Algebra 1
Midterm Exam
Review

Name: _______________________________ Pd : ___________ Teacher: __________

Directions: For problems 1 – 30, solve each problem. For problems #31-40, write the correct answer from the matching on the answer sheet. You may refer to the formula sheet at any time during the exam. For #41-43, respond to the open ended response.
Algebra 1 Midterm Exam Review

Multiple Choice Directions: For problems 1-30, solve each problem.

1. The expression: \(3 + 2 = 2 + 3\) is an example of which property?

2. Evaluate \(4x + 6y - \frac{15}{z}\), for \(x = -4, y = 10, z = 3\)

3. The pie chart represents favorite lunch items from the school cafeteria. If 240 students were surveyed, how many students chose pizza as their favorite item?

\[
\text{Pizza, 55%} \\
\text{Burger, 15%} \\
\text{Nachos, 20%} \\
\text{Other, 10%}
\]

4. Solve for \(a\): \(a = \frac{2 - 5\cdot3}{26 + 13} + 10\)

5. Find the solution set for the inequality using the given replacement set:
\(x - 6 > 5\); \(\{9, 10, 11, 12, 13\}\)

6. Write the verbal expression as an algebraic expression:

   \[\text{The sum of a number and 10 divided by twice the product of 3 and 4.}\]

7. Write the verbal expression for the algebraic expression: \(5w + 10c\)

8. Find the absolute value: \(|-6|\).

9. In your own words, what is a function? Give an example using 4 or more ordered pairs.
10. Calculate the slope given the points (10, 5) and (8, -9).

11. Solve: 5 = 2(4) + b.

12. Solve: 5x + 2 = 7(x – 2)

13. Solve: 4x – 5 = 5x + 21

14. Which of the following represents an equation that has a slope of \(\frac{2}{3}\) and passes through (-2,8).

15. Bernardo originally had 48 customers on his paper route. Through a newspaper sales promotion, his customer base increased to 63. What is the percent of increase over the original number of customers. (round answer to nearest percent)

16. Find the discounted price of a DVD that cost $19.95 after a 20% discount.

17. Which equation below represents the line that is perpendicular to the equation \(y = 2x – 4\)

19. What is \(f(-2)\), \(f(x) = x^2 – 3x + 7\)

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21. The domain of the relation \{(-3, 6), (2, 4), (3, 5), (4, 0), (6, -4)\} is:

22. Determine the range of the relations \{(4, 2), (8, -4), (3, 7), (0, 3), (-4, 9)\}

23. What is the inverse of the relation \{(-6, 5), (7, -9), (8, 3), (2, 5), (6, 12)\}?

24. Which relation is represented by the mapping below?

   A. \{(2,3), (2,5), (3,0), (3,3)\}
   B. \{(-2,2), (3,2), (0,3), (5,3)\}
   C. \{(3,2), (5,2), (0,3), (3,5)\}
   D. \{(2, -2), (2,3), (3,0), (3,5)\}
25. Which equation describes the graph?
   A. \( y = \frac{3}{2} x + 2 \)  
   B. \( y = -3x + 2 \)  
   C. \( y = \frac{2}{3} x + 2 \)  
   D. \( y = -\frac{2}{3} x + 2 \)

26. Find the next three terms of the arithmetic sequence \(-22, -13, -4, \ldots\)
   A. -4, 13, 22  
   B. -5, -14, -23  
   C. 5, 14, 23  
   D. -4, -13, -22

27. Find \( a_n \) for \( a_1 = 6, d = 3, n = 55 \) (use \( a_n = a_1 + (n - 1)d \))
   A. 972  
   B. 168  
   C. 162  
   D. 174

28. What is the 7% tax on a Plasma TV which costs $647.
   A. $452.90  
   B. $45.29  
   C. $692.23  
   D. $601.71

29. Which graph is the equation of \( y = -\frac{1}{2} x + 4 \)
   A. 
   B. 
   C. 
   D.

30. Find the final cost of a computer game if the original price is $34.99, the game is discounted by 33% but has a sales tax of 6%.
   A. $23.44  
   B. $1.41  
   C. $24.85  
   D. $43.99
Matching Directions: For problems 31 - 40, match the correct definition with the correct vocabulary word. Write your answers on your answer sheet.

31. _________ The plane containing the x- and y – axes  
   A. Domain

32. _________ Another name for a point or coordinate  
   B. x - intercept.

33. _________ The y-values of a relation  
   C. Line of Best Fit

34. _________ A line that describes the trend of the data in a scatter plot  
   D. Ordered Pair

35. _________ The point on the x-axis.  
   E. Slope

36. _________ The x-values of a relation  
   F. Range

37. _________ The coordinates in each ordered pair are switched  
   G. Scatter Plot

38. _________ Two sets of data plotted as ordered pairs  
   H. Coordinate Plane

39 _________ The point on the y-axis  
   I. y - intercept

40. _________ The ratio of the change in y – coordinates (rise)  
   J. Inverse

   To the change in x – coordinates (run)
Open Ended Directions: For problems 41-43, solve each problem, show all work.

41.

The results of an experiment were listed in several numerical forms as listed below.

\[ 5^3 \quad 4 \quad \sqrt{5} \quad \frac{3}{8} \quad 0.003 \]

A. Order the numbers listed from least to greatest.

[Blank space for student response]

Another experiment required evaluating the expression shown below.

\[ \frac{1}{6} (\sqrt{36} + 3^2) + 4^3 + |\text{-8}| \]

B. What is the value of the expression? Show all work!

Value of the expression: ________________________________
Nolan has $15.00, and he earns $8.00 an hour babysitting. The equation below can be used to determine how much money in dollars \( m \) Nolan has after any number of hours of babysitting \( h \).

\[
m = 6h + 15
\]

**A.** After how many hours of babysitting will Nolan have $51.00? Show all work!

hours: __________________________

The graph below displays the amount of money Alex and Pat will each have saved after their hours of babysitting.

**C.** Based on the graph, for what domain \( h \) will Alex have more money saved than Pat? Explain your reasoning.
Standard A11.2

The diagram below shows 5 identical bowls stacked one inside the other.

Bowls

2 inches

5 inches

The height of 1 bowl is 2 inches. The height of a stack of 5 bowls is 5 inches.

A. Write an equation using x and y to find the height of a stack of bowls based on any number of bowls.

   equation: __________________________

B. Describe what the x and y variables represent.

   x-variable: __________________________

   y-variable: __________________________

C. What is the height, in inches, of a stack of 10 bowls?

   height: ______________________________ inches