Sample Questions for Final Exam

1. How many license plates with 3 letters followed by 3 numbers can be made if no letters or numbers are repeated?

2. Let $A = \{2, 4, 5\}$ and $B = \{3, 4, 5, 6\}$.
   
   (a) What is $n(A \cap B)$?
   
   (b) What is $n(A \cup B)$?
   
   (c) What is $n(A \cap B')$?
   
   (d) What is $n(A \times B)$?

3. Sketch a Venn Diagram to illustrate $A \cap B$.

4. An investor hopes to increase his retirement account to $800,000 by the time he retires 15 years from now. The present value of the account is $65,000. He expects his investment to earn an annual rate of 9.9%, compounded monthly. What must his end-of-the-month payment be each month to reach his goal?

5. Estimate the balance on a credit card after 4 years if the initial balance is $1500, the interest rate is 15.9% compounded monthly, and the cardholder makes minimum monthly payments of 2.5% of the balance.

6. You take out a car loan for $14,000 over 6 years at 3.9% financing. What are your monthly payments going to be?

7. You start a savings account with $500. It earns 4.1% annual interest. Find out your balance after 3 years if the interest is (a) simple, (b) compounded quarterly, or (c) compounded daily.

8. Solve for $x$ if $4^x = 7(3^x)$.

Also review the sample questions for Exam #1 and Exam #2.