Dear Student,

The problems in this packet are very similar to those on the Math 055 final. If you wish to try to place out of Math 055, we suggest you use this material for practice. You will need to know both the algebra and the geometry material. If you are a Triton student and you wish to have some help working through this material, you may visit the Math Zone in A112 and they will be happy to assist you. Good luck!

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MAT 055
Placement Practice Test - Form A

Name____________________________

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

Evaluate.
1) \( \frac{x + y}{12} \), for \( x = 13 \) and \( y = 83 \)
   A) 6  B) 7  C) 9  D) 8
   Objective: (1.1) Evaluate Algebraic Expression in Two Variables

Translate to an algebraic expression.
2) 3 less than 5 times a number
   A) 5x - 3  B) 3x - 5  C) 2x  D) 3 - 5x
   Objective: (1.1) Translate Verbal Expression to Algebraic Expression

Translate the problem to an equation. Do not solve.
3) The sum of twice a number and 5 is 60.
   A) 10x - 1 = 60  B) 2x + 5 = 60  C) 10(x + 1) = 60
   Objective: (1.1) Translate Word Problem to Equation

Translate to an algebraic expression.
4) Alex had \( y \) dollars before spending $17.50 for a book. How much did he have after the purchase?
   A) \( y - 17.50 \)  B) \$17.50y  C) \$17.50 - \( y \)  D) \$17.50 + \( y \)
   Objective: (1.1) Solve Apps: Translate Phrase to Algebraic Expression

Add.
5) \( \frac{-4}{5} + \frac{8}{15} \)
   A) \( -\frac{4}{15} \)  B) \( \frac{4}{3} \)  C) \( -\frac{4}{3} \)  D) \( \frac{4}{15} \)
   Objective: (1.5) Add Fractions and Decimals

6) 11 + (-10) + 20 + (-7) + 12 + (-13)
   A) -27  B) -73  C) -7  D) 13
   Objective: (1.5) Add More Than Two Real Numbers
Solve the problem.

7) A football team gained 29 yards on one play, lost 21 yards on another, and gained 25 yards on the last play of the first half. They had already gained 299 yards during the half. What was the total yardage gain for the first half?
   A) 353 yards  B) 332 yards  C) 374 yards  D) 266 yards
   Objective: (1.5) Solve Apps: Add Real Numbers

Combine like terms.

8) \(-10 + 5m + 15 + (-7m)\)
   A) \(-m + 5\)  B) \(-2m + 5\)  C) \(-m - 5\)  D) \(-3m + 4\)
   Objective: (1.5) Combine Like Terms

Subtract.

9) \(\frac{\frac{1}{10}}{\frac{1}{2}}\)
   A) \(\frac{2}{5}\)  B) \(-\frac{2}{5}\)  C) \(\frac{3}{5}\)  D) \(-\frac{3}{5}\)
   Objective: (1.6) Subtract Fractions and Decimals

Translate the phrase to mathematical language and simplify.

10) Subtract 8 from \(-22\).
    A) \(-8 - (-22)\); 30  B) \(8 + (-22)\); \(-14\)  C) \(-22 - 8\); \(-30\)  D) \(-22 + 8\); \(-14\)
    Objective: (1.6) Translate to Mathematical Language

Simplify.

11) \(-19 + 6 - (-9) - 10 + 18\)
    A) \(4\)  B) \(-42\)  C) \(6\)  D) \(24\)
    Objective: (1.6) Simplify Expression with Addition/Subtraction

Combine like terms.

12) \(-4x - (-3x) - 5 - (-6x) - 8\)
    A) \(-17x + 9x\)  B) \(-13 - 13x\)  C) \(-13 + 5x\)  D) \(-13 - 13\)
    Objective: (1.6) Combine Like Terms

Solve the problem.

13) The temperature at the South pole was \(-7^\circ F\) at 8 am. At 3 pm, it was \(28^\circ F\). By how many degrees did the temperature rise?
    A) \(21^\circ F\)  B) \(-21^\circ F\)  C) \(-35^\circ F\)  D) \(35^\circ F\)
    Objective: (1.6) Solve Applications: Subtraction
Multiply.

14) \(-\frac{7}{2} \cdot \left(\frac{-19}{8}\right)\)
   A) \(\frac{133}{16}\) B) \(-\frac{20}{7}\) C) \(\frac{5}{6}\) D) \(-\frac{57}{2}\)

Objective: (1.7) Multiply Decimals and Fractions

Divide. If a quotient is undefined state this.

15) \(\frac{9}{14} \div \left(\frac{-1}{2}\right)\)
   A) \(\frac{9}{7}\) B) \(-\frac{9}{7}\) C) \(\frac{7}{9}\) D) \(-\frac{9}{28}\)

Objective: (1.7) Divide Fractions

Simplify.

16) \(-11^2\)
   A) \(-121\) B) \(-22\) C) \(121\) D) \(22\)

Objective: (1.8) Simplify Exponential Expression

17) \(8 + 6^2 - (-3) \cdot 4\)
   A) \(164\) B) \(32\) C) \(92\) D) \(56\)

Objective: (1.8) Use Order of Operations (No Grouping)

18) \(4[-5 + 6(-7 + 2)]\)
   A) \(-24\) B) \(-140\) C) \(-50\) D) \(-20\)

Objective: (1.8) Use Order of Operations (Grouping)

19) \(3(-8) + |7(-8)|\)
   A) \(32\) B) \(-25\) C) \(-80\) D) \(-9\)

Objective: (1.8) Use Order of Operations (Grouping)

Evaluate.

