**Assignment: Power to a Power & Exponent Rules**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_

**Simplify. Show Work!**

1. $\left(12xy\right)^{4}$ 2. $(x^{2}y^{2})^{2}(x^{2}y)^{-2}$ 3. $\left(\frac{3x^{2}y^{5}}{6x^{3}y}\right)^{2}$

4. $\frac{\left(3a^{2}b\right)^{3}}{\left(6ab^{4}\right)^{-2}}$ 5. $(-3a^{3}b^{3})^{2}$ 6. $\frac{2x^{-5}y^{-3}z^{4}}{8x^{-3}y^{7}z^{-4}}$

7. $-4\left(mn^{2}\right)^{3}$ 8. $(3a^{3}b)^{2}(-5a^{2}b^{2})$ 9. $\frac{\left(4b\right)^{2}}{2b}$

10. $\frac{-15m^{5}n^{8}\left(m^{3}n^{2}\right)}{45m^{4}n}$ 11. $\frac{x^{-1}y^{-2}}{x^{3}y^{-5}}$ 12. $\frac{-4a^{-3}}{16b^{-5}}$

13. $\left(16a^{4}b^{6}\right)^{-2}$ 14. $\left(\frac{2}{3}xy^{3}\right)\left(-\frac{9}{4}x^{2}y\right)$ 15. $\left(\frac{-4x^{2}}{x^{2}y^{2}}\right)^{3}$

16. $6a^{2}(3b^{3})(2a^{2}b)^{4}$ 17. $2b\left(2ab\right)^{3}$ 18. $\frac{10x^{5}y^{3}}{(2x^{3}y)^{2}}$

19. $\left(\frac{7a^{2}}{b^{3}}\right)^{-2}$ 20. $(-5m^{3}n^{2})(2m^{4}n^{5})$ 21. $\left(2x^{2}\right)^{2}\left(3x^{3}\right)^{3}$