Name: _____ Date: _____

Learning Goal 4.4	Use exponent laws to simplify expressions with rational exponents.

Recall the exponent laws for integer bases and whole number exponents.

Product of Powers	$a^m \cdot a^n =$		Power of a Power	$(a^m)^n =$	
Quotient of Powers	$a^m \div a^n =$		Power of a Product	$(ab)^m =$	
			Power of a Quotient	$\left(\frac{a}{b}\right)^m =$	

These all work the same way as they did last year, we can just use them with

_____ and _____

exponents now!

Example Simplify by writing as a single power. Do not evaluate. Remember your order of operations!

a. $0.8^2 \times 0.8^{-7}$

b. $\left(-\frac{4}{5}\right)^2 \div \left(-\frac{4}{5}\right)^{-5}$

c. $\frac{(1.5^{-3})^{-5}}{1.5^5}$

d. $\frac{9^{5/4} \times 9^{-1/4}}{9^{3/4}}$

A good first step if you're feeling overwhelmed: change the expression so all the exponents are positive.

e. $\left[\left(\frac{3}{2}\right)^{2}\right]^{-3} \div \left[\left(\frac{3}{2}\right)^{-5}\right]^{4}$

f. $\left(\frac{7^{2/3}}{7^{1/3} \times 7^{5/3}}\right)^{6}$

g. $(25a^{4}b^{2})^{3/2}$

h. $\left(x^{3}y^{-3/2}\right)\left(x^{-1}y^{1/2}\right)$

i. $\frac{12x^{-5}y^{5/2}}{3x^{1/2}y^{-1/2}}$

j. $\left(\frac{50x^{2}y^{4}}{2x^{4}y^{7}}\right)^{1/2}$