20) \(4x^2 + 9x\), for \(x = 4\)
   A) \(28\) B) \(52\) C) \(68\) D) \(100\)

Objective: (1.8) Evaluate Expression Given Value of Variable

21) \(9 - 6x\), for \(x = 7\)
   A) \(21\) B) \(33\) C) \(-33\) D) \(51\)

Objective: (1.8) Evaluate Expression Given Value of Variable
Simplify.

22) \(-10(7r + 2) + 6(10r + 7)\)
   
   A) \(-3r - 8\)   B) \(-10r + 22\)   C) \(-90r\)   D) \(-10r + 2\)
   
   Objective: (1.8) Simplify Algebraic Expressions

23) \(9x - (4x - 5) - (-6x + 1)\)
   
   A) \(19x + 4\)   B) \(11x + 4\)   C) \(11x + 6\)   D) \(11x - 6\)
   
   Objective: (1.8) Simplify Algebraic Expressions

Solve.

24) \(-17.4 - x = 15.1\)
   
   A) \(32.5\)   B) \(-32.5\)   C) \(-2.3\)   D) \(2.3\)
   
   Objective: (2.1) Solve Equation Using Addition Principle

25) \(\frac{7x}{8} = \frac{7}{4}\)
   
   A) \(\frac{1}{2}\)   B) \(\frac{49}{32}\)   C) \(2\)   D) \(\frac{7}{8}\)
   
   Objective: (2.1) Solve Equation Using Multiplication Principle

26) \(5y - 8 + y = 16 + 3y - 5y\)
   
   A) \(\frac{4}{3}\)   B) \(\frac{8}{7}\)   C) \(1\)   D) \(3\)
   
   Objective: (2.2) Solve Equation (More Than Two Steps)

27) \(\frac{7}{8} + \frac{1}{9}x = 4\)
   
   A) \(-\frac{27}{8}\)   B) \(-\frac{225}{8}\)   C) \(\frac{207}{8}\)   D) \(-\frac{8}{3}\)
   
   Objective: (2.2) Solve Equation with Fractions or Decimals

28) \(2(2z - 4) = 3(z + 2)\)
   
   A) \(0\)   B) \(2\)   C) \(-2\)   D) \(14\)
   
   Objective: (2.2) Solve Equation with Parentheses

29) \(-3x + 2(-3x - 7) = -21 - 2x\)
   
   A) \(5\)   B) \(1\)   C) \(-11\)   D) \(-1\)
   
   Objective: (2.2) Solve Equation with Parentheses
Solve the formula for the indicated letter.

30) $V = \frac{1}{3}Bh$ for $h$

A) $h = \frac{3B}{V}$  
B) $h = \frac{3V}{B}$  
C) $h = \frac{3V}{B}$  
D) $h = \frac{3V}{B}$

Objective: (2.3) Solve Formula for Variable I

31) $P = 2L + 2W$ for $L$

A) $L = P - W$  
B) $L = d - 2W$  
C) $L = \frac{P - W}{2}$  
D) $L = \frac{P - 2W}{2}$

Objective: (2.3) Solve Formula for Variable I

Solve.

32) What number is 8.6% of 43

A) 370  
B) 3.7  
C) 37  
D) 0.37

Objective: (2.4) Calculate Percent of Number

33) 16 is 4% of what number?

A) 40  
B) 64  
C) 4000  
D) 400

Objective: (2.4) Find Number Given Percent of Number

34) 964 is what percent of 1646?

A) 0.1%  
B) 170.7%  
C) 0.6%  
D) 58.6%

Objective: (2.4) Find What Percent One Number is of Another

Solve using the five-step problem-solving process.

35) The sum of the page numbers on the facing pages of a book is 345. Find the larger page number.

A) 173  
B) 171  
C) 183  
D) 168

Objective: (2.5) Solve Apps: Numbers

36) The sum of twice a number and 17 less than the number is the same as the difference between −29 and the number. What is the number?

A) −6  
B) −3  
C) −2  
D) −4

Objective: (2.5) Solve Apps: Numbers

37) The second angle of a triangle is 3 times as large as the first. The third angle is 65° more than the first. Find the measure of the smallest angle.

A) $65^\circ$  
B) $115^\circ$  
C) $23^\circ$  
D) $25^\circ$

Objective: (2.5) Solve Apps: Geometry
38) Find the length of a rectangular lot with a perimeter of 112 meters if the length is 4 meters more than the width. \(P = 2L + 2W\)

A) 26 m  
B) 30 m  
C) 60 m  
D) 56 m  

Objective: (2.5) Solve Apps: Geometry

Graph on a number line.

39) \(x < 2\)

A)  
B)  
C)  
D)  

Objective: (2.6) Graph Inequality on Number Line

Graph the inequality, and write the solution set using both set-builder notation and interval notation.

40) \(x \geq 5\)

A) \(\{x \mid x \geq 5\}, (5, \infty)\)  
B) \(\{x \mid x \geq 5\}, [5, \infty)\)  
C) \(\{x \mid x \geq 5\}, (5, \infty)\)  
D) \(\{x \mid x \geq 5\}, [5, \infty)\)  

Objective: (2.6) Graph Inequality and Write Solution Set

Describe the graph using set-builder notation and interval notation.

