ALG032003 Algebra 1 Practice Unit Test Chapter 8

1. Find the number of grams of polonium remaining after 276 days if 67 grams of the isotope were initially present. The half-life of polonium is 138 days.

2. Explain the meaning of the half-life of a radioactive substance.

3. Simplify: $\frac{x^{-6}}{x^{-7}}$

4. Evaluate (assume $x \neq 0$ and $y \neq 0$): $6x^0 + 7y^0$

   [A] 0 [B] $6x + 7y$ [C] $13xy$ [D] 13

5. Write the expression so that it contains only positive exponents.
   $\frac{q^{-7}r^{-3}}{s^{-4}}$

   [A] $-\frac{s^4}{q^7r^3}$ [B] $\frac{s^4}{q^7r^3}$ [C] $q^7r^3s^4$ [D] $-\frac{q^7r^3}{s^4}$

6. Write the expression so that it contains only positive exponents.
   $\frac{v^{-6}w^{-9}}{x^{-2}}$

   [A] $-\frac{x^2}{v^6w^9}$ [B] $v^6w^9x^2$ [C] $\frac{x^2}{v^6w^9}$ [D] $-\frac{v^6w^9}{x^2}$

7. Write 0.0000324 in scientific notation.

   [A] 0.324×10^{-4} [B] 0.324×10^{-6} [C] 3.24×10^{-5} [D] 324×10^{-7}

8. Write 87,100 in scientific notation.

   [A] 87.1×10^6 [B] 0.871×10^5 [C] 8.71×10^4 [D] 871×10^2

9. Explain why scientific notation is used to write very large or very small numbers.

10. Compare the quantities in Column A and Column B.

Column A	Column B
the value of $2\cdot(4\times10^3)$	the value of $4\cdot(2\times10^4)$

[A] The quantity in Column A is greater. [B] The quantity in Column B is greater.

[C] The quantities are equal.

[D] The relationship cannot be determined from the information given.

Simplify:

11. $a^{-2}(a^3)(a^{-5})$

12. $(-3xy^3)(-2xy)$ [A] $6xy^3$ [B] $6x^2y^4$ [C] $-5x^2y^4$ [D] $-5xy$

13. Explain how to multiply powers with the same base.

14. Write $8x^8$ as the product of two powers with the same base.

15. Explain why $2a^3\cdot b^{10}$ cannot be simplified.

Simplify:

16. $(2qr^6s^5)^3$

17. $(5tu^4v^3)^2$

18. $x^{-5}\cdot x^3$

19. Simplify the product: $(2bc^5)^3(bc)^2$

[A] $8b^5c^7$ [B] $2b^4c^{17}$ [C] $8b^5c^{17}$ [D] $2b^5c^{17}$

Simplify:

20. $(2x^2y^{-2})^{-3}$ [A] $\frac{y^6}{6x^2}$ [B] $\frac{-6x^2}{y^6}$ [C] $\frac{y^6}{8x^6}$ [D] $\frac{8x^6}{y^6}$

21. Simplify: $(2x^2y^{-5})^2$ [A] $\frac{y^{10}}{4x^4}$ [B] $\frac{y^{10}}{4x^2}$ [C] $\frac{4x^2}{y^{10}}$ [D] $\frac{4x^4}{y^{10}}$

22. The formula for the area of a square is $A = s^2$. Write an expression for the area of a square in which $s = 4x^4$.

Simplify:

23. $\frac{40x^6y^2}{-8x^2y^5}$

24. $\frac{b^{-2}c^{-5}}{d^{-9}}$

25. $\frac{45x^3}{9x^{-4}}$ [A] $5x$ [B] $\frac{5}{x}$ [C] $\frac{5}{x^7}$ [D] $5x^7$

26. Explain why the expression $\frac{w^4}{w}$ is *not* in simplest form.