**ALGEBRA I: Mid-Semester Review Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**1. Which expression is equivalent to** $\sqrt[3]{27x^{\begin{array}{c}4\\ \end{array}}}y^{7}z^{3}$ **?**

**2. Simplify 3**$\sqrt{18}$ **- 5**$\sqrt{24}$**.**

**3. How many terms are in the simplified expression 2x3 + 4x2 + 3x2 + 7x – 12x3+ 5x -12 ?**

**4. The product of -3, *a*, and *b* is represented by the expression -3*ab*. If the value of *a* is positive, what**

 **must be said about the value of *b* in order for the product to be negative?**

**5. The area of Ally’s herb garden is** $\frac{1}{8} $**the area of her gnome garden. The area of her herb garden is 12**

 **square feet. What is the area of her gnome garden?**

**6. Suppose 5(3 - y) = 7x. When y = 10, what is the value of x?**

**7. Write the algebraic expression *4x + 5*** **two ways in words.**

**8. Quentin had *k* pencils. Kellan, Garrett, and Ben then gave Quentin an additional *x* pencils each. Write an expression to represent the number of pencils Quentin has now?**

**9. Kelsey scored 10 more than twice the points that Kathy scored. Together they scored 100 points.**

 **How many points did each score?**

**10. Simplify the following expression: 4x(x + 3) – x(x – 2x - 7) + 2**

**11. Elyssa will take a total of 6 tests. On the first 5 tests, her scores were: 89, 86, 78, 78, 90. If she wants a mean grade of 85, what does Elyssa have to score on her 6th test?**

**12. Solve the following equation: 24*p* − 70 = 52*p* + 98.**

**13. In the following equations, the value of *x* represents the price per pound of graveland the value of *y* represents the price perpound of sand. At what price for sand do the two lines intersect?**

**3y = 4x + 20**

**4y – 12y = -40**

**14. Solve the inequality −5*c* + 5 ≥ –40 and graph the solutions.**

**15. Solve the system by graphing.**

**−2*x* + *y* = 1**

***x* + 2*y* = 12**



**16. Solve the systems of inequalities by graphing. 2x + y > 5 y ≤ ½ x – 3**



**17. Solve the following equation V = Bh2 for B.**

**18. The area of a triangle is found by A = ½ Bh. Solve for h.**

**19. Identify each step to justify the solving of the following equation:**

 **2x + 3x – 8 = 22 Original equation**

 5x – 8 = 22 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 5x = 30 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 x = 6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**20. The water level of Lake Allatoona is 150 feet and it is receding at a rate of 5 foot per day. Write an**

**equation that represents the water level, *w*, after *d* days. Identify the slope and *y*-intercept.**

**21. Given the following sequence, find the closed form (y = mx + b). 7, 10. 13. 16. …**

**22. If an = an-1 + 4 and a5 = 20, find a8.**

**23. Which of these points does not lie on the graph of y = -4x + 2 ? ( 2, -6 ) or ( 5, 22 ) Explain.**

**24. Find the slope of the line that passes through the points (–3, 5) and (4, 19).**

 **25. A long string with a balloon at the end was tied to the ground. After a breeze came up, the balloon was 25 feet to the right of where it was tied and 70 feet above the ground. What is the slope of the line between the balloon and the point where it was tied?**

**26. The table below shows the average weight of a type of algae after several weeks. Find the average rate of change from week 2 to week 6.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **weeks** | **2** | **3** | **4** | **5** | **6** |
| **ounces** | **.4** | **.9** | **1.5** | **2.3** | **3.1** |

**27. If the geometric explicit equation is an = 4(-2)n-1, what is the 7th term?**

**28. Given the function f(x) = 3x, what is the range?**

**29. Write the exponential function for the following table.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **x** | **-3** | **0** | **3** | **6** |
| **y** | **0.4** | **2** | **10** | **50** |

**30. Mrs. Barber invested $4,000 into an account that has a 4.2% annual (per year) interest rate. What equation best describes this investment after *t* years.**

**31. What is the equation of the graph shown?**

**32. Davis walked 1 mile in 20 minutes. Ella walked 3,520 yards in 24 minutes. In**

**miles per hour, how much faster did Ella walk than Tanner? SHOW ALL WORK.**

**(Note: 1 mile = 1,760 yards)**

**33. A phone company advertises a new plan in which the customer pays a fixed amount of $35 per month for unlimited calls in the country, and $0.20 per minute for international calls.**

**a. Find a rule in slope intercept form, *y* = m*x* + b, for the monthly payment a customer pays according to**

**the new plan.**

**b. Using your rule from part a, what is the monthly payment when a customer uses 200 minutes on international calls?**