



# Precalculus: Exponential Function

Name \_\_\_\_\_ Date \_\_\_\_\_

Calculate the value of quantities with an exponential behavior

- (1) The mass of a radioactive substance decays by 0.3% each day. If today we have 109 ton of that substance, how much remains after 15 days?
  
- (2) Certain quantity decreases at a constant rate of 7% per semester. Its present value is 8,500 units. How much will its value be 19 years from now?
  
- (3) The amount of area covered by a lake grows by 1.5% each year. It was estimated the area covered in 2011 was 118 square miles. Estimate the area for the year 2029.
  
- (4) An electrical device purchased for \$45,000 depreciates at a constant rate of 3.6% each year. Determine its value 24 years after purchase.
  
- (5) A bank offers a savings account which gives a yearly interest rate of 0.8%. An investor deposits \$9,000 today. How much will have the investor in the account in 8 years?
  
- (6) The population of a country grows by 0.2% yearly. If today the population is 2,400,000 people, how many people will the country have 14 years from now?



## Answers

Calculate the value of quantities with an exponential behavior

(1) The mass of a radioactive substance decays by 0.3% each day. If today we have 109 ton of that substance, how much remains after 15 days?

104.20 ton

(2) Certain quantity decreases at a constant rate of 7% per semester. Its present value is 8,500 units. How much will its value be 19 years from now?

539.23 units

(3) The amount of area covered by a lake grows by 1.5% each year. It was estimated the area covered in 2011 was 118 square miles. Estimate the area for the year 2029.

Area for the year 2029= 154.27 square miles

(4) An electrical device purchased for \$45,000 depreciates at a constant rate of 3.6% each year. Determine its value 24 years after purchase.

Final value: \$18,666.43

(5) A bank offers a savings account which gives a yearly interest rate of 0.8%. An investor deposits \$9,000 today. How much will have the investor in the account in 8 years?

\$9,592.39

(6) The population of a country grows by 0.2% yearly. If today the population is 2,400,000 people, how many people will the country have 14 years from now?

2,468,081 people