California State University Sacramento - Math 101

Homework Assignment 10

1) Suppose that A and B are finite sets. Give a formula for $|A \cup B|$ that only involves $|A|$, $|B|$, and $|A \cap B|$.

2) Suppose that A, B, and C are finite sets. Give a formula for $|A \cup B \cup C|$ that only involves $|A|$, $|B|$, $|C|$, $|A \cap B|$, $|A \cap C|$, $|B \cap C|$, and $|A \cap B \cap C|$.

3) Find the number of integers in the set $\{1, 2, \ldots, 90\}$ that are divisible by 3 or 5.

4) Find the number of integers in the set $\{1, 2, 3, \ldots, 140\}$ that are divisible by 2, 5, or 7.

5) Problem 1 on page 173

6) Suppose 100 students play three sports; baseball, hockey, or football. Each student may play one, two, or all three sports. If 30 students played baseball, 50 students played hockey, 60 students played football, and 18 students played all three sports, how many students played at least two sports?

Exercise 4

1. A group of 100 students took examinations in Chinese, English and Mathematics. Among them, 92 passed Chinese, 75 English and 63 Mathematics; at most 65 passed Chinese and English, at most 54 Chinese and Mathematics, and at most 48 English and Mathematics. Find the largest possible number of the students that could have passed all the three subjects.