

## MATH ANALYSIS II

### REVIEW for Quiz 15.1 – 15.3

1. Draw a Venn diagram and shade in the corresponding region for each of the following:

a.  $\overline{A \cup B}$

b.  $A \cap \overline{B}$

c.  $(A \cap B) \cup C$

2. Evaluate the following without using a calculator.

a.  $3!5!$

b.  $7! / 5!$

c.  $(n + 1)! / (n - 1)!$

d.  ${}^6C_3$                    ${}^8C_2$

e.  ${}^7P_4$                    ${}^8P_2$

3. Out of 285 seniors in a high school, 75 participate in sports, 125 participate in clubs, and 85 are on the honor roll. Of the students who play sports, 45 are on the honor roll. Of the students who participate in clubs, 60 are on honor roll. 40 students participate in sports, clubs, and are on the honor roll. 25 students play sports only. How many students are not involved in any sports, clubs, or the honor roll? (Include a Venn diagram.)

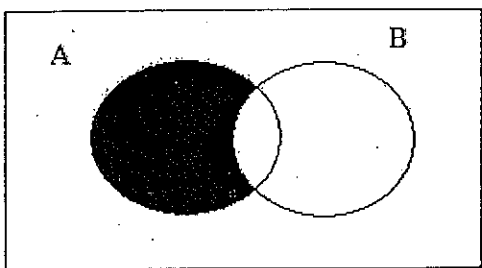
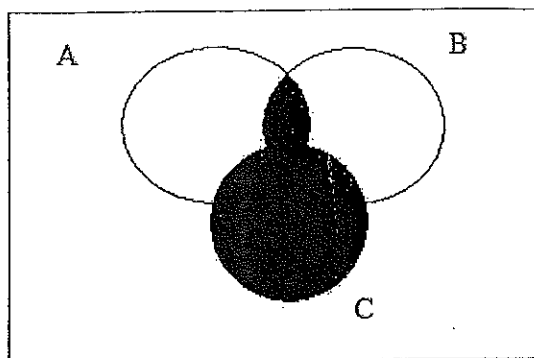
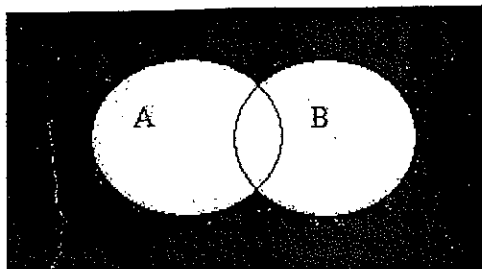
4. How many numbers from 300 to 999 contain no 1's and 2's? How many numbers from 300 to 999 contain at least one 5?

5. License plate numbers can consist of 3 letters followed by 3 digits or 4 letters followed by 2 digits. How many different license plates are possible?

6. Ten people apply for four job positions. In how many different ways can the positions be filled if the jobs are all the same? How many different ways are there if the four jobs are different?

7. Five girls and six boys go to the movies. In how many different ways can they sit together? In how many different ways can they sit if the boys must sit together and the girls must sit together?

1.



2. a) 720    b) 42    c)  $n^2 + n$     d) 20; 28    e) 840; 56

3. 110

4. 448; 214

5. 63,273,600

6. 210; 5040

7. 39,916,800; 172,800