

**Math 5710**  
**Conditional Probability and Multiplication Rules**  
**Examples**

1. Roll a pair of dice. Let A be the event “sum is even.” Let B be the event “sum  $> 4$ .” Find the probability of A given that event B occurs.

2. Draw three cards from a standard deck without replacement. Find the probability that they are all “hearts”. If you draw with replacement, what is the probability of all “hearts”?

3. On a multiple-choice exam with 3 possible answers for each of the ten questions, what is the probability of getting exactly four of the ten questions correct just by guessing?

4. Two dice are tossed  $n$  times in succession. Compute the probability that "snake eyes" appears at most once. How large must  $n$  be to make this probability at least  $\frac{1}{2}$  ?

5. A bin of 25 electrical components is known to contain 2 that are defective. If the components are to be tested one at a time, in random order, until the defectives are discovered, find the probability that the defectives are discovered on the sixth test.

6. A pair of dice is rolled until a "seven" or "eleven" appears. What is the probability that a "seven" occurs first?