Homework 1: Sample Spaces, Events, Set Theory

1. §1.4, #6b, 6d, 10

2. An urn contains twenty-four chips, numbered 1 through 24. One is drawn at random. Let A be the event that the number is divisible by 2, and let B be the event that the number is divisible by 3. State in words, in the simplest possible way, the event represented by $A \cap B$.

3. What must be true of the events A and B if $A \cup B = B$? What must be true of the events if $A \cap B = A$?

4. Let A and B be any two events on a sample space S. Which of the following sets are necessarily subsets of which other sets: A, B, $A \cup B$, $A \cap B$, $A^c \cap B$, $A \cap B^c$, $(A^c \cup B^c)^c$?