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For problem 1- 2, evaluate the value of each of the following.

1. a) 4^3 b) $(11.7)^0$ c) $\left(-\dfrac{5}{8}\right)^2$ d) $(-4x)^3$

SNS: ANS: ANS: ANS:

2. a) $x^0, x \neq 0$ b) $\left(-\dfrac{5}{8}\right)^0$ c) $x^6, x = 2$ d) $z^5 + 5, z = -2$

ANS: ANS: ANS: ANS:

3. Express using positive exponents. Then simplify.

a) 3^{-2}, b) $\dfrac{1}{3^{-2}}$ c) x^{-3} d) $\dfrac{1}{x^{-3}}$

ANS: ANS: ANS: ANS:

For problems 4 - 7, multiply and simplify.

4. a) $3^5 \cdot 3^2$ b) $x^7 \cdot x^9$ 5. a) $(2t)^8 (2t)^{17}$ b) $(8x)^0 (8x)^2$

ANS: ANS: ANS: ANS:

6. a) $5^8 \cdot 5^{-9}$ b) $y \cdot y^{-1}$ 7. a) $x^{12} \cdot x^{-12}$ b) $a^{-11} \cdot a^3 \cdot a^{17}$

ANS: ANS: ANS: ANS:

For problems 8 - 9, divide and simplify.

8. a) $\dfrac{5^8}{5^6}$ b) $\dfrac{(8t)^4}{(8t)^{11}}$ 9. a) $\dfrac{x^9}{x^{-3}}$ b) $\dfrac{x^{-3}}{y^{-9}}$

ANS: ANS: ANS: ANS:

For problems 10 - 13, simplify.

10. a) $\left(5^2\right)^4$ b) $\left(t^5\right)^{-2}$ 11. a) $\left(x^{-6}\right)^{-5}$ b) $\left(x^3 y\right)^{-2}$

ANS: ANS: ANS: ANS:

12. a) $\left(t^5 x^3\right)^{-4}$ b) $\left(4x^5 y^{-6}\right)^3$ 13. a) $\left(\dfrac{a^4}{3}\right)^{-2}$ b) $\left(\dfrac{2a^2}{3b^4}\right)^{-3}$

ANS: ANS: ANS: ANS:

For problems 14 - 15, convert to scientific or decimal notation

14 a) 168,000,000,000,000   b) 0.000000000185
ANS: ANS:

15. a) 8.043×10^{-4} b) 8.74×10^{-4}
ANS: ANS:

Foe problems 16 - 19, multiply or divide and write **scientific notation** for the result.

16. $\left(3.9 \times 10^8\right)\left(8.4 \times 10^{-3}\right)$ 17. $\left(7.1 \times 10^{-7}\right)\left(8.6 \times 10^{-5}\right)$
    ANS: ANS:

18. $\left(1.5 \times 10^{-3}\right) \div \left(1.6 \times 10^{-6}\right)$ 19. $\dfrac{4.0 \times 10^{-3}}{8.0 \times 10^{23}}$
    ANS: ANS:

20. a) What is a monomial?   b) What is a polynomial?
ANS:

21 Collect like terms of $\dfrac{1}{3}x^3 + 2x - \dfrac{1}{6}x^3 + 4 - 16$.

Solution:

22. What is the degree of $\left(5m^5\right)^2$?
Solution:

23. A nut dealer has 1800 lb of peanuts, 1500 lb of cashews, and 700 lb of almonds. What is the percent of the total peanuts, cashews, and almonds?
Solution:

24. a) Solve: $3(x + 2) = 5x - 9$ b) Solve: $C = ab - r$ for b .
Solution: Solution:

25. Explain why an understanding of the rules for Order of Operations is essential when evaluating polynomials.
ANS: