 in his bank. The number of $5 bills was 3 times the number of $10 bills, and the number of $1 bills was 30 more than the number of $5 bills. How many bills of each type did he deposit?

71. Marie has $5.05 in quarters and dimes. The number of quarters exceeds twice the number of dimes by 1. Find the number she has of each kind.

72. A purse contains $4.70 in nickels and quarters. There are 30 coins in all. How many of each kind are there?

73. Brian wants to earn at least $20 this week to go to the fair. His father said he will pay him $9 for mowing the lawn and $2.75 an hour to weed the flower bed. Brian has decided to do both chores. What is the minimum number of hours he will need to weed to earn at least $20?

74. An employee earns $2 for every magazine sold and a salary of $10 a week. How many magazines will the employee need to sell in order to earn at least $40 in one week?

75. Juan spent $2.50 on apples and oranges. He bought 5 apples at $0.36 each. What is the most he spent on the oranges?

76. Four times a number decreased by six is at most thirty. Find the number.

77. You must have an average score of at least 80 to get a B- on your report card. You have scores of 61, 70, 99 and 70. What is the minimum score you must get on the last test to get a B- on your report card?

78. The cashier in a movie box office sold 200 more adult admission tickets at $11.00 each than children's admission tickets at $8.00 each. What is the minimum number of each type of ticket that the cashier had to sell for the total receipts to be at least $5000?

Algebra Word Problems Packet #1
Answer Key

1. −125
2. 56
3. 24
4. 120
5. 15/40
6. 6
7. 9
8. 32, 52
9. 32, 56
10. 17, 51
11. 8, 23
12. 18, 19, 31
13. 4, 24
14. 6 min.
15. French: 55 min; Math: 80 min.
16. 8.5 hr
17. 6 wk
18. Jim: 11 yr; Tom: 16 yr; Bill: 33 yr
19. 50 guests
20. $2 youngest; $2.50 middle; $6 oldest
21. 800 student; 100 adult
22. 120 of the $6 slippers
23. 130 teaching inquiries
24. 5.5 miles
25. 23 days
26. 10 months
27. 100 calls
28. 30 miles
29. 36 movies
30. 13 hr.
31. 10 months
32. 72, 73
33. 96, 98, 100
34. −9, −8, −7
35. 5, 7, 9, 11
36. 17, 18, 19, 20
37. 12, 14, 16, 18
38. 19, 20, 21
39. 14, 15, 16
40. 4, 6, 8
41. 20, 21, 22
42. No
43. 2 hr
44. 48 min.
45. 4 min.
46. 3 hr
47. 25°; 155°
48. 18°, 72°
49. 8 in
50. 16 in, 64 in, 64 in
51. 12 in, 29 in, 32 in
52. 9 cm, 21 cm
53. 60 ft, 160 ft
54. 30 ft, 32 ft, 34 ft
55. 5 in, 16 in
56. Square: 12 in; Hexagon: 8 in
57. 52 sq in
58. 6 in by 14 in
59. 4 yr
60. Pat: 7 yr; Mattie: 14 yr; Jon: 28 yr
61. Sue: 3 yr; Jon: 21 yr
62. Twins: 16 yr; Triplets: 12 yr
63. Jessie: 13 yr; Jamie: 36 yr
64. Dan: 8 yr; Don: 16 yr
65. 9 yr; 13 yr; 16 yr
66. 7 yr
67. 4 quarters; 10 dimes
68. 7 dimes; 14 nickels
69. 20 nickels; 50 dimes; 28 quarters
70. $10 bills: 5; $5 bills: 15; $1 bill: 45
71. 8 dimes; 17 quarters
72. 14 nickels; 16 quarters
73. 4 hr
74. 15 magazines
75. $0.70
76. 9
77. 100
78. 148 child; 348 adult