

MAT 0012 Basic Algebra I

KEY CONCEPT REVIEW

CHAPTER 3, SECTIONS 3.1 – 3.2

TO RECEIVE CREDIT, DO ALL PROBLEMS, MAKE CORRECTIONS, AND SHOW ALL WORK.

Identify the like terms of the given expression. Then list three examples of terms that are not like terms.

1) $9x - 7y + 15 - 8x - 2 + 3y$

Like Terms	Unlike Terms

2) Are the terms $4a$, $6a^2$, and $-12a^5$ like terms? Explain why or why not.

3) When is an algebraic expression simplified? Explain.

Simplify each expression by combining like terms.

4) $7p - 2p + p - 10$

5) $-3t + 3s - 2r - 5t + 7s$

6) How is the distributive property used to simplify an algebraic expression? Explain.

Multiply.

7) $3(7a - 6)$

8) $-9(3x - 2y + 4)$

- A) $-27x - 18y + 36$
- B) $-27x + 18y + 4$
- C) $-45xy$
- D) $-27x + 18y - 36$

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9) How do you simplify $-(-10y + 6)$? Explain.

10) **What mistakes were made in the calculations shown below?**

a) $4(2x - 7) = 4(-5x) = -20x$

b) $-5(x - 4y + 8) = -5x + 20y + 8$

c) $8x - 3(5 - x) + 12$
 $= 8x - 15 - 3x + 12$
 $= 5x - 3$

Simplify each expression.

11) $-5(8y + 2) - 2$

12) $3(4x - 9) + 5x$

13) $-4(2x - 8) - 4x + 6$

A) $-12x + 38$

B) $4x + 38$

C) $-12x - 26$

D) $12x + 38$

14) $6(5x - 4) - 4(x - 3)$

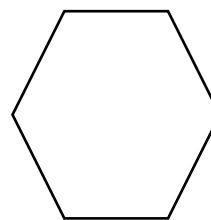
A) $6x - 12$

B) $26x - 36$

C) $26x - 12$

D) $26x - 7$

15) **Find the perimeter.**



Each side: $(2x - 4)$ feet

16) Is -3 a solution of $3(3x - 4) = 13x$?

- A) No B) Yes

17) Is $p = -6$ a solution of $4p - 24$? Explain why or why not.

18) In your own words, explain how to solve the equations listed below.

- a) $-12 + x = 36$
b) $-12x = 36$

19) What value is added to both sides to solve this equation given equation for k ?
 $9k - 15 = 10k$

Solve each equation.

20) $x - 6 = -3 - 28$

21) $-6x + 7x = -9$

22) $3y - 12 = 0$

23) $3x + 3 - 2x = 6 - 20$

- A) 29 B) -29
C) 17 D) -17

24) $17x = 4(4x - 6)$

25) $6(y + 6) = 8y + 36$

26) $-4(x + 2) - 24 = -10 - 6$

- A) 2 B) -4
C) -2 D) 4

Each solution below contains a mistake. Find the mistake and the correct solution.

27) $6(y - 5) = 8y + 44$
 $6y - 30 = 8y + 44$
 $6y + 8y = 44 - 30$
 $14y = 14$
 $y = 1$

28) $7x = 8(x + 2)$
 $7x = 8x + 16$
 $-7x$
 $x = 16$

29) $4x - 3x = 10 - 4$
 $+3x \quad +4$
 $7x = 14$
 $x = 2$

Write each phrase as a variable expression. Use x to represent the unknown number.

30) The product of negative 3 and a number.

31) Twice a number, decreased by 32

- A) $2(x - 32)$ B) $2x - 32$
C) $2 + x - 32$ D) $-32(2x)$

32) A number subtracted from 12

33) Four times the sum of a number and seven

- A) $4x + 7$ B) $4 + x + 7$
C) $4(x + 7)$ D) $4(7x)$