

## 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:  $A$ ,  $B$ ,  $A \cup B$ ,  $A \cap B$ ,  $A^c \cap B$ ,  $A \cap B^c$ ,  $(A^c \cup B^c)^c$ ?