

Name:

Date:

Topic:

Class:

Main Ideas/Questions	Notes/Examples		
What is "e"?	<ul style="list-style-type: none"> e is an _____ with an approximate value of _____. e often occurs as the base of exponential and logarithmic functions that describe real-world scenarios. 		
Base "e" Exponential Functions	<ul style="list-style-type: none"> Exponential functions with base e are called _____ exponential functions. Example: _____ 		
Base "e" Logarithmic Functions	<ul style="list-style-type: none"> Logarithmic functions with base e are called _____ Example: _____. This is often abbreviated as _____. 		
Converting Between Forms	Write each equation in logarithmic form.		
	1. $e^x = 24$	2. $e^9 = x$	3. $e^{x+5} = 72$
	Write each equation in exponential form.		
	4. $\ln x = 58$	5. $\ln 6 = x$	6. $\ln(x - 9) = 32$
Simplifying with Properties	Condense each expression into a single logarithm.		
	7. $\ln 3 + \ln 16$	8. $\ln 63 - 2 \cdot \ln 3$	9. $\frac{1}{3} \cdot \ln 64 + 2 \cdot \ln x$
	Expand each logarithm.		
	10. $\ln 5x$	11. $\ln \left(\frac{a^3}{b} \right)^2$	12. $\ln \sqrt[3]{m^2 n}$

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<p>What is a LOGARITHM?</p>	<p>A logarithm (log) is another way of writing exponents.</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin-right: 20px;"> <p style="text-align: center;">Logarithmic Form</p> $\log_b a = x$ </div> <div style="font-size: 2em; margin-right: 20px;">➔</div> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin-left: 20px;"> <p style="text-align: center;">Exponential Form</p> </div> </div> <p style="text-align: center; margin-top: 10px;">↶ Read as "log base b of a equals x."</p>	
<p>Converting LOG ↔ EXP</p>	<p>Directions: Write each equation in exponential form.</p>	
	<p>1. $\log_3 9 = 2$</p>	<p>2. $\log_6 216 = 3$</p>
	<p>3. $\log_7 1 = 0$</p>	<p>4. $\log_2 16 = 4$</p>
<p>5. $\log_4 \frac{1}{16} = -2$</p>	<p>6. $\log_9 27 = \frac{3}{2}$</p>	
<p>Converting EXP ↔ LOG</p>	<p>Directions: Write each equation in logarithmic form.</p>	
	<p>7. $14^2 = 196$</p>	<p>8. $3^4 = 81$</p>
	<p>9. $12^1 = 12$</p>	<p>10. $36^{\frac{1}{2}} = 6$</p>
<p>11. $2^{-3} = \frac{1}{8}$</p>	<p>12. $8^{\frac{4}{3}} = 16$</p>	