41) 

A) \(\{x \mid x \leq -5\}, [-5, \infty)\)  
B) \(\{x \mid x \leq -5\}, (-\infty, -5]\)  
C) \(\{x \mid x < -5\}, (-\infty, -5)\)  
D) \(\{x \mid x > -5\}, (-5, \infty)\)  

Objective: (2.6) Describe Graph Using Set-Builder and Interval Notation

Solve.

42) \(-5z - 8 \geq -4z - 4\)

A) \([z \mid z \leq -4]\) or \((-\infty, -4]\)  
B) \([z \mid z \geq 4]\) or \([4, \infty)\)  
C) \([z \mid z \leq -5]\) or \((-\infty, -5]\)  
D) \([z \mid z > -5]\) or \((-5, \infty)\)  

Objective: (2.6) Solve Using Both Principles I
43) 
\[-5(2y - 8) < -15y + 35\]

A) \(\{y \mid y \leq -1\}\) or \((\infty, -1]\)
B) \(\{y \mid y < -1\}\) or \((\infty, -1)\)
C) \(\{y \mid y > -1\}\) or \((-1, \infty)\)
D) \(\{y \mid y \geq -1\}\) or \([-1, \infty)\)

Objective: (2.6) Solve Using Both Principles II

Find the coordinates of the labeled points.

44)

A) \((-7, 1)\); \((-5, 4)\)
B) \((-7, -5)\); \((1, -5)\)
C) \((-7, 1)\); \((4, -5)\)
D) \((1, 2)\); \((-3, 4)\)

Objective: (3.1) Find Coordinates of Point

Determine the quadrant in which the point is located.

45) \((0, -14)\)

A) Quadrant IV
B) None
C) Quadrant II
D) Quadrant III

Objective: (3.1) Determine in Which Quadrant Point is Located

46) \((-3.9, 37)\)

A) Quadrant III
B) Quadrant II
C) Quadrant IV
D) Quadrant I

Objective: (3.1) Determine in Which Quadrant Point is Located

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

47) \(-11x + 19y = 51\); \((4, 5)\)

A) No
B) Yes

Objective: (3.2) Determine Whether Ordered Pair is Solution of Equation
Graph the equation.

48) \( y = 2x - 5 \)

A)  

B)  

C)  

D)  

Objective: (3.2) Graph Linear Equation

Find the equation for the graph.

49)

A) \( y = -3x + 6 \)  
B) \( y = 2x + 6 \)  
C) \( y = \frac{1}{2}x - 3 \)  
D) \( y = 3x + 6 \)

Objective: (3.2) Write Equation Given Graph
Find the intercepts for the equation.
50) \(-2x - 2y = 2\)
   
   A) \((0, -3), (0, -4)\)  
   B) \((-1, -4), (-3, 2)\)  
   C) \((-3, 0), (-4, 0)\)  
   D) \((-1, 0), (0, -1)\)

Objective: (3.3) Find x- and y-Intercepts from Equation

Find the x- and y-intercepts for the equation. Then graph the equation.
51) \(-2x - 4y = 8\)

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

Objective: (3.3) Find Intercepts and Graph Equation
Graph the equation.

52) \(7x = -42\)

A)

B)

C)

D)

Objective: (3.3) Graph Horizontal or Vertical Line Given Eqn.

Write an equation for the graph.

53)

A) \(y = 4\)  
B) \(x = y + 2\)  
C) \(x = 4\)  
D) \(y = x + 4\)

Objective: (3.3) Write Equation of Horizontal or Vertical Line Given Graph.
Find the slope of the line, or state that the slope is undefined if appropriate.

54)

\[ \begin{array}{cccc}
A) \frac{2}{3} & B) \frac{3}{2} & C) -\frac{3}{2} & D) -\frac{2}{3}
\end{array} \]

Objective: (3.5) Find Slope from Graph

Find the slope of the line containing the given pair of points. If the slope is undefined, state so.

55) \((4, -3)\) and \((8, 6)\)

\[ \begin{array}{cccc}
A) \frac{2}{7} & B) \frac{9}{4} & C) \frac{4}{9} & D) \frac{7}{2}
\end{array} \]

Objective: (3.5) Find Slope of Line from Pair of Points

56) \((-4, -4)\) and \((-4, 4)\)

\[ \begin{array}{cccc}
A) 0 & B) \text{Undefined} & C) 8 & D) 4
\end{array} \]

Objective: (3.5) Find Slope of Line from Pair of Points

Find the slope of the line. If the slope is undefined, state so.

57) \(x = -1\)

\[ \begin{array}{cccc}
A) 0 & B) \frac{3}{2} & C) -1 & D) \text{Undefined}
\end{array} \]

Objective: (3.5) Find Slope of Horizontal or Vertical Line

58) \(y = -3\)

\[ \begin{array}{cccc}
A) -3 & B) 0 & C) \frac{7}{-6} & D) \text{Undefined}
\end{array} \]

Objective: (3.5) Find Slope of Horizontal or Vertical Line
Draw a line that has the given slope and y-intercept.

