STAT 2857A – Lecture 7 Examples and Exercises

Example 7.1

Approximately 79% of world's population has brown eyes[1].

Suppose that we sample 5 people from the population at random with replacement and record their eye-colour as brown or not brown. Let X denote the number of people in the sample with brown eyes.

- a) What are the possible outcomes in the sample space?
- b) List the outcomes in the event that exactly 3 people have brown eyes. Write this event in terms of the random variable X.
- c) List the outcomes in the event that no more than 3 people have brown eyes. Write this event in terms of the random variable X.

Example 7.2

Which of the following random variables are discrete and which are continuous.

- a) The year of birth of a randomly selected student.
- b) The time it takes a randomly selected student to drive to school.
- c) The number of blue candies in a box of Smarties.
- d) The minimum of your shoe size and the distance you live from Western in kilometres.

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[1]https://www.worldatlas.com/articles/which-eye-color-is-the-most-common-in-the-world.html#
targetText=Approximately%2079%25%20of%20the%20world's,include%20gray%20and%20red%2Fviolet.

Exercise 7.1

Identify the following random variables as discrete or continuous. Which are Bernoulli random variables.

a) Whether or not it rains tomorrow with $1 = $ Rain and $0 = $ No rain.
b) The number of birds in a flock.
c) The wavelength of light measured from a distant star.
d) Whether or not you live past 80.
e) Height of a randomly selected building in metres.
f) Height of a randomly selected building in floors.