**Laws of Exponents**

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

**Exponent Rules**

When simplifying expressions, when do you add the exponents?

When simplifying expressions, when do you multiply the exponents?

When simplifying expressions, when do you subtract the exponents?

$x^{\frac{1}{2}}=$ $x^{\frac{1}{3}}=$ $x^{-1}=$

Simplify

1. $(4xy^{4}z^{3})^{2}+(2y^{4}z^{2})^{3}$
2. $(3ab^{4}c^{3})^{2}(a^{4}b^{3}c)^{4}$
3. $(\frac{4xz^{3}}{2x^{5}y^{2}z})^{2}$
4. $(9xy^{4}z^{6})^{\frac{1}{2}}$
5. $\left(8xy^{6}z^{3}\right)^{\frac{1}{3}}(6x^{\frac{1}{3}}y^{-2}z^{-1})^{2}$

Independent Practice

1. $(\frac{3xz^{2}}{x^{2}y^{4}z})^{3}$
2. $(4ab^{6}c^{8})^{\frac{1}{2}}$
3. $\left(27x^{9}y^{3}z^{-3}\right)^{\frac{1}{3}}(2x^{\frac{1}{2}}y^{2}z^{-4})^{2}$
4. $(\frac{xy^{4}z^{5}}{64x^{-7}yz^{2}})^{\frac{1}{3}}$