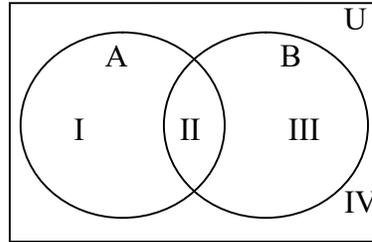Math 1313
Review for test 4
Chapter 5 and 6
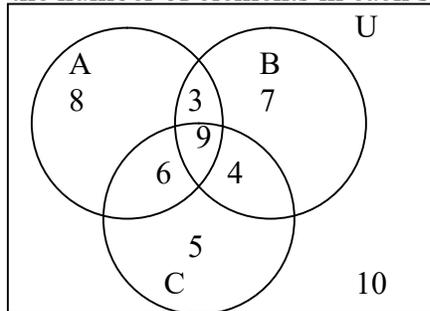
Example 1: Given the following Venn diagram, which region(s) make(s) up:

a. $A^c \cap B$

b. $A^c \cap B^c$

Example 2: Find the number of elements in each set.

a. $n((B \cup C) \cap A^c)$

b. $n(A^c \cup (C^c \cap B))^c$

Example 3: 800 college freshmen were surveyed regarding their enrollment in Math, Physics and English classes. The survey revealed the following:

184 were enrolled in Physics and Math
399 were enrolled in Math
168 were enrolled in Physics and English
314 were enrolled in Physics
101 were enrolled in all three
212 were enrolled in Math and English
418 were enrolled in English

a. How many were enrolled in Math or Physics?

b. How many were not enrolled in Math or English but were enrolled in Physics?

Example 4: Suppose 4 pens are selected at random from a box containing 9 yellow pens and 6 blue pens. In how many ways can you choose at least 1 yellow pen?

Example 5: A club has 58 members, 38 men and 20 women. A committee must consist of 8 people. In how many ways can the committee consist of at most 1 woman?

Example 6: A business organization needs to make up a 5 member fund-raising committee. The organization has 10 accounting majors and 8 finance majors. In how many ways can the fund-raising committee be formed if at least 4 finance major is on the committee?

Example 7: If a coin is tossed 14 times.

a. What is the probability that heads will come up exactly 10 times?

b. What is the probability that heads comes up at most 12 times?

Example 8: A box contains 20 computer chips, 5 of which are defective. Seven chips are taken out at random for testing. What is the probability that

a. at least 4 are defective?

b. at most 4 are defective?

Example 9: Let E and F be two events of an experiment, P(E) = 0.3 and P(F) = 0.2 , and $P(E \cup F) = 0.35$. Find the following probabilities:

a. $P(E \cap F)$

b. $P(E^C \cap F)$

c. P(E | F)

d. $P(F|E^C)$

Example 10: Companies A, B. and C produce 10%, 40% and 50% respectively of the Model II computer. It has been found 1 % from A, 1½ % from B and 2% from C are found to be defective. Find the following probabilities:

a. Find the probability of a computer being defective.

b. Find the probability of a computer being defective given it came from company C.

c. If it's found that a computer is defective, find the probability it came from company A.

Example 11: One of 2 bands is chosen at random with equally likely probability then a band member is chosen at random from the chosen band. Band one has 30 boys and 20 girls. Band two has 20 boys and 25 girls. Find the indicated probabilities:

a. What is the probability that band two was chosen, given a boy was chosen?

b. What is the probability that a girl was chosen?

c. What is the probability a boy was chosen given band one was chosen?