

# Algebra Word Problems

## Lesson 1

### Worksheet 1

#### Algebra Word Problems –

#### Number Problems

Algebra Word Problems – Lesson 1 - Worksheet 1 - Algebra Word Problems –  
Number Problems

**Problem 1)** Five times a number increased by seven is equal to forty-seven.  
What is the number?

**Problem 2)** The sum of two consecutive integers is sixty-five. Find the two  
numbers.

**Problem 3)** Ninety-six golf balls were picked up at the driving range and placed  
into two buckets. One bucket has twenty-eight more balls than the other bucket.  
How many golf balls are in each bucket?

**Problem 4)** The sum of three consecutive integers is forty-two. Find the three numbers.

**Problem 5)** A basketball team played thirty-two games and won three times as many games as it lost. How many games did the team win?

**Problem 6)** Find two numbers whose sum is sixty-eight and whose difference is twenty-two.

**Problem 7)** The sum of two consecutive even integers is ninety-four. Find the numbers.

**Problem 8)** One hundred sixty-two guests attended a banquet. Three servers provided their beverages. The first server helped three times as many people as the second server and the third server helped twice as many people as the first server. How many guests did each server help?

**Problem 9)** The sum of three numbers is fifty-eight. The second number is four more than the first number and the third number is eight more than the second number. What are the numbers?

**Problem 10)** Two case workers share an office. The first case worker has fifteen active cases. The second case worker has twice the number of active cases. How many active cases does the office have?

**Problem 11)** Nine times a number decreased by five is equal to forty-nine. What is the number?

**Problem 12)** The sum of two consecutive integers is one hundred twenty-three. Find the two numbers.

**Problem 13)** A college has two depositional systems classes with a total of two hundred thirty-seven students. One class has forty-five more students than the other class. How many students are in each class?

**Problem 14)** The sum of three consecutive odd integers is fifty-seven. Find the three numbers.

**Problem 15)** A baseball team played sixty-three games and won twice times as many games as it lost. How many games did the team lose?

**Problem 16)** Find two numbers whose sum is ninety-nine and whose difference is seventy-three.

**Problem 17)** The sum of three consecutive even integers is one hundred seventy-four. Find the numbers.

**Problem 18)** Company employees attended a year end banquet. Forty-three of the guests ordered chicken, while twelve more of them ordered steak and nine fewer ordered seafood. How many guests attended the banquet?

**Problem 19)** The sum of three numbers is fifty-four. The second number is nine more than the first number and the third number is three less than the second number. What are the numbers?

**Problem 20)** Three taxi drivers are working at an airport. The first driver transported seventeen passengers in one day. The second driver transported six more passengers than the first driver, while the third driver transported two fewer passengers than the second driver. How many passengers did the three drivers transport?



Answers - Algebra Word Problems – Lesson 1 - Worksheet 1 - Algebra Word Problems – Number Problems

**Problem 1)** Five times a number increased by seven is equal to forty-seven. What is the number?

Solution:

Let  $x$  equal the number. Write and solve an equation:

$$5x + 7 = 47$$

$$5x = 40$$

$$x = 8$$

**Answer: 8**

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**Problem 2)** The sum of two consecutive integers is sixty-five. Find the two numbers.

Solution:

Let  $x$  equal the first number and let  $y$  equal the second number. Write an equation for their sum:

$$x + y = 65$$

Since the numbers are consecutive integers

$$y = x + 1$$

Substitute this expression for  $y$  in the equation and solve for  $x$ :

$$x + (x + 1) = 65$$

$$2x + 1 = 65$$

$$2x = 64$$

$$x = 32$$

Use  $x = 32$  to find  $y$ :

$$y = x + 1$$

$$y = 32 + 1 = 33$$

**Answer:** 32, 33

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**Problem 3)** Ninety-six golf balls were picked up at the driving range and placed into two buckets. One bucket has twenty-eight more golf balls than the other bucket. How many golf balls are in each bucket?

Solution:

Let  $x$  equal the number of golf balls in the first bucket and let  $y$  equal the number of golf balls in the second bucket. Write an equation for their sum:

$$x + y = 96$$

From the problem, we can say that

$$y = x + 28$$

Substitute this expression into the equation above for  $y$  and solve for  $x$ :

$$x + (x + 28) = 96$$

$$2x + 28 = 96$$

$$2x = 68$$

$$x = 34$$

Use  $x = 34$  to find  $y$ :

$$y = 34 + 28 = 62$$

**Answer:** 34, 62

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**Problem 4)** The sum of three consecutive integers is forty-two. Find the three numbers.

Solution:

Let  $x, y$  and  $z$  be the three numbers. Write an equation for their sum:

$$x + y + z = 42$$

Since the numbers are consecutive

$x$  is the smallest number

$$y = x + 1$$

$$z = x + 2$$

Substitute these expressions into the above equation and solve for  $x$ :

$$x + (x + 1) + (x + 2) = 42$$

$$3x + 3 = 42$$

$$3x = 39$$

$$x = 13$$

Use  $x = 13$  to find  $y$  and  $z$ :

$$y = 13 + 1 = 14$$

$$z = 13 + 2 = 15$$

$$x + y + z = 13 + 14 + 15 = 42$$

**Answer:** 13, 14, 15

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**Problem 5)** A basketball team played thirty-two games and won three times as many games as it lost. How many games did the team win?

