Exponents—Part 1

Review of Vocabulary:

\[ 5^2 \] The base is _________. The exponent or power is ____________.

\[ -4^3 \] The base is _________. The exponent or power is ____________.

\[ (-4)^3 \] The base is _________. The exponent or power is ____________.

Exponent Properties:

1. **Product Property:** When multiplying the same base, keep the base and add the exponents.

\[ x^2 \cdot x^8 = \quad 4^2 \cdot 4^3 = \]

2. **Quotient Property:** When dividing the same base, keep the base and subtract the exponents.

\[ \frac{x^8}{x^5} = \quad \frac{5^{13}}{5^{11}} = \]

3. **Power Property:** When raising a power to a power, keep the base and multiply the exponents.

\[ (x^2)^5 = \quad (2^3)^4 = \]

4. **Distributive Property:** This is an extension of the Power Property.

\[ (x^2y^3)^5 = \quad (2x^6)^3 = \]

Evaluate the following expressions:

1. \[ 3^3 \]
2. \[ -2^4 \]
3. \[ (-2)^4 \]
Simplify the following expressions:

10. \(x^{15} \cdot x\)

11. \(2x^7 \cdot 5x^9\)

12. \((x^8 \cdot x^3)^7\)

13. \((x^2yz^3)^6\)

14. \(\left(\frac{3x^2}{y^4}\right)^3\)

15. \((4x^8y)^2 \left(x^6y^2\right)^3\)

16. \(\frac{(2x^3y^6)^5}{(4xy^5)^2}\)