**8th Grade 1st Semester FINAL EXAM**

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| --- |
| **Formulas:** Vcylinder=πr2h Vsphere = πr3 Vcone = π r2h Pythagorean: a2 + b2 = c2 Use 3.14 for π |

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. Complete the equation by supplying the missing exponent.

 *x* 

|  |  |  |  |
| --- | --- | --- | --- |
| 1. 8
 | 1. -3
 | 1. -8
 | 1. 4
 |

\_\_\_\_ 2. Simplify the expression 5y6 2y8

1. 10y48 b. 10y14 c. 7y48 d. 7y14

\_\_\_\_ 3. A microscope can magnify a specimen 104 times. How many times is that?

|  |  |
| --- | --- |
| 1. 40,000 times
 | 1. 10,000 times
 |
| 1. 40 times
 | 1. 1,000 times
 |

\_\_\_\_ 4. Write the number 230,000 in scientific notation.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | 0.23 x 106 | b. | 2.3 x 106 | c. | 2.3 x 105 | d. | 23 x 104 |

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\_\_\_\_ 5. Evaluate.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | –36 | b. |  | c. | – | d. | 36 |

\_\_\_\_ 6. Solve x3 = 125

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| --- | --- | --- | --- | --- | --- |
| a. | x = 2 | b. | x = 4 | c. x = 3 | d. x = 5 |

\_\_\_\_ 7. List the following numbers in order from least to greatest.

 , and 

1. a. ,  and 

b., and 

 c., and 

 d., and 

\_\_\_\_ 8. How many solutions does the following equation have 2(3x + 11) = 6x + 22.

 a. one solution c. infinite solutions

 b. no solutions d. none of the above

\_\_\_\_ 9. Combine like terms. 8*x* + 5*z* – 4*x* + 3*z* + 6.

|  |  |  |  |
| --- | --- | --- | --- |
| a.  | 4x + 8z | c. | 4*x* + 8*z* + 6 |
| b. | -32x + 15z + 6 | d. | 12*x* + 2*z* + 6 |

\_\_\_\_ 10. Evaluate.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | 0 | b. | 22 | c. | –4 | d. | 4 |

\_\_\_\_ 11. Classify the number  as rational, irrational, or not a real number.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| a. | irrational | b. | not a real number | c. | rational |

\_\_\_\_ 12. The attendance at a parade was  people. The attendance at a rally was  people. Which event had the higher attendance?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | rally  | b. | parade |

\_\_\_\_ 13. Find the distance between the two points.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 6 units | c. | 7 units |
| b. | 4 units | d. | 5 units |

\_\_\_\_ 14. A cylindrical container of potatoes has a radius of 5 cm and a height of 9 cm. Find the volume of the container of potatoes. Give your answer in terms of **.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 225** cm3 | c. | 706.5** cm3 |
| b. | 544.5** cm3 | d. | 900** cm3 |

\_\_\_\_ 15. Solve. 8*a* – 10 = 6*a*

|  |  |  |  |
| --- | --- | --- | --- |
| a. | *a* = –0.3 | c. | *a* = 2 |
| b. | *a* = 5 | d. | *a* = 0 |

\_\_\_\_ 16. Write the number  in standard notation.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | 0.0000991 | b. | 9,910,000 | c. | 0.00000991 | d. | 0.000000991 |

\_\_\_\_ 17. Solve 

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 2 | c. | 3 |
| b. | 4 | d. | 5 |

\_\_\_\_ 18. Determine if the graph represents a function. Tell whether it is linear of nonlinear.



a. The relationship is not a function. It is nonlinear. c. The relationship is a function. It is nonlinear.

b. The relationship is not a function. It is linear. d. The relationship is a function. It is linear.

\_\_\_\_ 19. The square root  is between two integers. Name the integers.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | 102, 104 | b. | 15, 16 | c. | 10, 11 | d. | 25, 26 |

\_\_\_\_ 20. Is it a function or not?



a. Yes, it is a function.

b. No, it is not a function.

c. There is not enough information.

\_\_\_\_ 21. What is the range of the function above in question #20?

 a. 8, 9, 10, 13 b. -1, -3, 5

\_\_\_\_ 22. Find the length of the hypotenuse. Round your answer to the nearest tenth.



|  |  |  |  |
| --- | --- | --- | --- |
| 1. 6.1 units
 | 1. 37 units
 | 1. 7 units
 | 1. 2.6 units
 |

\_\_\_\_\_ 23. Frankie measured large and small items in her science lab. She needed to multiply

 5.4 x 103 cm by 8.1 x 105 cm. What is her correct result in scientific notation?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | 4.374 x 109 | b. | 4.374 x 1015 | c. | 43.74 x 108 | d. | 43.74 x 1015 |

\_\_\_\_ 24. A square room has a tiled floor with 81 square tiles. How many tiles are along an edge of the room?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.  | 9 tiles | b. | 11 tiles | c. | 40 tiles | d. | 20 tiles |

\_\_\_\_ 25. Find the volume of the figure. Use 3.14 for . If necessary, round your answer to the nearest tenth.



