Elementary Algebra
MATH 97
Practice Test
Form B

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate the expression for the given values. If necessary, round to the nearest tenth.
1) \(6x + 9y + 9; x = 2, y = 5\)
   A) 30  B) 57  C) 66  D) 60
   Objective: (1.2) Evaluate Expression (Multiple Variable)

State the phrase as a mathematical expression. Use \(x\) to represent the variable.
2) The quotient of a number and five
   A) \(5x\)  B) \(5 + x\)  C) \(\frac{x}{5}\)  D) \(5 - x\)
   Objective: (1.2) Convert Phrase to Algebraic Expression

Decide if the given number is a solution to the given equation.
3) \(6m + 4 = 36; \quad 5\)
   A) No  B) Yes
   Objective: (1.2) Determine Whether Given Number is Solution of Equation

Answer the question.
4) Which one of the following is the correct method for evaluating the expression \(2x^2 - 5\) for \(x = 7?\)
   A) \(2 \cdot 7^2 - 5 = 142 - 5 = 137\)  B) \(2 \cdot 7^2 - 5 = 2 \cdot 49 - 5 = 98 - 5 = 93\)
   C) \(2 \cdot 7^2 - 5 = (14 - 5)^2 = 9 = 81\)  D) \(2 \cdot 7^2 - 5 = 2 \cdot 42 = 2 \cdot 4 = 8\)
   Objective: (1.2) *Know Concepts: Variables/Expressions/Equations

List the numbers from the set that are of the type indicated.
5) \(\{0, \sqrt{6}, -18, \frac{2}{3}, -\frac{1}{2}, 3.1, 2\}\)
   A) 12, \(\sqrt{6}\)  B) 0, -18, 2  C) 12  D) 12, -18
   Objective: (1.3) List Numbers in Specified Subset of Real Numbers
Select the lesser of the two given numbers.
6) \(|-19|, |-23|\)
   A) \(|-23|\) \quad B) \(|-19|\)

Objective: (1.3) Select the Lesser of Two Numbers

Simplify.
7) \(-|-22|\)
   A) 22 \quad B) -22 \quad C) 44 \quad D) 0

Objective: (1.3) Find Absolute Value of Number

Write a numerical expression for the phrase and simplify it.
8) The sum of -10 and -13, increased by -15
   A) \([-10] +(-13)] +15; -8\)
   B) \([-10] +(-13)] +(-15); -38\)
   C) \[10 +13] +15; 38\)
   D) \([-10] +(-13)] +(-15); -18\)

Objective: (1.4) Write Numerical Expression for Phrase and Simplify

Solve the problem.
9) The stock market gained 15 points on Tuesday and lost 11 points on
   Wednesday. Find the difference between these changes.
   A) -4 points \quad B) -26 points \quad C) 26 points \quad D) 4 points

Objective: (1.5) Solve Apps: Subtraction of Signed Numbers

Find the sum.
10) \(7 +[4 +(-22)]\)
    A) -19 \quad B) -11 \quad C) 33 \quad D) 25

Objective: (1.4) Add Three or More Signed Numbers

Find the quotient.
11) \(\frac{108}{-4}\)
    A) -37 \quad B) -\frac{1}{27} \quad C) 27 \quad D) -27

Objective: (1.6) Divide Signed Numbers

Perform the indicated operation.
12) \(-12(2) +8(8)\)
    \(-5 - (-1)\)
    A) 10 \quad B) 22 \quad C) -10 \quad D) -22

Objective: (1.6) Use Order of Operations to Simplify Expression
Evaluate the expression, given $x = -2$, $y = 3$, and $a = -4$.

13) $(-6x - 3y)(-2a)$
   A) 24     B) -24     C) -120     D) -96

Objective: (1.6) Evaluate Signed Number Expression

Decide whether the statement is an example of the commutative, associative, identity, inverse, or distributive property.

14) $(9 +5) +7 = (5 +9) +7$
   A) Identity     B) Distributive
   C) Associative     D) Commutative

Objective: (1.7) Identify Property of Real Numbers

Write the phrase as a mathematical expression. Use $x$ to represent the number. Combine like terms if possible.

15) Two times a number, added to the sum of the number and seven.
   A) $3x$     B) $9x$
   C) $2x + 7$     D) $(x +7) +2x; 3x +7$

Objective: (1.8) Convert Phrase into Mathematical Expression

Solve the equation.

16) $10y = 7y + 8 + 2y$
   A) -80     B) 80     C) 8     D) -8

Objective: (2.1) Solve Equation (Collect Like Terms)

17) $-7m - 22 = -8m - 7$
   A) 15     B) 14
   C) All real numbers     D) No solution

Objective: (2.1) Solve Equation Using Addition Property

Solve the problem.

