Review 4A

1. What is the accumulated amount if \$5000 is invested at 4.5% compounded monthly over a period of 5 years?

2. What amount should be invested now to accrue \$25,000 in 15 years when invested at an annual rate of 4% compounded daily?

3. Which has the higher effective interest rate: 5% compounded annually or 4% compounded daily? What are the effective rates?

4. If you deposit \$10 each month into a savings account with an interest rate of 5% compounded monthly, how much would be in the account after 40 years? How much would you have to put into the account now to have the same amount at the end of 40 years?

5. James and Mary take out a \$150,000 mortgage on their new house to be paid in monthly installments over a 30 year period. If they are charged 7% interest, what are their monthly payments?

6. If $A = \{0, 1, 2, 3, \ldots, 9\}$, $B = \{2, 4, 6, 8, 10\}$ and $U = A \cup B$, find $A \cup B^C$ and $A^C \cap B$.

7. Of the 30 freshman majoring in international marketing, 12 speak French, 8 speak German, and 5 speak both languages. How many do not speak either French or German? Illustrate this with a Venn diagram.

8. How many eight character passwords can be constructed using the 92 keyboard characters?

9. From a box of 20 books, in how many ways may 10 be arranged on a bookshelf?

10. Out of a hat with 32 names, how many ways are there to draw out winners of a first, second and third prize (without replacing names).

Bring your own formulas.

Answers to other side: 1. \$1643.62; 2. \$6139.13; 3. 5.64% and 5.13%; 4. \$17,308.48, \$8612.62; 5. \$577.75; 6. $\{a, b, c, d, e, h, i, k, o, s, u\}$, $\{a, e, u\}$; 7. 90,000; 8. 12; 9. $C(5, 3) = 10$; 10. $C(15, 5) = 3003$.

Review 4B

1. What is the accumulated amount if \$1000 is invested at 5% compounded quarterly over a period of 10 years?
2. What amount should be invested now to accumulate \$10,000 in 10 years when invested at an annual rate of 5% compounded annually?
3. Which has the higher effective interest rate: 5.5% compounded monthly or 5% compounded daily? What are the effective rates?
4. If you deposit \$100 each month into a savings account with an interest rate of 7% compounded monthly, how much would be in the account after 10 years? How much would you have to put into the account now to have the same amount at the end of 10 years?
5. Suppose you want to accumulate \$100,000 over the next 10 years. How much must you put into your savings account, which pays 7% intrest compounded monthly, each month?
6. If $A = \{a, e, i, o, u\}$, $B = \{a, b, c, d, e\}$ and $C = \{a, c, h, k, s, u\}$, find $A \cup B \cup C$ and $A \cap (B \cup C)$.
7. A regional telephone company with 200,000 customers provides 60,000 with call waiting and 70,000 with call forwarding. If 20,000 customers have both, how many have neither? Illustrate this with a Venn diagram.
8. If a student has 3 pairs of pants and 4 shirts, how many different outfits are possible?
9. How many 3-element subsets are there of $\{a, b, c, d, e\}$?
10. How many ways are there to select a committee of 5 people from a pool of 15 people?

This and all other class documents can be found on the web at: http://www.geocities.com/pvachusk/

Answers to other side: 1. \$6258.98; 2. \$13,720.74; 3. 5% and 4.08%; 4. \$15,260.20, \$2073.84; 5. \$997.95; 6. $\{0, 1, 2, \ldots, 9\}$, $\{10\}$; 7. 15;
8. $P(92, 8) = \frac{92!}{84!} = 3,753,021,371,299,200$; 9. $P(20, 10) = \frac{20!}{10!} = 670,442,572,800$;
10. 29,760.