BASIC ALGEBRA ASSESSMENT SAMPLE

You have up to 1 hour to complete **25 multiple choice questions**.
Calculators and dictionaries are NOT allowed.

PART A - Basic Concepts

Choose the letter of the correct answer and place it in the blank space at the right.

1. {0,1,2,3,4,.......} is called the set of:
   - a) natural numbers
   - b) arithmetic numbers
   - c) integers
   - d) whole numbers

   1. _____

2. Which one of the following is <u>FALSE</u> ?
   - a) $3 > -2$
   - b) $6 + (-2) > 6 + (-1)$
   - c) $-5 < -1$
   - d) $|-7| = 7$

   2. _____

3. The reciprocal of $3\frac{3}{4}$ is:

   - a) $-3\frac{3}{4}$
   - b) $\frac{4}{9}$
   - c) $\frac{15}{4}$
   - d) $\frac{4}{15}$

   3. _____

4. For which one of the following is the answer <u>NOT</u> equal to 0:

   - a) 0^5
   - b) 5×0
   - c) $\frac{5}{0}$
   - d) $\frac{0}{5}$

   4. _____

5. What does x³ represent if x = 2?

   - a) $2 \bullet 2 \bullet 2$
   - b) $2 + 3$
   - c) 2×3
   - d) $2 + 2 + 2$

   5. _____

PART B - Operations with algebraic expressions - Signed Numbers
Perform the indicated operations:

1. $-5 + (-7) =$ _____

2. $-2 - (-9) =$ _____

3. $(-3) \bullet (-2)^2 =$ _____

4. $3[2 - (3 \bullet 4 - 15)] + 5 =$ _____

5. $\frac{10.(-3)}{(-15)} =$ _____

6. Evaluate if x = 5 and y = -2: $4x + 3y =$

   6. _____

7. Collect like terms: $4x - y + 8 + 3y - 2x - 4 =$

   7. _____

8. Remove brackets and collect like terms:

   $(2x - 3y) + 3(x + y) - (4x - 5y)$

   8. _____

9. Multiply: $x(3x^2 + 4x - 5)$

   9. _____

10. Factor: $4a + 12$

    10. _____

PART C - Solving equations
Solve the following equations for "x" showing all necessary steps:

1. $5x + 2 = 17$

2. $4x + 3(x + 2) = 20$

3. $\dfrac{1}{3}x + \dfrac{1}{5}x = 8$

4. $6x - 4 = 2x + 12$

5. $\dfrac{x}{3} = \dfrac{12}{18}$

1. _____

2. _____

3. _____

4. _____

5. _____

PART D - Solving word problems using equations

1. Twice a number is subtracted from 5 and the result is 10. Pick the correct equation to find the number.

   a) $x^2 - 5 = 10$ b) $5 - 2x = 10$

   c) $2x - 5 = 10$ d) $5 - x^2 = 10$

2. A man is three times as old as his daughter. The sum of their ages is 52. Pick the correct equation to find their ages.

   a) $x^3 + x = 52$ b) $x + x + 3 = 52$

   c) $x + 3x = 52$ d) $3(x + x) = 52$

3. If a number is increased by 20% the result is 70. Pick the correct equation to find the number.

   a) $x + .02x = 70$ b) $x + .2x = 70$

   c) $x + 20x = 70$ d) $x + 20 = 70$

4. The perimeter of a picture frame is 34 inches. Pick the correct equation to find the dimensions of the frame if the length of the frame is 3 inches more than the width.

   a) $x + 3x = 34$ b) $x + x + 3 = 34$

   c) $x + x + 3 = 17$ d) $2x + 2x + 3 = 34$

5. The sum of three consecutive integers is 105. Pick the correct equation to find the numbers.

   a) $x + 2x \div 3x = 105$ b) $3x = 105$

   c) $x + x + 1 + x + 2 = 105$ d) $x + 3 = 105$

Answer key for Basic Algebra

PART A	PART B	PART C	PART D
1. d	1. −12	1. x = 3	1. b
2. b	2. 7	2. x = 2	2. c
3. d	3. −12	3. x = 15	3. b
4. c	4. 20	4. x = 4	4. c
5. a	5. 2	5. x = 2	5. c
	6. 14		
	7. $2x + 2y + 4$		
	8. $x + 5y$		
	9. $3x^3 + 4x^2 - 5x$		
	10. $4a + 12 = 4(a + 3)$		