A. 1362.2 ft.3

B. 1502 ft.3

C. 1413 ft.3

D. 1264 ft.3

\_\_\_\_ 26. Multiply. Write the product as one power. 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a.$12^{10}$  |  | b. | Cannot combine  | 1. $12^{7}$
 |  | 1. $12^{3}$
 |  |

\_\_\_\_ 27. Find the volume of the sphere in terms of . Leave  in your answer.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 64 cm3  | c. | 21.3 cm3  |
| b. | 85.3 cm3  | d. | 256 cm3  |

\_\_\_\_ 28. Find the height of a right cone with radius 6 in. and slant 10 in.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | h = 8in | c. | *h* = 16in |
| b. | h = 4in | d. | *h* = 11.6in |

\_\_\_\_ 29. Solve .

|  |  |  |  |
| --- | --- | --- | --- |
| a. | *z* = 14 | c. | *z* = 135 |
| b. | *z* = 85 | d. | *z* = 45 |

\_\_\_\_ 30. Determine if the relationship represents a function and find the slope (m).

|  |  |
| --- | --- |
| ***x*** | ***y*** |
| 0 | –5 |
| 1 | –1 |
| 2 | 3 |
| 3 | 7 |

a. The relationship is a function (m = 1/4) c. The relationship is not a function (m = 4)

b. The relationship is function (m = 4) d. The relationship is not a function (m = ¼)

\_\_\_\_ 31. This relation is not a function because it fails the vertical line test. Where does it fail the test?

 

a. A & D c. C

b. B & E d. C & F

\_\_\_\_ 32. Find the slope of the line that passes through the points (9, 7) and (2, 9).

|  |  |  |  |
| --- | --- | --- | --- |
| 1.

  | 1.
 | 1.
 | 1.
 |

\_\_\_\_ 33. What is the y-intercept of the line represented by y = -2x – 4?

|  |  |
| --- | --- |
| 1. -4
 | 1. $\frac{1}{4}$
 |
| 1. 4
 | 1. 2
 |

\_\_\_\_ 34. Solve for m:  8(*m* + 5) = 16

|  |  |  |  |
| --- | --- | --- | --- |
| 1. $\frac{11}{8}$
 | 1. $-\frac{11}{8}$
 | 1. 3
 | 1. -3
 |

\_\_\_\_ 35. Find the radius of a cone with volume 150.72 ft3 and a height of 9.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 4 ft | c. | 2.3 ft |
| b. | 3 ft | d. | 16 ft |

\_\_\_\_ 36. Determine if the following function is linear or not. f(x) = 3x3 + 5

1. Yes, Linear b. No, Non-linear

\_\_\_\_\_ 37. Find the missing side length. Round to the tenths place, if necessary.



a. 275 c. 16.6

b. 5 d. 25

\_\_\_\_ 38. Daniel rides his bicycle 15 km west and then 8km north. How far is her from his starting points?

1. 22 km c. Approximately 12.7 km
2. 17 km d. 7 km

\_\_\_\_ 39. Compare the volume of a cylinder to the volume of a cone with the same radius and height.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | The volume of the cylinder will be 3 times larger. | c. | The volume of the cone will be 3 times larger. |
| b. | The volumes will be equivalent. | d. | There is not enough information. |

\_\_\_\_ 40. Which function has the greater rate of change?

 **Function A** **Function B**

 

 y = ½ x + 3

|  |  |  |  |
| --- | --- | --- | --- |
| a.  | Function A has a greater rate of change. | c.  | They have the same rate of change. |
| b. | Function B has a greater rate of change. | d.  | There is not enough information. |

\_\_\_\_ 41. Make a table and a graph of *y* = 4*x* – 3.

|  |  |  |  |
| --- | --- | --- | --- |
| a.  |  | c.  |  |
| b.  |  | d.  |  |

**SHORT ANSWER:**

For #42 and 43, write an equation in slope intercept form for each of the questions below.

42.

 

m = \_\_\_\_\_\_\_\_\_\_

b = \_\_\_\_\_\_\_\_\_\_

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 43. slope = -2 point (4, 3)

m = \_\_\_\_\_\_\_\_\_\_

b = \_\_\_\_\_\_\_\_\_\_

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer Key

1. B
2. B
3. A
4. C
5. B
6. D
7. D
8. C
9. D
10. C
11. A
12. A
13. A
14. B
15. C
16. A
17. C
18. B
19. D
20. C
21. C
22. A
23. A
24. C
25. C
26. B
27. A
28. D
29. A
30. B
31. D
32. C
33. D
34. A
35. B
36. A