Date:\_\_\_\_\_ Chapter 1: Scientific Tool Box

## **Exponents Notes Handout**

Law	Example
$\mathbf{x}^1 = \mathbf{x}$	$6^1 = 6$
$x^{0} = 1$	$7^0 = 1$
$x^{-1} = 1/x$	$4^{-1} = 1/4$
$\mathbf{x}^{\mathbf{m}}\mathbf{x}^{\mathbf{n}} = \mathbf{x}^{\mathbf{m}+\mathbf{n}}$	$x^2x^3 = x^{2+3} = x^5$
$\mathbf{x}^{\mathbf{m}}/\mathbf{x}^{\mathbf{n}} = \mathbf{x}^{\mathbf{m}\cdot\mathbf{n}}$	$x^{6}/x^{2} = x^{6-2} = x^{4}$
$(\mathbf{x}^{\mathrm{m}})^{\mathrm{n}} = \mathbf{x}^{\mathrm{mn}}$	$(x^2)^3 = x^{2 \times 3} = x^6$
$(xy)^n = x^n y^n$	$(\mathbf{x}\mathbf{y})^3 = \mathbf{x}^3 \mathbf{y}^3$
$(\mathbf{x}/\mathbf{y})^{n} = \mathbf{x}^{n}/\mathbf{y}^{n}$	$\left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2}$
$\mathbf{x}^{\mathbf{-n}} = 1/\mathbf{x}^{\mathbf{n}}$	$x^{-3} = 1/x^3$

## And the law about Fractional Exponents:

$$x^{\frac{m}{n}} = \sqrt[n]{x^m} \qquad \qquad x^{\frac{2}{3}} = \sqrt[3]{x^2} \\ = (\sqrt[n]{x})^m \qquad \qquad = (\sqrt[3]{x})^2$$

Based on http://www.mathsisfun.com/algebra/exponent-laws.html