Solution:

Let  $x$  equal the number of games the team won and let  $y$  equal the number of games the team lost. Write an equation for their sum:

$$x + y = 32$$

From the problem, we can say that

$$x = 3y$$

Substitute this expression into the above equation for  $x$ :

$$(3y) + y = 32$$

$$4y = 32$$

$$y = 8$$

The team lost 8 games. Use  $y = 8$  to find the number of games the team won:

$$x = 3(8) = 24$$

**Answer:** 24

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**Problem 6)** Find two numbers whose sum is sixty-eight and whose difference is twenty-two.

Solution:

Let  $x$  equal the first number and let  $y$  equal the second number. Write an equation for their sum and for their difference:

$$x + y = 68$$

$$x - y = 22$$

In the second equation, isolate  $x$  by adding  $y$  to both sides:

$$x - y + y = 22 + y$$

$$x = 22 + y$$

Substitute this expression into the first equation for  $x$  and solve for  $y$ :

$$(22 + y) + y = 68$$

$$22 + 2y = 68$$

$$2y = 46$$

$$y = 23$$

Use  $y = 23$  to find  $x$ :

$$x = 22 + 23 = 45$$

**Answer:** 23, 45

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**Problem 7)** The sum of two consecutive even integers is ninety-four. Find the numbers.

Solution:

Let  $x$  and  $y$  equal the numbers. Write an equation for their sum:

$$x + y = 94$$

Since the numbers are consecutive even integers

$$y = x + 2$$

Substitute this expression into the above equation and solve for  $x$ :

$$x + (x + 2) = 94$$

$$2x + 2 = 94$$

$$2x = 92$$

$$x = 46$$

Use  $x = 46$  to find  $y$ :

$$y = 46 + 2 = 48$$

**Answer:** 46, 48

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**Problem 8)** One hundred sixty-two guests attended a banquet. Three servers provided their beverages. The first server helped three times as many people as the second server and the third server helped twice as many people as the first server. How many guests did each server help?

Solution:

Let  $x$ ,  $y$  and  $z$  represent the servers. Write an equation for their sum:

$$x + y + z = 162$$

From the problem, we can say

$$y = 3x$$

$$z = 2x$$

Substitute these expressions into the above equation and solve for  $x$ :

$$x + 3x + 2x = 162$$

$$6x = 162$$

$$x = 27$$

Use  $x = 27$  to find  $y$  and  $z$ :

$$y = 3(27) = 81$$

$$z = 2(27) = 54$$

**Answer:** 27, 81, 54

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**Problem 9)** The sum of three numbers is fifty-eight. The second number is four more than the first number and the third number is eight more than the second number. What are the numbers?

Solution:

Let  $x$ ,  $y$  and  $z$  represent the three numbers. Write an equation for their sum:

$$x + y + z = 58$$

From the problem, we know that

$$y = x + 4$$

$$z = (x + 4) + 8 = x + 12$$

Substitute these expressions into the above equation:

$$x + (x + 4) + (x + 12) = 58$$

$$3x + 16 = 58$$

$$3x = 42$$

$$x = 14$$

Use  $x = 14$  to find  $y$  and  $z$ :

$$y = 14 + 4 = 18$$

$$z = (14 + 4) + 8 = 26$$

**Answer:** 14, 18, 26

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**Problem 10)** Two caseworkers share an office. The first caseworker has fifteen active cases. The second caseworker has twice the number of active cases. How many active cases does the office have?

Solution:

Let  $x$  equal the number of cases for the second worker and let  $y$  equal the number of cases for the office. Write an equation for the sum of cases:

$$y = x + 15$$

The problem states that

$$x = 2(15) = 30$$

Substitute 30 into the equation above for  $x$ :

$$y = 30 + 15 = 45$$

**Answer:** 45

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**Problem 11)** Nine times a number decreased by five is equal to forty-nine.  
What is the number?

Let  $x$  equal the number. Write an equation using the information in the problem:

$$9x - 5 = 49$$

$$9x = 54$$

$$x = 6$$

**Answer:** 6

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**Problem 12)** The sum of two consecutive integers is one hundred twenty-three. Find the two numbers.

Solution:

Let  $x$  and  $y$  represent the two numbers. Write an equation for their sum:

$$x + y = 123$$

Since the numbers are consecutive integers

$$y = x + 1$$

Substitute this expression into the above equation:

$$x + (x + 1) = 123$$

$$2x + 1 = 123$$

$$2x = 122$$

$$x = 61$$

Use  $x = 61$  to find  $y$ :

$$y = 61 + 1 = 62$$

**Answer:** 61, 62

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**Problem 13)** A college has two depositional systems classes with a total of two hundred thirty-seven students. One class has forty-five fewer students than the other class. How many students are in each class?

