

DIGITS LESSON 4-1/4-2

Introduction to Scientific Notation

11/13/2019

Goal: I will be able to change numbers into Scientific Notation	
<p>Tool Bag Formulas, equations, Vocabulary, etc.</p> <p>Review Exponents</p>	<p>Here's How... Notes & Examples</p> $10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100,000$ $10^4 = 10 \times 10 \times 10 \times 10 = 10,000$ $10^1 = 10$ $10^0 = 1$ $10^{-1} = \frac{1}{10^1} = \frac{1}{10} = 0.1$ $10^{-2} = \frac{1}{10^2} = \frac{1}{100} = 0.01$ $10^{-6} = 0.000001$

<p>Ways to Express Numbers</p>	$50,000 = 5 \times \overbrace{10,000} = 5 \times 10^4$ $500 = 5 \times 100 = 5 \times 10^2$ $0.5 = 5 \times 0.1 = 5 \times 10^{-1}$ $0.00005 = 5 \times 0.00001 = 5 \times 10^{-5}$
<p>Standard Form</p>	<p>The typical way we see/write numbers.</p> <p>ex. 5 50,000 0.05</p>

<p>Scientific Notation</p>	<p>Used to write very LARGE numbers or very small numbers It is written as 2 numbers multiplied where one is between 1 and 10.</p> <p>ex. 6.92×10^5 ← is an integer ↑ between 1 and 10</p>
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<p>Standard Form</p>	→	<p>Scientific Notation</p>
$3,510,000$ 6 places		3.51×10^6
$21,000,000,000$ 10 places		2.1×10^{10}
0.0002 4 places		2×10^{-4}
0.0000000791 8 places		7.91×10^{-8}

<p>Scientific Notation</p>	→	<p>Standard Form</p>
3×10^6		$3,000,000$ 6 places
5.93×10^3		$5,930$ 3 places
2.71×10^{-5}		0.0000271 5 places

<p>Example</p>	<p>Bacteria Colony A: 79,854,000 B: 2,124,000 How many times bigger is A to B?</p> $\frac{A}{B} \approx \frac{80,000,000}{2,000,000} = 40 \text{ times bigger}$ <p>Use scientific notation</p> $\frac{A}{B} \approx \frac{8 \times 10^7}{2 \times 10^6} = 4 \times 10^{7-6} = 4 \times 10^1 = 40$ <p>Least to Greatest</p> $5.3 \times 10^4 \quad 5.3 \times 10^8 \quad 5.3 \times 10^{-7} \quad 5.3 \times 10^{-2}$ $5.3 \times 10^{-7} \quad 5.3 \times 10^{-2} \quad 5.3 \times 10^4 \quad 5.3 \times 10^8$
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