Name _____ **Period** _____ **Date** _____

WORKSHEET USING POWERS OF MONOMIALS

To simplify the powers of monomials, you must either find the power of a power or find the power of a product. Use the properties of exponents, which are stated below:

- To find the power of a power, the property of exponents states that $(x^m)^n = x^{mn}$.

$$(x^2)^5 = x^{10} \qquad (a^2)^3 = a^6 \qquad (2^3)^3 = (2)^9 = 512$$

- To find the power of a product, the property of exponents states that $(xy)^m = x^m y^m$.

$$(3x^5)^2 = 3^2x^{10} = 9x^{10} \quad (-5a^7)^3 = (-5)^3a^{21} = -125a^{21} \quad (-a^2x^4)^4 = (-1)^4(a^8x^{16}) = a^8x^{16}$$

DIRECTIONS: Simplify the monomials.

1. $(a^2)^4$ **2.** $(2a^2)^4$ **3.** $(a^8)^2$ **4.** $(15x^5)^2$

5. $(xy)^3$ **6.** $(-3x^2)^4$ **7.** $(2^2a^2)^3$ **8.** $(-3xy^2)^3$

9. $(2x^3y^2)^4$ **10.** $(-4ab)^2$ **11.** $(4ab)^2$ **12.** $(10x^3y^3)^3$