59) Slope $-\frac{1}{6}$; y-intercept (0, 6)

60) $-4x + 6y = 18$

A) $\frac{2}{3}$; (0, 3)  
B) $-1\frac{1}{2}$; (0, 3)
C) $1\frac{1}{2}$; (0, -3)  
D) $-\frac{2}{3}$; (0, -3)

61) $y = \frac{13}{4}x - 4$

A) $-\frac{13}{4}$; (0, -4)  
B) $\frac{13}{4}$; (0, -4)
C) $\frac{13}{4}$; (0, 4)  
D) $-\frac{13}{4}$; (0, 4)

Objective: (3.6) Draw Line Given Slope and y-Intercept

Find the slope and the y-intercept of the line.

Objective: (3.6) Find Slope and y-Intercept of Line
Find the slope-intercept equation for the line with the indicated slope and y-intercept.

62) Slope \(\frac{7}{3}\); y-intercept (0, -2)

A) \(y = \frac{-7}{3}x + 2\)  B) \(y = \frac{7}{3}x - 2\)  C) \(y = \frac{7}{3}x + 2\)  D) \(y = \frac{-7}{3}x - 2\)

Objective: (3.6) Find Equation Given Slope, y-Intercept

Graph the linear equation.

63) \(4x - y = 5\)

A)

B)

C)

D)

Objective: (3.6) Graph Linear Equation

Find an equation in point-slope form of the line having the specified slope and containing the point indicated.

64) \(m = 4; \ (-7, -5)\)

A) \(y + 5 = 4(x + 7)\)  B) \(y - 5 = 4(x + 7)\)  C) \(y + 5 = 4(x - 7)\)  D) \(y - 5 = 4(x - 7)\)

Objective: (3.7) Find Equation in Point-Slope Form Given Point and Slope

Find an equation of the line having the specified slope and containing the indicated point. Write your answer in slope-intercept form.

65) \(m = -4; \ (-3, 6)\)

A) \(y = 4x - 8\)  B) \(y = -4x - 14\)  C) \(y = -4x - 7\)  D) \(y = -4x - 6\)

Objective: (3.7) Find Equation in Slope-Intercept Form Given a Point and Slope
Simplify. Assume that no denominator is zero and that 0^0 is not considered.

\[
\frac{18m^3p^2}{6m^{10}p} \quad \frac{3m^7}{p} \quad 3mp \quad 3m^7p^2 \quad \frac{3p}{m^7}
\]

Objective: (4.1) Divide Expressions with Exponents

Simplify the expression.

\[
-6^0 + (-2)^0 \quad 0 \quad -2 \quad 1 \quad 4
\]

Objective: (4.1) Simplify Expressions with Zero Exponents

Simplify. Assume that no denominator is zero and that 0^0 is not considered.

\[
\left(\frac{x^5y^5}{z^5}\right)^5 \quad \frac{x^{10}y^5}{z^{10}} \quad \frac{x^{5y^{25}}}{z^{25}} \quad \frac{x^{25}y^5}{z^5} \quad \frac{x^{25}y^5}{z^{25}}
\]

Objective: (4.1) Raise Fraction to Power

Simplify. Do not use negative exponents in your answer.

\[
(x^{8y^{-7}z^{-2}})(x^{-2}y^{-4}z^{6}) \quad \frac{x^6z^4}{y^{11}} \quad \frac{x^6}{y^{11}z^4} \quad \frac{z^4}{x^6y^{11}} \quad \frac{x^6y^{11}z^4}{x^6y^{11}}
\]

Objective: (4.2) Multiply Using Rules for Exponents

\[
\frac{28x^{-6y}z^2}{7x^2y^5z} \quad \frac{4z}{x^8y^4} \quad \frac{4z}{x^4y^4} \quad \frac{21z}{x^8y^4} \quad \frac{4}{x^8y^4z}
\]

Objective: (4.2) Divide Using Rules for Exponents

\[
(3m^4n^{-5})^2 \quad \frac{9m^8}{n^{10}} \quad 3m^8n^{10} \quad \frac{9m^8}{n^{10}} \quad \frac{3m^8}{n^{10}}
\]

Objective: (4.2) Raise to Power

Add.

\[
(9 - 6x^5 + 6x^7 + 9x^6) + (-5x^6 + 9x^5 + 7 + 5x^7) \quad 11x^7 + 4x^6 + 3x^5 + 16 \quad 4x^7 + 4x^6 + 13x^5 + 14 \quad 18x^3 + 36 + 16 \quad 11x^{14} + 4x^{12} + 3x^{10} + 16
\]

Objective: (4.4) Add Polynomials
Subtract.

73) \((2x^4 + 5x^6 + 4 - 7x^5) - (-8 + 2x^5 + 9x^6 + 9x^4)\)
   A) \(-4x^6 - 5x^5 + 11x^4 - 4\)  
   B) \(-4x^6 - 9x^5 - 7x^4 + 12\)  
   C) \(14x^6 - 5x^5 + 11x^4 - 4\)  
   D) \(14x^6 - 5x^5 + 11x^4 + 12\)

Objective: (4.4) Subtract Polynomials

Multiply.