18) If 7 is added to a number and the sum is doubled, the result is 18 less than the number. Find the number.
   A) -4     B) 4     C) 11     D) -32

Objective: (2.4) Solve Apps: Numbers

19) The sum of three consecutive even integers is 198. Find the integers.
   A) 59, 60, 61     B) 64, 66, 68     C) 68, 70, 72     D) 66, 68, 70

Objective: (2.4) Solve Apps: Consecutive Integers
Find the measure of each marked angle.

20) \( (x + 2)° \) \( (4x - 137)° \)

A) 63° and 117°  
B) 65° and 25°  
C) 67° and 113°  
D) 65° and 115°

Objective: (2.5) Find Measure of Angle

Use a formula to solve the problem.

21) What is the perimeter of a rectangle of length 35 ft and width 9 ft?  
A) 79 ft  
B) 88 ft  
C) 176 ft  
D) 44 ft

Objective: (2.5) Solve Apps: Geometry Formulas

Express the phrase as a ratio in lowest terms.

22) 4 feet to 40 inches  
A) \( \frac{6}{5} \)  
B) \( \frac{40}{4} \)  
C) \( \frac{1}{10} \)  
D) \( \frac{1}{120} \)

Objective: (2.6) Write Ratio to Describe Situation

Tell which brand is the better buy.

23) Brand X 10 oz for $2.50  
Brand Y 8 oz for $1.84  
A) Brand Y  
B) Not enough information  
C) Brand X  
D) Equal value

Objective: (2.6) Solve Apps: Find Best Buy

Answer the question about percent. Round your answer to the nearest tenth of a percent, if necessary.

24) 150 is what percent of 1760?  
A) 8.5%  
B) 0.1%  
C) 0.0%  
D) 1173.3%

Objective: (2.6) Solve Percent Problem for the Percent

Solve the problem.

25) If a boat uses 19 gallons of gas to go 67 miles, how many miles can the boat travel on 57 gallons of gas?  
A) 402 miles  
B) 201 miles  
C) 22 miles  
D) 221 miles

Objective: (2.6) Solve Apps: Proportions
Graph the inequality.

26) \( x > 0 \)  

A)  

B)  

C)  

D)  

Objective: (2.7) Graph Inequality on Number Line

Decide whether or not the ordered pair is a solution to the equation.

27) \( x + y = 14; \ (7, 8) \)  

A) Yes  

B) No  

Objective: (3.1) Decide Whether Ordered Pair Is Solution of Equation

Complete the table of values. Write the results as ordered pairs.

28) \( y = -x + 9 \)  

<table>
<thead>
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<th>( x )</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>( _ )</td>
</tr>
<tr>
<td>9</td>
<td>( _ )</td>
</tr>
<tr>
<td>0</td>
<td>( _ )</td>
</tr>
</tbody>
</table>

A) \( (5, 5); \ (9, 9); \ (0, 0) \)  
B) \( (5, 20); \ (9, 0); \ (0, 9) \)  
C) \( (5, 4); \ (9, 1); \ (0, 9) \)  
D) \( (5, 4); \ (9, 0); \ (0, 9) \)  

Objective: (3.1) Complete Table of Ordered Pairs

Find the intercepts for the graph of the equation.

29) \( x + y = 4 \)  

A) \( (0, 2); \ (0, 2) \)  
B) \( (4, 2); \ (2, 4) \)  
C) \( (4, 0); \ (0, 4) \)  
D) \( (2, 0); \ (2, 0) \)  

Objective: (3.2) Find Intercepts for Graph of Equation

Answer the question.

30) True or False? The \( x \)-coordinate is positive in quadrants I and IV.  

A) True  

B) False  

Objective: (3.1) *Know Concepts: Reading Graphs; Linear Equations
Use the indicated point coordinates to find the slope of the line.

31) Use the indicated point coordinates to find the slope of the line.

\[ y = \frac{1}{4}x + 3 \]

A) 1 \hspace{1cm} B) 4 \hspace{1cm} C) -1 \hspace{1cm} D) -4

Objective: (3.3) Find Slope Given Graph

Decide whether or not the ordered pair is a solution to the equation.

32) \(2x + y = 15; (5, 5)\)

A) Yes \hspace{1cm} B) No

Objective: (3.1) Decide Whether Ordered Pair Is Solution of Equation

Provide an appropriate response.

33) If the \(y\) term is missing in both of two linear equations, the lines are ________.

A) parallel or the same \hspace{1cm} B) parallel \hspace{1cm} C) the same \hspace{1cm} D) intersecting

Objective: (4.1) *Know Concepts: Solving Systems by Graphing

Decide whether or not the ordered pair is a solution of the system.

34) \((-5, -4)\)

\(x + y = -9\)
\(x - y = -1\)

A) Yes \hspace{1cm} B) No

Objective: (4.1) Decide Whether Ordered Pair is Solution of System

Solve by the substitution method.

35) \(x + 3y = -9\)

\(4x + 2y = -16\)

A) (-4, -1) \hspace{1cm} B) (-3, -2) \hspace{1cm} C) (3, -1) \hspace{1cm} D) No Solution

Objective: (4.2) Solve System by Substitution
Solve the system by the elimination method.

