PC 5.3 Applications of Exponential Functions.

Compound Interest - when interest is paid on a balance that includes interest accumulated from previous time periods.

Ex. 1

If you invest $6000 at 8% compounded annually, how much is in the account at
the end of 10 years?

Ex. 2

$4000 invested over 3 years at 6.4%.

a) Annually

b) Quarterly

c) Monthly

d) Daily

Ex.3

$5000 invested at 7% annual interest, compounded daily. When will investment be
worth $6800?

Continuous Compounding

Ex.4

Invest $4000 at 5% annual interest compounded continuously. How much will you
have at the end of 3 years?

Exponential Growth

Ex.5

At the beginning of an experiment, a culture contains 1000 bacteria. Five hours later,
there are 7600 bacteria. Assuming bacteria grow exponentially, how many will be there
after 24 hours?

Exponential Decay

Ex. 6

When tap water is filtered through a layer of charcoal and other purifying agents, 30%
of impurities are removed. If water goes through second layer, 30% of impurities are
removed. How many layers are needed to ensure 95% impurities are removed?

Ex.7

When a living organism dies, it's carbon-14 decays exponentially. An archeologist
determined that the skeleton of a mastodon has lost 64% of its carbon-14. The half
life of carbon-14 is 5730 years. Estimate how long ago the mastodon died.