1. You have landed a job in the "Friends of Bacteria" lab. You grow a variety of Bacteria that doubles its population every twenty minutes. You want to have a bacteria colony that has 2048 million bacteria 200 minutes from now. How many bacteria cells should you have started with in your initial culture ?

2. In a living organism, the ratio of radioactive carbon, Carbon-14, to ordinary carbon stays fairly constant during the lifetime of the organism. After its death, however, no new carbon is ingested, and the proportion of Carbon-14 in the organism's remains decreases as the Carbon-14 decays. Can we exploit this property of Carbon-14 ?

   Q: On a scuba diving expedition in crater lake Oregon, you discover a charcoal piece from a tree killed in a volcanic eruption. You do a lab analysis to find out that there is 44.5% of Carbon-14 found in living matter. The half-life of Carbon-14 is known to be about 5700 years. How old is crater lake ?

3. Find the present value of \$3000 due after three years if the interest rate is 9% compounded quarterly.

4. Suppose Ted Turner asks you for an investment of \$2,000,000 in CNN that guarantees you cash flows at the end of years $2, 3, 5$ as indicated below:

   2- 1,500,000
   3- 400,000
   4- 3,000,000

   Assume an interest rate of 7% compounded annually and find the net present value of the cash flows. Finally, decide if you want to turn Mr. Turner down or not ?

[1] **Office hours:** Monday: 1:45-3:15pm, Tuesday:3:30-5:30pm, Wednesday 2:15-3:15pm