

Homework #14

Due Wednesday, November 12

No late papers accepted! No excuses!

1. Ruth Odom, a psychology major at the University of Texas, was planning a study of viewer response to certain aspects of the movies, *The Sixth Sense*, *Ghost*, and *Heaven Can Wait*. Upon surveying 55 students, she determined the following:

17 had seen *The Sixth Sense*

17 had seen *Ghost*

23 had seen *Heaven Can Wait*

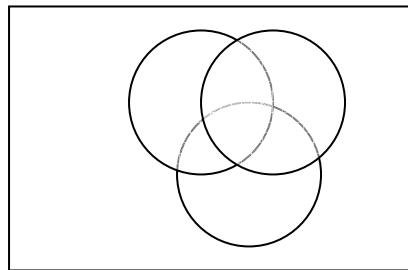
6 had seen *Ghost* and *The Sixth Sense*

8 had seen *The Sixth Sense* and *Heaven Can Wait*

10 had seen *Ghost* and *Heaven Can Wait*

2 had seen all three movies

- Construct a Venn diagram to model the above problem.
- How many students had seen none of these movies?
- If one student is randomly selected, find the probability that the student had seen *Ghost* given that the student saw *The Sixth Sense*.
- If one student is randomly selected, find the probability that the student had seen *Ghost* and *The Sixth Sense* but not *Heaven Can Wait*.
- If one student is randomly selected, find the probability that the student had seen *Ghost* or *The Sixth Sense* but not *Heaven Can Wait*.
- How many students had seen at most one of these movies?
- How many students had seen exactly one of these movies?
- If one student is randomly chosen, find the probability that the student saw *The Sixth Sense* and *Heaven Can Wait* given that the student saw *Ghost*.
- Are the events “seeing *The Sixth Sense*” and “seeing *Ghost*” mutually exclusive events? Why or why not?



2. Four men and three women are waiting to be interviewed for jobs. They are all selected to be interviewed in random order.

- a) How many ways can they all be interviewed?
- b) Find the probability that all the women will be interviewed first.
- c) Find the probability that the first person interviewed will be a woman.
- d) How many ways can the first and the last person interviewed be a man?

3. For the experiment of rolling an ordinary pair of dice, find each of the following.

- a) How many elements are in the sample space?
- b) Find the probability that the sum will be 11 or 12.
- c) Find the odds that the sum will be 11 or 12.
- d) Find the probability that the sum will be greater than 5 or even.
- e) Find the probability of rolling an eight given that doubles are rolled.
- f) Find the odds of rolling an eight given that doubles are rolled.
- g) Find the probability that doubles are rolled given that an eight was rolled.