74) \((-6x^2)(-7x^4)(-8x^3)\)
   A) \(-336x^{24}\)  
   B) \(336x^{24}\)  
   C) \(-336x^9\)  
   D) \(336x^9\)

Objective: (4.5) Multiply Monomials

75) \(8x^3(8x^7 - 3)\)
   A) \(64x^7 - 24\)  
   B) \(64x^{10} - 3\)  
   C) \(64x^{10} - 24x^3\)  
   D) \(40x^3\)

Objective: (4.5) Multiply Polynomial by Monomial

76) \((x - 5)(9x^2 + x + 9)\)
   A) \(9x^3 - 44x^2 + 14x - 45\)  
   B) \(9x^3 + 44x^2 + 4x - 45\)  
   C) \(9x^3 - 44x^2 + 4x - 45\)  
   D) \(9x^3 - 46x^2 + 4x - 45\)

Objective: (4.5) Multiply Polynomials

77) \((2x^2 + 8)(5x - 6)\)
   A) \(10x^2 + 40x - 48\)  
   B) \(10x^3 - 12x^2 + 40x - 48\)  
   C) \(10x^3 - 12x^2 - 40x - 48\)  
   D) \(10x^3 - 48\)

Objective: (4.6) Multiply Binomials

78) \((3p + 11)(3p - 11)\)
   A) \(9p^2 + 66p - 121\)  
   B) \(9p^2 - 66p - 121\)  
   C) \(9p^2 - 121\)  
   D) \(p^2 - 121\)

Objective: (4.6) Multiply Conjugate Binomials

79) \((5m + 11)^2\)
   A) \(25m^2 + 121\)  
   B) \(5m^2 + 110m + 121\)  
   C) \(25m^2 + 110m + 121\)  
   D) \(5m^2 + 121\)

Objective: (4.6) Square Binomial

Perform the indicated operation.

80) \(\frac{10x^3 - 18x^2 - 4x}{2x}\)
   A) \(5x^3 - 18x^2 - 4x\)  
   B) \(5x^3 - 9x^2 - 2x\)  
   C) \(5x^2 - 9x - 2\)  
   D) \(10x^2 - 18x - 4\)

Objective: (4.8) Divide by Monomial
Divide.

81) \((p^2 + 3p - 20) \div (p + 7)\)
   \[\begin{align*}
   A) & \quad p + 4 + \frac{8}{p + 7} \\
   B) & \quad p - 8 + \frac{4}{p + 7} \\
   C) & \quad p - 4 \\
   D) & \quad p - 4 + \frac{8}{p + 7}
   \end{align*}\]
   Objective: (4.8) Divide by Binomial I

82) \[\frac{2m^3 + 16m^2 - 10m + 72}{m + 9}\]
   \[\begin{align*}
   A) & \quad m^2 + 3m + 4 \\
   B) & \quad m^2 + 2m + 2 \\
   C) & \quad 2m^2 - 2m + 8 \\
   D) & \quad 2m^2 + 2m + 8
   \end{align*}\]
   Objective: (4.8) Divide by Binomial II

Factor out the largest common factor.

83) \[4x^{12} - 8x^9 + 12x^6 - 16x^3\]
   \[\begin{align*}
   A) & \quad 4x^3(x^9 - 2x^6 + 3x^3 - 4) \\
   B) & \quad 4(x^9 - 2x^6 + 3x^3 - 4) \\
   C) & \quad 4x^3(x^4 - 2x^3 + 3x^2 - 4) \\
   D) & \quad 4x^3(x^4 - 2x^3 + 3x^2 - 4)
   \end{align*}\]
   Objective: (5.1) Factor Out the Greatest Common Factor

Factor completely.

84) \[8x^2(x - 1) + (x - 1)\]
   \[\begin{align*}
   A) & \quad (x - 1)(8x^2 + 1) \\
   B) & \quad (8x - 1)(x^2 + 1) \\
   C) & \quad 8x^2(x - 1) \\
   D) & \quad (x + 1)(8x^2 - 1)
   \end{align*}\]
   Objective: (5.1) Factor Out Common Binomial Factor

Factor by grouping, if possible.

85) \[x^3 + 6x^2 + 4x + 24\]
   \[\begin{align*}
   A) & \quad (x - 6)(x^3 + 4) \\
   B) & \quad (x + 6)(x^2 + 4x) \\
   C) & \quad (x + 6)(x^2 + 4) \\
   D) & \quad (x + 4)(x^2 + 6)
   \end{align*}\]
   Objective: (5.1) Factor by Grouping

86) \[x^3 + 6x^2 - 8x - 48\]
   \[\begin{align*}
   A) & \quad (x + 6)(x^3 - 8x) \\
   B) & \quad (x - 6)(x^2 - 8) \\
   C) & \quad (x - 8)(x^2 + 6) \\
   D) & \quad (x + 6)(x^2 - 8)
   \end{align*}\]
   Objective: (5.1) Factor by Grouping

Factor completely. If the polynomial is prime, state this.

