February 21 – Conditional Probability

1. Conditional probability. (The case of partial information.)

2. Notation: \( P(A|B) \) read “probability of event \( A \) given \( B \)”

3. Definition:

\[
P(A|B) = \frac{P(A \cap B)}{P(B)}
\]

4. examples: two dice, the random senior

5. Be careful: \( P(A|B) \) is not necessarily equal to \( P(B|A) \).

6. Independence.
   (a) the intuitive content.
   (b) the formal definition: \( A \) and \( B \) are independent if \( P(A \cap B) = P(A)P(B) \).

7. The difference between sampling with and without replacement amounts to independence.

Homework, Due Friday, 25

1. Read Devore and Farnum Section 5.3.

2. Do problems 5.18,19,20,22 in Devore and Farnum.