

COMP 1433 Quiz 2 (Monday)

1. Which of the following R functions generates a sequence of 10 random numbers between 0 and 1?
 - A. `rnorm(10, 0, 1)`
 - B. `runif(10, 0, 1)`
 - C. `rbinom(10, 1, 0.5)`
 - D. `rexp(10, 1)`

The correct answer is B. This function generates a sequence of 10 random numbers that are uniformly distributed between 0 and 1. The other options generate random numbers from different distributions (normal, binomial, exponential) but not necessarily within the specified interval of [0,1]. See P57 Lecture 6.

2. What is the purpose of `facet_wrap()` function in `ggplot2`?
 - A. To add a layer to an existing plot
 - B. To create multiple subplots based on a categorical variable
 - C. To create a legend for a plot
 - D. To change the shape of data points in a plot

The correct answer is B. See Pg 24 Lecture 7.

3. Which of the following is a characteristic of a pseudo-random number generator in R?
 - A. It produces truly random numbers.
 - B. It requires a seed value to start generating numbers.
 - C. It generates random numbers that never repeat.
 - D. It always generates positive integers.

The correct answer is B. See Pg 10 Lecture 8.

4. Given 1000 flipping of a fair coin, which of the following code allows us to calculate the probability of 256 heads-up or less?
 - A. `dbinom(256, 1000, prob=0.5, lower.tail=TRUE)`
 - B. `dbinom(256, 1000, prob=0.5, lower.tail=FALSE)`
 - C. `pbinom(256, 1000, prob=0.5, lower.tail=TRUE)`
 - D. `pbinom(256, 1000, prob=0.5, lower.tail=FALSE)`

The correct answer is C. See P29 Lecture 9.

5. Which of the following probability distribution is continuous?
 - A. Bernoulli
 - B. Binomial
 - C. Exponential
 - D. Poisson

The correct answer is C. Bernoulli distribution is a binary distribution that models the probability of success or failure in a single trial. Binomial distribution is a distribution that models the number of successes in a fixed number of independent trials with a constant probability of success. Poisson distribution is a distribution that models the number of events occurring in a fixed interval of time or space.