87) \[x^2 - x - 20\]
   \[\begin{align*}
   A) & \quad (x + 1)(x - 20) \\
   B) & \quad (x + 5)(x - 4) \\
   C) & \quad (x + 4)(x - 5) \\
   D) & \quad \text{Prime}
   \end{align*}\]
   Objective: (5.2) Factor Trinomial of the Type \(x^2 + bx + c\)

88) \[-4b^2 - 77 + b^2\]
   \[\begin{align*}
   A) & \quad (b + 7)(b - 11) \\
   B) & \quad \text{Prime} \\
   C) & \quad (b - 7)(b + 11) \\
   D) & \quad (b - 77)(b + 1)
   \end{align*}\]
   Objective: (5.2) Factor Trinomial of the Type \(x^2 + bx + c\)
89) \(3x^2 - 15x + 18\)
   A) \(3(x + 2)(x + 3)\)  
   B) \(3(x - 2)(x - 3)\)  
   C) \((3x - 1)(x - 18)\)  
   D) \(3(x - 1)(x - 18)\)
   Objective: (5.2) Factor Trinomial with Monomial Factor

90) \(9x^2 + 83x + 18\)
   A) \((9x + 2)(x + 9)\)  
   B) \((x + 2)(9x + 9)\)  
   C) \((x - 9)(x + 9)\)  
   D) \((9x + 1)(x + 18)\)
   Objective: (5.3) Factor Trinomial (Lead Coefficient not 1)

91) \(-80a^2 + 160a - 75\)
   A) \((-20a + 15)(4a - 5)\)  
   B) \(-5(4a + 3)(4a + 5)\)  
   C) \((4a - 3)(-20a + 25)\)  
   D) \(-5(4a - 3)(4a - 5)\)
   Objective: (5.3) Factor Trinomial with Common Monomial Factor

92) \(25x^2 + 60x + 36\)
   A) \((5x + 6)(5x - 6)\)  
   B) \((5x + 6)^2\)  
   C) Prime  
   D) \((5x - 6)^2\)
   Objective: (5.4) Factor Perfect Square Trinomial

93) \(49y^3 - 84y^2 + 36y\)
   A) \(y(49y + 1)(y + 36)\)  
   B) \((7y^2 - 6y)(7y - 6)\)  
   C) \(y(7y - 6)^2\)  
   D) \(y(7y - 6)(7y + 6)\)
   Objective: (5.4) Factor Perfect Square with Monomial Factor

94) \(16x^2 - 25\)
   A) \((4x - 5)^2\)  
   B) \((4x + 5)(4x - 5)\)  
   C) \((16x + 1)(x - 25)\)  
   D) \((4x + 5)^2\)
   Objective: (5.4) Factor Difference of Squares

95) \(4x^3 - 9x\)
   A) \(x(4x + 1)(x - 9)\)  
   B) \((2x^2 + 3x)(2x - 3)\)  
   C) \(x(2x + 3)(2x - 3)\)  
   D) \(x(2x - 3)^2\)
   Objective: (5.4) Factor Difference of Squares with Monomial Factor

Factor completely.

96) \(125a^3 - 8b^3\)
   A) \((5a - 2b)(25a^2 + 10ab + 4b^2)\)  
   B) \((125a - 2b)(a^2 + 10ab + 4b^2)\)  
   C) \((5a - 2b)(25a^2 + 4b^2)\)  
   D) \((5a + 2b^2)(25a^2 - 10ab + 4b^2)\)
   Objective: (5.5) Factor Sums or Differences of Cubes
97) \( 8c^3 + 27 \)
   A) \((2c + 3)(4c^2 + 9)\)  \(\quad\) B) \((2c - 3)(4c^2 + 6c + 9)\)
   C) \((2c + 3)(4c^2 - 6c + 9)\)  \(\quad\) D) \((8c + 3)(c^2 - 6c + 9)\)

Objective: (5.5) Factor Sums or Differences of Cubes

Solve using the principle of zero products.

98) \((y - 7)(4y + 23) = 0\)
   A) \(\frac{-4}{23}, 7\)  \(\quad\) B) \(-7, \frac{4}{23}\)
   C) \(-7, \frac{23}{4}\)  \(\quad\) D) \(-\frac{23}{4}, 7\)

Objective: (5.7) Solve Factored Quadratic Equation

Solve by factoring and using the principle of zero products.

99) \(b^2 + 15b = 0\)
   A) \(1, -15\)  \(\quad\) B) \(0, 15\)
   C) \(-15, 0\)  \(\quad\) D) \(-1, -15\)

Objective: (5.7) Solve Quadratic Equation Using Principle of Zero Products

100) \(x^2 - x = 20\)
    A) \(-4, -5\)  \(\quad\) B) \(-4, 5\)
    C) \(4, 5\)  \(\quad\) D) \(1, 20\)

Objective: (5.7) Solve Quadratic Equation Using Principle of Zero Products
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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

1) Draw the segment whose endpoints are P and Q. Name the segment in two ways.

   ![Segment PQ](image)

   A) \( \overline{PQ} \) or \( \overline{QP} \)

   B) \( \overline{PQ} \) or \( \overline{QP} \)

   C) \( \overrightarrow{PQ} \) or \( \overrightarrow{QP} \)

   D) \( \overrightarrow{PQ} \) or \( \overrightarrow{QP} \)

2) Draw the ray with endpoint D. Name the ray.

   ![Ray DE](image)

   A) \( \overrightarrow{DE} \)

   B) \( \overrightarrow{DE} \)

   C) \( \overrightarrow{ED} \)

   D) \( \overrightarrow{DE} \)
Name the angle in five different ways.

3) 

A) Angle ZYX, angle XZY, \( \angle XYZ \), \( \angle YZX \), or \( \angle Y \)
B) Angle XYZ, angle ZYX, angle XZY, or \( \angle Y \)
C) Angle ZYX, \( \angle XYZ \), \( \angle YZX \), \( \angle XZY \), or \( \angle Y \)
D) Angle ZYX, angle XYZ, \( \angle Y \), \( \angle ZXY \), or angle ZYX

Tell whether the angle is acute, right, obtuse, or straight.