Solution:

Let  $x$  and  $y$  represent the number of student in each class. Write an equation for their sum:

$$x + y = 237$$

From the problem, we can say

$$y = x - 45$$

Substitute this expression into the above equation and solve for  $x$ :

$$x + (x - 45) = 237$$

$$2x - 45 = 237$$

$$2x = 282$$

$$x = 141$$

Use  $x = 141$  to find  $y$ :

$$y = 141 - 45 = 96$$

**Answer:** 96, 141

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**Problem 14)** The sum of three consecutive odd integers is fifty-seven. Find the three numbers.

Solution:

Let  $x$ ,  $y$  and  $z$  represent the three numbers. Write an equation for their sum:

$$x + y + z = 57$$

Since the numbers are consecutive odd numbers

$$y = x + 2$$

$$z = x + 4$$

Substitute these expressions into the above equation:

$$x + (x + 2) + (x + 4) = 57$$

$$3x + 6 = 57$$

$$3x = 51$$

$$x = 17$$

Use  $x = 17$  to find  $y$  and  $z$ :

$$y = 17 + 2 = 19$$

$$z = 17 + 4 = 21$$

**Answer:** 17, 19, 21

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**Problem 15)** A baseball team played sixty-three games and won twice times as many games as it lost. How many games did the team lose?

Solution:

Let  $x$  equal the number of games the team won and let  $y$  equal the number of games the team lost. Write an equation for the number of games the team played:

$$x + y = 63$$

From the problem, we know that

$$x = 2y$$

Substitute this expression into the above equation and solve for  $y$ :

$$(2y) + y = 63$$

$$3y = 63$$

$$y = 21$$

**Answer:** 21

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**Problem 16)** Find two numbers whose sum is ninety-nine and whose difference is seventy-three.

Solution:

Let  $x$  equal the first number and let  $y$  equal the second number. Write an equation for their sum and for their difference:

$$x + y = 99$$

$$x - y = 73$$

In the second equation, isolate  $x$  by adding  $y$  to both sides:

$$x - y + y = 73 + y$$

$$x = 73 + y$$

Substitute this expression into the first equation for  $x$  and solve for  $y$ :

$$(73 + y) + y = 99$$

$$73 + 2y = 99$$

$$2y = 26$$

$$y = 13$$

Use  $y = 13$  to find  $x$ :

$$x = 73 + 13 = 86$$

**Answer:** 13, 86

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**Problem 17)** The sum of three consecutive even integers is one hundred seventy-four. Find the numbers.

Solution:

Let  $x$ ,  $y$  and  $z$  represent the three numbers. Write an equation for their sum:

$$x + y + z = 174$$

Since the numbers are consecutive even integers

$$y = x + 2$$

$$z = x + 4$$

Substitute these expressions into the above equation:

$$x + (x + 2) + (x + 4) = 174$$

$$6x + 6 = 174$$

$$6x = 168$$

$$x = 56$$

Use  $x = 56$  to find  $y$  and  $z$ :

$$y = 56 + 2 = 58$$

$$z = 56 + 4 = 60$$

**Answer:** 56, 58, 60

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**Problem 18)** Company employees attended a year end banquet. Forty-three of them ordered chicken, while twelve more guests ordered steak and nine fewer ordered seafood. How many guests attended the banquet?

Solution:

Let  $x$  represent those guests who ordered steak, let  $y$  represent those guests who ordered seafood and let  $z$  represent the total number of guests. Write an equation for the total number of guests:

$$43 + x + y = z$$

From the problem, we know that

$$x = 43 + 12 = 55$$

$$y = 43 - 9 = 34$$

Substitute these values into the above equation and solve for  $z$ :

$$43 + 55 + 34 = z$$

$$z = 132$$

**Answer:** 132

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**Problem 19)** The sum of three numbers is fifty-four. The second number is nine more than the first number and the third number is three less than the second number. What are the numbers?

Solution:

Let  $x$ ,  $y$  and  $z$  represent the three numbers. Write an equation for their sum:

$$x + y + z = 54$$

From the problem, we can say

$$y = x + 9$$

$$z = (x + 9) - 3 = x + 6$$

Substitute these expressions into the above equation:

$$x + (x + 9) + (x + 6) = 54$$

$$3x + 15 = 54$$

$$3x = 39$$

$$x = 13$$

Use  $x = 13$  to find  $y$  and  $z$ :

$$y = 13 + 9 = 22$$

$$z = (13 + 9) - 3 = 22 - 3 = 19$$

Answer: 13, 22, 19

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**Problem 20)** Three taxi drivers are working at an airport. The first driver transported seventeen passengers in one day. The second driver transported six more passengers than the first driver, while the third driver transported two fewer passengers than the second driver. How many total passengers did the three drivers transport?

Solution:

Let  $x$  represent those passengers who were transported by the second driver, let  $y$  represent those passengers who were transported by the third driver and let  $z$  represent the total number of passengers. Write an equation for the total number of guests:

$$17 + x + y = z$$

From the problem, we know that

$$x = 17 + 6$$

$$y = (17 + 6) - 2 = 17 + 4$$

Substitute these values into the above equation and solve for  $z$ :

$$17 + (17 + 6) + (17 + 4) = z$$

$$17 + 23 + 21 = z$$

$$z = 61$$

**Answer:** 61

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