

*Use when you get it right all by yourself*

**S** *Use when you did it all by yourself, but made a silly mistake*

**H** *Use when you could do it alone with a little help from teacher or peer*

**G** *Use when you completed the problem in a group*

**X** *Use when a question was attempted but wrong (get help)*

**N** *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Simplifying Algebraic Expressions	1, 2, 3	3, 4, 5	6
Coefficient	1		
Like & Unlike Terms	2		
CLT/Simplifying	3		
Distributive Property	4	4	
Writing Algebraic Expressions	9	5	6
Addition Property of Equality (POE)	7, 8	8	16
Multiplication Property of Equality (POE)	7, 8	8	16
Real-World Application/Word Problems		10	
Consecutive Integers		11	
Solving Linear Equations	12	12	12
Checking Linear Equations	12	15	
Evaluating Expressions		13	
Inequalities	14	14	
Opposite	17		
Reciprocal	18		
Commutative/Associative Property		19	
Quadrilateral Properties		20	

**2.1 Simplifying Algebraic Expressions**

1. Identify the numerical coefficient of each term.

a)  $-7y$

b)  $3x$

c)  $17x^2y$

d)  $1.2xy$

2. Determine which terms in each list are like or unlike.

a)  $-2x^2y, 6xy$

b)  $ab^2, -7ab^2$

c)  $7.4p^3q^2, 6.2p^3q^2r$

3. Simplify each expression by combining any like terms.

a)  $7y + 8y$

b)  $8x^3 + x^3 - 11x^3$

c)  $3b - 5 - 10b - 4$

d)  $m - 4m + 2m - 6$

e)  $8p + 4 - 8p - 15$

f)  $6x + 0.5 - 4.3x - 0.4x + 3$

4. Simplify each expression. First use the distributive property to remove any parentheses.

a)  $7(r - 3)$                       b)  $-(b + 7) - 15$                       c)  $-2(4x - 3w - 1)$                       d)  $4(2x - 3) - 2(x + 1)$

5. Write each of the following as an algebraic expression. Simplify if possible.

a) Subtract  $m - 3$  from  $2m - 6$                       b) Add  $4q - 7$  to  $q + 10$

6. Write each phrase as an algebraic expression and simplify if possible. Let  $x$  represent the unknown number.

a) The difference of a number and two, divided by five

b) Eight more than triple a number

c) Eleven, increased by two-thirds of a number

d) The sum of three times a number and 10, subtracted from nine times the number

e) Six times the difference of a number and five

f) Half a number, minus the product of the number and eight

g) The sum of twice a number, -1, five times the number, and -12

### **2.2 The Addition & Multiplication Properties of Equality**

7. Solve each equation. Check each solution.

a)  $x + 14 = 25$                       b)  $y - 9.2 = -6.8$                       c)  $9m + 5.5 = 10m$                       d)  $18p - 9 = 19p$

8. Solve each equation. Checking is great, but optional for these.

a)  $7y + 2 = 2y + 4y + 2$                       b)  $4c + 8 - c = 8 + 2c$                       c)  $10 = 8(3v - 4) - 23v + 20$

d)  $-2x = 0$

e)  $-k = 7$

f)  $-g + 4g = 33$

g)  $\frac{3}{4}n = -15$

h)  $\frac{1}{8}v = \frac{1}{4}$

i)  $\frac{d}{15} = 2$

j)  $\frac{f}{-5} = 0$

9. Two numbers have a sum of 13. If one number is  $y$ , express the other number in terms of  $y$ .
10. The Missouri River is the longest river in the United States. The Mississippi River is 200 miles shorter than the Missouri River. If the length of the Missouri River is  $r$  miles, express the length of the Mississippi River as an algebraic expression in  $r$ .
11. Write each algebraic expression described. Simplify if possible.
- a) If  $x$  is the first of four consecutive even integers, write their sum as an algebraic expression in  $x$ .
- b) If  $x$  is the first of two consecutive integers, express the sum of 20 and the second consecutive integer as an algebraic expression containing the variable  $x$ .

### **2.3 Solving Linear Equations**

12. Solve each equation. Then check on your calculator and write what you get for each side after substituting in your solution to prove your answer is correct.
- a)  $-4y + 10 = -2(3y + 1)$       b)  $-2(3x - 4) = 2x$       c)  $-4(n - 4) - 23 = -7$
- d)  $6y - 8 = -6 + 3y + 13$       e)  $\frac{2}{3}x + \frac{4}{3} = -\frac{2}{3}$       f)  $\frac{3}{4}x - \frac{1}{2} = 1$
- g)  $0.40x + 0.06(30) = 9.8$       h)  $x + \frac{7}{6} = 2x - \frac{7}{6}$       i)  $\frac{x}{3} - 2 = \frac{x}{3}$
- j)  $0.60(d - 300) + 0.05d = 0.70d - 205$       k)  $4(3x + 2) = 12x + 8$

**Spiral Review**

13. If  $a = 2$  and  $b = -5$ , find  $a - b^2$ .

14. Insert  $<$ ,  $>$ , or  $=$  in the appropriate space to make each statement true.

a.  $(-3)^2$  \_\_\_  $-3^2$

b.  $(-2)^4$  \_\_\_  $-2^4$

c.  $(-2)^3$  \_\_\_  $-2^3$

15. Use a calculator to determine whether the given value is a solution of the given equation.

$3(a + 4.6) = 5a + 2.5$ ;  $a = 6.3$

16. Solve each equation. Use your calculator to avoid making careless mistakes.

a.  $-3.6x = 10.62$

b.  $4.95y = -31.185$

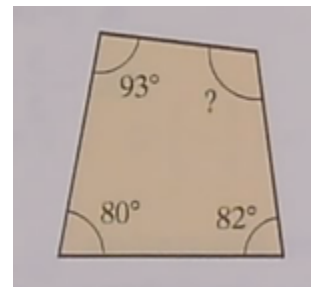
c.  $7x - 5.06 = -4.92$

17. The opposite of  $-7$  is \_\_\_\_.

18. The reciprocal of  $-3$  is \_\_\_\_ and  $\frac{2}{3}$  is \_\_\_\_.

19. An example of the commutative property is \_\_\_\_\_ while the associative property example would be \_\_\_\_\_.

20. The expression  $360 - a - b - c$  represents the measure of the unknown angle of the given quadrilateral. Replace  $a$  with  $93$ ,  $b$  with  $80$ , and  $c$  with  $82$  to find the measure of the unknown angle.



**CYU Reflection:** *How far can you go: basic, intermediate, or advanced?*

**Rate your mastery level!**

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