4) 

A) Right  B) Obtuse  C) Acute  D) Straight

5) \( \angle ADB \)

A) Right  B) Straight  C) Obtuse  D) Acute

Find the requested angle.

6) Complement of 28°

A) 332°  B) 56°  C) 152°  D) 62°

7) Supplement of 56°

A) 34°  B) 112°  C) 124°  D) 304°
Use the vertical angle property to find the indicated angle measures.

8) In the figure, \( \angle 1 = 29^\circ \) and \( \angle 3 = 116^\circ \). Find \( \angle 2 \), \( \angle 4 \), \( \angle 5 \), and \( \angle 6 \).

- A) \( \angle 2 = 35^\circ \); \( \angle 4 = 35^\circ \); \( \angle 5 = 29^\circ \); \( \angle 6 = 116^\circ \)
- B) \( \angle 2 = 29^\circ \); \( \angle 4 = 29^\circ \); \( \angle 5 = 29^\circ \); \( \angle 6 = 116^\circ \)
- C) \( \angle 2 = 29^\circ \); \( \angle 4 = 35^\circ \); \( \angle 5 = 35^\circ \); \( \angle 6 = 116^\circ \)
- D) \( \angle 2 = 35^\circ \); \( \angle 4 = 29^\circ \); \( \angle 5 = 35^\circ \); \( \angle 6 = 116^\circ \)

9) Identify the specified angles.

- Identify all pairs of corresponding angles.

- A) \( \angle 3 \), \( \angle 4 \), \( \angle 5 \), and \( \angle 6 \)
- B) \( \angle 1 \) and \( \angle 7 \), \( \angle 2 \) and \( \angle 8 \), \( \angle 4 \) and \( \angle 6 \), \( \angle 3 \) and \( \angle 5 \)
- C) \( \angle 1 \) and \( \angle 5 \), \( \angle 2 \) and \( \angle 6 \), \( \angle 4 \) and \( \angle 8 \), \( \angle 3 \) and \( \angle 7 \)
- D) \( \angle 1 \) and \( \angle 8 \), \( \angle 2 \) and \( \angle 7 \), \( \angle 4 \) and \( \angle 5 \), \( \angle 3 \) and \( \angle 6 \)
Use the properties of parallel lines to solve the problem.

10) If \( p \parallel q \) and \( m\angle 8 = 47^\circ \), what are the measures of the other angles?

\[
\begin{align*}
4 & \quad 5 \\
3 & \quad 6 \\
\downarrow & \quad \downarrow \\
2 & \quad 7 \\
1 & \quad 8 \\
& \quad 1
\end{align*}
\]

A) \( m\angle 2 = m\angle 4 = m\angle 6 = 47^\circ \), \( m\angle 1 = m\angle 3 = m\angle 5 = m\angle 7 = 133^\circ \)
B) \( m\angle 2 = m\angle 4 = m\angle 6 = 47^\circ \), \( m\angle 1 = m\angle 3 = m\angle 5 = m\angle 7 = 143^\circ \)
C) \( m\angle 5 = m\angle 6 = m\angle 7 = 47^\circ \), \( m\angle 1 = m\angle 2 = m\angle 3 = m\angle 4 = 133^\circ \)
D) \( m\angle 2 = m\angle 4 = m\angle 6 = 47^\circ \), \( m\angle 1 = m\angle 3 = m\angle 5 = m\angle 7 = 43^\circ \)

11) In the figure, \( \overline{GH} \parallel \overline{DE} \). Identify any pairs of congruent angles.

\[
\begin{align*}
D & \quad E \\
\downarrow & \quad \downarrow \\
F & \quad G \\
\overline{GH} & \quad \overline{DE}
\end{align*}
\]

A) \( \angle DEF \cong \angle FED \), \( \angle DFE \cong \angle HFG \), \( \angle PHG \cong \angle FGH \), \( \angle DFG \cong \angle EFH \)
B) \( \angle DEF \cong \angle HFG \), \( \angle DFE \cong \angle GHF \), \( \angle DEF \cong \angle FGH \), \( \angle DFG \cong \angle EFH \)
C) \( \angle DEF \cong \angle DFE \), \( \angle HF \cong \angle GHG \), \( \angle DEF \cong \angle FGH \), \( \angle DFG \cong \angle EFH \)
D) \( \angle DEF \cong \angle GHF \), \( \angle DFE \cong \angle HFG \), \( \angle DEF \cong \angle FGH \), \( \angle DFG \cong \angle EFH \)

Classify the triangle as equilateral, isosceles, or scalene. Then classify it as right, obtuse, or acute.

12) 

\[
\begin{align*}
& \text{12} \\
& \downarrow \\
& \text{12} \\
& \downarrow \\
& \text{12}
\end{align*}
\]

A) Scalene; acute 
B) Equilateral; acute 
C) Isosceles; obtuse 
D) Scalene; right
13) Find the missing angle measure.

A) Isosceles; acute   B) Scalene; right   C) Isosceles; right   D) Scalene; acute

14) A) 122°   B) 149°   C) 58°   D) 153°

15) A) 119°   B) 61°   C) 151°   D) 29°

16) Classify the polygon by name.

A) heptagon   B) octagon   C) pentagon   D) hexagon

17) A) pentagon   B) hexagon   C) rectangle   D) quadrilateral
Find the sum of the angle measures of the specified polygon.

