

COMP9334 Week 1: Sample Problems on Probability

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In COMP9334, we will be using probability very extensively. Here is a list of topics that you are expected to know.

- Random variables (discrete, continuous), Probability Density function (PDF), Probability Mass Functions (PMF), Cumulative Distribution Function (CDF), Conditional Probability, Bayes theorem, Statistical terms (mean, variance, standard deviation), Expectation.

Here are a number of study problems that you are asked to attempt before coming to the first lecture.

Problem 1: You roll two fair dice. What is the probability that the total of two dice is greater than 8?

Problem 2: You roll two fair dice. What is the probability that the total of two dice is greater than 8 given that the first die gives 6?

Problem 3: Among a group of students, you know that:

- The probability that a student likes to watch *Star War* is 0.4.
- The probability that a student likes to watch *The Theory of Everything* is 0.7.
- The probability that a student likes to watch *Mad Max* is 0.6.
- The probability that a student likes to watch both *Star War* and *The Theory of Everything* is 0.1.
- The probability that a student likes to watch both *The Theory of Everything* and *Mad Max* is 0.55.

Answer the following questions:

- (a) What is the probability that a student likes to watch either *The Theory of Everything* or *Mad Max*?
- (b) What is the probability that a student likes to watch *Star War* given that the student likes to watch *The Theory of Everything*?