

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
Exponential Growth	Occurs when a quantity exponentially increases over time.
	<p>Formula:</p> <p>$a =$ _____</p> <p>$r =$ _____</p> <p>$t =$ _____</p>
Examples	<p>1. The original value of an investment is \$1400, and the value increases by 9% each year. Use an exponential growth function to find the value of the investment after 25 years.</p>
	<p>2. The cost of tuition at a college is \$12,000 and is increasing at a rate of 6% each year. Use an exponential function to find the tuition cost after 4 years.</p>
	<p>3. The number of student athletes at a local high school is 300 and is increasing at a rate of 8% per year. Use an exponential function to find the number of student athletes after 5 years.</p>
	<p>4. Annual sales for a company are \$149,999 and are increasing at a rate of 6% per year. Use an exponential function to find the annual sales after 7 years.</p>
	<p>5. The population of a small town is 1600 and is increasing at a rate of 3% per year. Use an exponential function to find the population of the town after 10 years.</p>
	<p>6. In 1985, there were 285 cell phone subscribers in Mayville. The number of subscribers increased by 75% per year after 1985. Find the number of subscribers in 2008.</p>

Exponential Decay	Occurs when a quantity exponentially decreases over time.	
	Formula:	$a =$ _____ $r =$ _____ $t =$ _____
<i>Examples</i>	7. The population of a town is decreasing at a rate of 1% per year. In 2000 there were 1300 people. Use an exponential function to find the population in 2008.	
	8. The value of a car is \$18,000 and depreciating at a rate of 12% per year. Use an exponential function to find the value of the car after 10 years.	
	9. A farmer buys a tractor for \$50,000. If the tractor depreciates 10% per year, use an exponential function to find the value of the tractor in 7 years.	
	10. An investment of \$8200 loses value at a rate of 2% per year. Use an exponential function to find the value of the investment after 9 years.	
	11. The initial value of a book is \$58 and decreases at a rate of 7% per year. Use an exponential function to find the value of the book after 8 years.	
	12. The population of a town is decreasing at a rate of 2.5% per year. If the population in 2000 was 28,000, what is the expected population in 2015 if this rate of decrease continues?	