18) A decagon.
   A) $1800^\circ$  B) $1620^\circ$  C) $1440^\circ$  D) $2160^\circ$

19) An octagon.
   A) $1440^\circ$  B) $720^\circ$  C) $1080^\circ$  D) $900^\circ$

Find the measures of the indicated sides, angles, or diagonals of the given parallelogram.

20) PM = 45 and LP = 51. Find the length of each diagonal.

   ![Parallelogram with sides L, M, O, N and diagonals L, MO, NP]

   A) LN = 102, MO = 90
   B) LN = 51, MO = 45
   C) LN = MO = 96
   D) LN = 90, MO = 102

21) Find $m \angle A$, $m \angle B$, and $m \angle C$.

   ![Parallelogram with angles A, B, C and D, and side D = 48°]

   A) $m \angle A = 132^\circ$, $m \angle B = 132^\circ$, $m \angle C = 48^\circ$
   B) $m \angle A = 48^\circ$, $m \angle B = 132^\circ$, $m \angle C = 132^\circ$
   C) $m \angle A = 132^\circ$, $m \angle B = 48^\circ$, $m \angle C = 132^\circ$
   D) $m \angle A = 132^\circ$, $m \angle B = 48^\circ$, $m \angle C = 48^\circ$

Find the perimeter of the polygon.

22) ![Triangle with sides 10 mi, 5 mi, and 11 mi]

   A) 25 mi  B) 26 mi  C) 21 mi  D) 27.5 mi
Solve the problem.

23) The perimeter of a rectangular room is 70 ft. The width is 15 ft. Find the length.
   A) 20 ft       B) 19 ft       C) 55 ft       D) 21 ft

Find the area.

24) Find the area of a square measuring $2\frac{2}{5}$ in. on a side.
   A) $5\cdot\frac{19}{25}$ in.$^2$   B) $11\cdot\frac{13}{25}$ in.$^2$   C) $4\cdot\frac{4}{5}$ in.$^2$   D) $9\cdot\frac{3}{5}$ in.$^2$

25)

\[ \text{5 in.} \]
\[ \text{10 in.} \]

A) 50 in.$^2$   B) 100 in.$^2$   C) 25 in.$^2$   D) 15 in.$^2$

26)

\[ \text{18 ft} \]
\[ \text{24 ft} \]

A) 108 ft$^2$   B) 216 ft$^2$   C) 432 ft$^2$   D) 162 ft$^2$

27)

\[ \text{130 in.} \]
\[ \text{33 in.} \]
\[ \text{23 in.} \]

A) 495 in.$^2$   B) 690 in.$^2$   C) 450 in.$^2$   D) 345 in.$^2$

28)

\[ \text{4 ft} \]
\[ \text{3 ft} \]
\[ \text{8 ft} \]

A) 18 ft$^2$   B) 16 ft$^2$   C) 36 ft$^2$   D) 15 ft$^2$
Find the area of the shaded region. All angles are right angles.

29) _______

A) 167 cm$^2$  B) 171 cm$^2$  C) 179 cm$^2$  D) 53 cm$^2$

Find the circumference of the circle. Use 3.14 or $\frac{22}{7}$ for $\pi$ as indicated.

30) Use 3.14 for $\pi$.

A) 62.80 ft  B) 31.40 ft  C) 78.50 ft  D) 15.70 ft

31) Use 3.14 for $\pi$.

A) 63.585 cm  B) 28.260 cm  C) 7.065 cm  D) 14.130 cm
Find the area of the circle. Use 3.14 or $\frac{22}{7}$ for $\pi$ as indicated.

32) Use 3.14 for $\pi$.

- A) 157 ft$^2$
- B) 490.625 ft$^2$
- C) 1962.5 ft$^2$
- D) 78.5 ft$^2$

33) Use 3.14 for $\pi$.

- A) 3629.84 mi$^2$
- B) 907.46 mi$^2$
- C) 106.76 mi$^2$
- D) 213.52 mi$^2$

Find the perimeter. Use 3.14 for $\pi$.

34)

- A) 27.42 m
- B) 18.42 m
- C) 21.42 m
- D) 30.84 m

Find the area of the figure. Use 3.14 for $\pi$.

35)

- A) 908.0925 yd$^2$
- B) 561.9075 yd$^2$
- C) 1081.185 yd$^2$
- D) Not enough data
Which property (if any), should be used to show that the pair of triangles is congruent?

36)

A) SSS  B) SAS  C) ASA  D) None

37)

A) SAS  B) ASA  C) SSS  D) None

38)

A) ASA  B) SSS  C) SAS  D) None
Assume that the given triangles are similar. Provide the missing length.

39) 

\[
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14 \\
\text{x} \\
21
\end{array}
\]

\[
\begin{array}{c}
10 \\
15 \\
20
\end{array}
\]

A) 20  
B) 28  
C) 26  
D) 35

40) 

\[
\begin{array}{c}
10 \\
\text{x} \\
8
\end{array}
\]

\[
\begin{array}{c}
3 \\
5 \\
4
\end{array}
\]

A) 9  
B) 4  
C) 3  
D) 6
Answer Key
Testname: 055 - GEOMETRY PLACEMENT PRACTICE - ATST

1) B
2) A
3) B
4) A
5) C
6) D
7) C
8) D
9) C
10) A
11) D
12) B
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