



**PROBLEMS AND SOLUTIONS - INTRODUCTION TO ALGEBRA**  
Prepared by Ingrid Stewart, Ph.D., College of Southern Nevada  
Please Send Questions and Comments to [ingrid.stewart@csn.edu](mailto:ingrid.stewart@csn.edu). Thank you!

**PLEASE NOTE THAT YOU MUST BE ABLE TO DO THE FOLLOWING PROBLEMS WITHOUT A CALCULATOR!**

**Problem 1:**

Identify the number of terms in each expression:

a.  $x + 7$

b.  $3x - 2(x + 3)$

c.  $\frac{7}{a + b} + \frac{1}{a - b}$

d.  $\frac{6}{x + y}$

**Problem 2:**

Identify the numerical coefficient of each term:

a.  $3x$

b.  $-5xy$

c.  $\frac{x}{7}$

d.  $\frac{3x}{4}$

e.  $abc$

f.  $-xy$

**Problem 3:**

Given  $y + 5 = 11$ , does  $y = 6$  make the equation true? Answer Yes or No

**Problem 4:**

Given  $-9 + R = 3$ , does  $R = 10$  make the equation true? Answer Yes or No.

**Problem 5:**

Given  $3 = \frac{3}{2}x$ , does  $x = 2$  make the equation true? Answer Yes or No.

**Problem 6:**

What is the value of the expression  $5x^2 + 7xy - y^2$ , when  $x = 2$  and  $y = -4$ ?

**Problem 7:**

Simplify  $3a - 7a + a$ .

**The word "simplify" takes on many meanings in mathematics. Often you must figure out its meaning from the mathematical expression you are asked to "simplify." Here we are asked to "simplify" instead of to adding and subtracting like terms.**

**Problem 8:**

Simplify  $-8x + y - 3y$ .

**Problem 9:**

Simplify  $3x + 8 - x + 4 - x - 2$ .

**Problem 10:**

Simplify  $2xy + 7yx$

**Problem 11:**

Simplify  $-3(2x + 5y - 6) - (5y - 2)$ .

**Problem 12:**

Simplify  $8(x + 2y) - 3(7x - 3y + 5)$ .

**Problem 13:**

Simplify  $\frac{5a}{6} - \frac{a}{4} + \frac{3a}{16}$ .

**Problem 14:**

Write the following as a mathematical statement: **5 more than a number is 12**

**Problem 15:**

Write the following as a mathematical statement: **4 times the difference of a number and 3 is 15**

**Problem 16:**

Write the following as a mathematical statement: **the sum of 12, 7, and a third number is 17**

**Problem 17:**

If the sum of three numbers is **60** and one of the numbers is  **$x$** , what is the sum of the other two?

**Problem 18:**

If  **$C$**  represents the number of cucumbers purchased at **20** cents each and  **$T$**  represents the number of tomatoes purchased at **5** cents each, write an expression for the total purchase amount in cents.



### SOLUTIONS

You can find detailed solutions below the link for this problem set!

|  |  |                       |
|--|--|-----------------------|
| 1. a. - c. Two terms d. One term         | 2. a. 3 b. -5 c. $\frac{1}{7}$ d. $\frac{3}{4}$ e. 1 f. -1 | 3. Yes                |
| 4. No                                    | 5. Yes   | 6. -52                |
| 7. -3a                                   | 8. $-8x - 2y$  | 9. $x + 10$           |
| 10. $9xy$                                | 11. $-6x - 20y + 20$                                       | 12. $-13x + 25y - 15$ |
| 13. $\frac{37a}{48}$ or $\frac{37}{48}a$ | 14. $5 + x = 12$ or $x + 5 = 12$                           | 15. $4(x - 3) = 15$   |
| 16. $12 + 7 + x = 17$                    | 17. $60 - x$   | 18. $20C + 5T$        |