Sample problems, exam 3.

1. Suppose A, B and C are three sets with 90, 70 and 80 members, respectively.

    i) If $n(A \cup B) = 150$, find $n(A \cap B)$?

    ii) If $B \cap C$ has 15 members, find the number of members in $B \cup C$.

    iii) If $C \setminus A$ has 55 members, find $n(A \cap C)$.

    iv) If $n(A \cap B \cap C) = 5$, find $n(A \cup B \cup C)$.

2. Bill invests $6000 at an 8% annual interest rate, compounded quarterly.

When will his investment reach $11,000?

3. Suppose you borrow $120,000 for a house and make monthly payments for 20 years to repay the loan. If the interest rate is 6%, find your monthly payment and the total amount you will pay back.

4. A payday lender will lend $100 for a term of 10 days and require that you repay $115. Find the annual percentage rate. Assume a 360 day year.

5. How many outfits can we make using three pairs of shoes, five pairs of pants and 4 shirts?

6. What if we do not care if our shoes match?

7. How many three letter words can we form letters ABCDE if we allow repeated letters?

8. How many three letter words can we form the letters ABCDE if we do not allow repeated letter?

9. Suppose we have 15 people and need to form a subcommittee with a chair, vice chair and secretary. How many ways can we do this?