Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
Exponential Growth	Occurs when a **quantity exponentially increases** over time.
	Formula: $a =$ _____ $r =$ _____ $t =$ _____
Examples	**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.
	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.
	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.
	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.
	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.
	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.

Exponential Decay	Occurs when a **quantity exponentially decreases** over time.	
	Formula:	$a =$ _____ $r =$ _____ $t =$ _____
Examples	**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?	