36) \( x + y = -1 \)
\( x - y = -11 \)

A) \((-7, 6)\) \hspace{1cm} B) \((6, 6)\) \hspace{1cm} C) No solution \hspace{1cm} D) \((-6, 5)\)

Objective: (4.3) Solve by Elimination Method

Solve the problem.

37) The sum of two numbers is 52 and their difference is 8. Find the numbers.

A) 24 and 32 \hspace{1cm} B) 30 and 22 \hspace{1cm} C) 45 and 7 \hspace{1cm} D) 28 and 24

Objective: (4.4) Solve Apps: Quantities

Write an expression that illustrates the quantity described.

38) The monetary value (in dollars) of \( x \) dimes and \( y \) quarters.

A) \$.25x + $.10y \hspace{1cm} B) $.10x + $.25y \hspace{1cm} C) $10x + $25y \hspace{1cm} D) $.35(x + y)

Objective: (4.4) *Know Concepts: Applications of Linear Systems

Write the expression using exponents.

39) \( 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \)

A) \( 6^5 \) \hspace{1cm} B) \( 5^6 \) \hspace{1cm} C) \( 5^5 \) \hspace{1cm} D) 30

Objective: (5.2) Write Expression Using Exponents

Find the square.

40) \((w - 13)^2\)

A) \( w^2 + 169 \) \hspace{1cm} B) \( w^2 - 26w + 169 \) \hspace{1cm} C) \( 169w^2 - 26w + 169 \) \hspace{1cm} D) \( w + 169 \)

Objective: (5.4) Find Square of Binomial

Find the product.

41) \( 6(-11x + 2) \)

A) \(-54x \) \hspace{1cm} B) \(-66x + 12 \) \hspace{1cm} C) \(-11x + 12 \) \hspace{1cm} D) \(-66x + 2 \)

Objective: (5.3) Multiply Polynomial by Monomial

Provide an appropriate response.

42) Decide whether the expression is positive, negative, or zero. \( 75^0 - 91^0 \)

A) Negative \hspace{1cm} B) Zero \hspace{1cm} C) Positive

Objective: (5.5) *Know Concepts: Integer, Exponents, Quotient Rule
Perform the division. Write the answer with positive exponents.

43) \[ \frac{8x^6 - 28x^4}{4x^2} \]

A) 8x^6 - 7x^2  
B) 2x^4 - 28x^4  
C) -5x^8  
D) 2x^4 - 7x^2

Objective: (5.6) Divide Polynomial by a Monomial

Provide an appropriate response.

44) What polynomial, when divided by \(-7ax^3\), yields \(-6ax^6 + 11x^3 - 6\) as a quotient?

A) \(42a^2x^9 + 11x^3 - 6\)  
B) \(42a^2x^9 - 77ax^6\)  
C) \(42a^2x^9 - 77ax^6 + 42ax^3\)  
D) \(42ax^6 - 77x^3 + 42\)

Objective: (5.7) *Know Concepts: Dividing a Polynomial by a Polynomial

Perform the indicated operation. Write the answer without exponents.

45) \(\frac{(4 \times 10^3) \times (16 \times 10^2)}{32 \times 10^{-1}}\)

A) 2,000,000  
B) 20,000,000  
C) 200,000  
D) 20,000

Objective: (5.8) Multiply or Divide and Express in Standard Notation

Find the greatest common factor of the terms.

46) \(21m^5, 189m^7\)

A) \(21m^2\)  
B) \(3969m^2\)  
C) \(189m^5\)  
D) \(21m^5\)

Objective: (6.1) Find Greatest Common Factor of Terms

Factor completely.

47) \(x^2 + 8x - 48\)

A) \((x - 12)(x + 4)\)  
B) \((x - 12)(x + 1)\)  
C) Prime  
D) \((x + 12)(x - 4)\)

Objective: (6.2) Factor Trinomial in One Variable

Solve the problem.

48) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 18 miles, the distance between the cars was 6 miles more than the distance traveled by the car heading east. How far had the eastbound car traveled?

A) 18 miles  
B) 30 miles  
C) 36 miles  
D) 24 miles

Objective: (6.7) Solve Apps: Pythagorean Formula
Use the product and quotient rules, as necessary, to simplify the radical expression.

49) \( \frac{\sqrt{16}}{\sqrt{9}} \)

- A) \( \frac{4}{3} \)
- B) \( \frac{\sqrt{4}}{\sqrt{3}} \)
- C) 1
- D) \( \frac{\sqrt{4}}{3} \)

Objective: (8.2) Use Product and Quotient Rules to Simplify Radical (Numbers)

Find the product and simplify.

50) \( \sqrt{2} \cdot \sqrt{9} \)

- A) 3
- B) \( \sqrt{18} \)
- C) \( 3\sqrt{2} \)
- D) \( \sqrt{6} \)

Objective: (8.2) Multiply Radicals and Simplify (Numbers)