Assessment # 2-Elementary Algebra Diagnostic Assessment (Sample problems)

This is a sample of some of the types of problems you will find on the Elementary Algebra Diagnostic assessment given on the specific Assessment dates. The actual assessment consists of 50 questions –you will have 45 minutes and will not be allowed to use a calculator. Print this assessment and try the problems, without a calculator, giving yourself about 25 minutes. The answer key is at the end of the example assessment.

1) Simplify: $10x+3y-4x-7y=$

a) $6x-4y$

b) $4y-6x$

c) $6x-11y$

d) $16x-10y$

2) Simplify: $\frac{x^2y^3}{x^7y^2}=$

a) $\frac{y}{x^5}$

b) $\frac{1}{x^9y^5}$

c) $x^{-5}y^{-1}$

d) $\frac{1}{x^5y}$

3) One of the solutions of $x^2-5x=-6$ is

a) -3

b) 1

c) 2

d) -2

4) One of the factors of $3x^2-8x+5$ is

a) $3x-5$

b) $5-x$

c) $x-3$

d) $x+5$

5) Multiply and simplify: $x(3x-5)(x-5)$

a) x^2-5x

b) $3x^2-5x$

c) $3x^2-20x+5$

d) $3x^3-20x^2+25x$

6) $3\sqrt{12}$ is between what two numbers:

a) $12 \& 16$

b) $15 \& 18$

c) $9 \& 12$

d) $9 \& 15$

7) If x is indirectly proportional to y and $x = 4$ when $y = 6$, then what is the value of x when $y = 12$?

a) 4

b) 10

c) 8

d) 2

e) 12

8) If $\frac{1}{2}x + \frac{1}{3}x = 10$, then $x =$

a) 6

b) 25

c) 10

d) 12

e) 24

9) If three times a first number is then decreased by a second number, the result is 1. If the first number is increased by twice the second number, the result is 12. Find the smaller of the two numbers.

a) 2

b) 1

c) 4

d) 7

e) 5

10) If the following fractions were put in increasing order, which would be the fourth in the list?

The fractions are $\frac{2}{5}, \frac{2}{3}, \frac{5}{9}, \frac{5}{8}, \frac{1}{2}$

a) $\frac{2}{5}$

b) $\frac{2}{3}$

c) $\frac{5}{9}$

d) $\frac{5}{8}$

e) $\frac{1}{2}$

11) Subtract $3x^2 - 4x + 6$ from $-7x^2 + x - 10$

$a) -4x^2 - 3x - 4$

$b) -10x^2 - 5x - 16$

$c) -10x^2 + 5x - 16$

$d) 10x^2 + 5x - 16$

12) Simplify: $\dfrac{15x^2y - 3x^2y^3 - 3y^5}{3y}$

$a) 5x^2 - 3x^2y^3 - 5y^5$

$b) \dfrac{5x^2 - x^2y^2 - y^4}{3y}$

$c) 5x^2$

$d) 5x^2 - x^2y^2 - y^4$

13) A quadrilateral is a 4-sided figure. If the side lengths of a quadrilateral are 4 consecutive positive integers, then what is the algebraic expression for the perimeter of the quadrilateral if the shortest side length is designated by n?

$a) 4n + 1$

$b) 4n + 6$

$c) (4n + 1)^4$

$d) 4n + 1$

14) Multiply and simplify: $\dfrac{(x+3)^2}{x^2 - 9} \bullet \dfrac{x}{x+3}$

$a) \dfrac{-1}{3}$

$b) \dfrac{x}{x^2 - 9}$

$c) \dfrac{x}{x-3}$

$d) \dfrac{-x}{x+3}$

15) Find the solution of $2(n-4) - 3(n+3) \geq 1$

$a) n \geq 6$

$b) n \leq -6$

$c) n \geq -18$

$d) n \leq -18$

16) One-tenth of 1% can be written as

$a) 10^{-1}$

$b) 10^{-4}$

$c) 10^{-2}$

$d) 10^{-3}$

17) If $y = x^2 - x - 1$ then what is the value y when $x = -2$?

$a) 1$

$b) 5$

$c) 7$

$d) -1$

18) Add and simplify: $\frac{x}{x-3} + \frac{4}{x}$

$a) \frac{x^2 + 4x - 12}{x^2 - 3x}$

$b) 4x - 12$

$c) \frac{4}{x-3}$

$d) x^2 - 4x - 3$

19) Two-fifths of farmer Joe's income comes from his soy bean crop. If farmer Joe makes $80,000 on his soy bean crop, what is his total income?

$a)$ \$100,000

$b)$ \$200,000

$c)$ \$116,000

$d)$ \$248,000

20) A right triangle has a hypotenuse of length 1.0cm and a leg of length 0.8cm. Find the length of the remaining leg.

$a) 1.64cm$

$b) 0.6cm$

$c) 0.2cm$

$d) 0.06cm$

$e) 16.6cm$

21) Simplify: $(\sqrt{15})(\sqrt{20}) - \sqrt{147}$

$a) 3\sqrt{3}$

$b) -75$

$c) \sqrt{153}$

$d) 3\sqrt{10} - 7\sqrt{3}$

$e) 3$

22) Factor out the greatest common factor of $12x^2y + 8x^4$

a) $4x^2(3y + 2x^2)$

b) $12(x^2y + x^4)$

c) $2x(6xy + 4x^3)$

d) $4x^4(3x^2y + 2)$

e) $20x^6y$

23) Find the slope of the line through the points (1,-1) and (-2,1).

a) $\frac{3}{2}$

b) $\frac{2}{3}$

c) $\frac{-3}{2}$

d) $\frac{-2}{3}$

e) 0

24) If $\sqrt{6-5x} = x$, then the solution set is

a) $\{1.-6\}$

b) $\{2,3\}$

c) $\{3\}$

d) $\{-2,-3\}$

e) $\{1\}$

How did you do?

Answer Key:

1) a
2) a
3) c
4) a
5) d
6) c
7) d
8) d
9) a
10) d
11) c
12) d
13) b
14) c
15) d
16) d
17) b
18) a
19) b
20) b
21) a
22) a
23) d
24) e