Assignment I

derekogle.com/NCMTH107/modules/CE/NormalDist_CE1

Normal Distribution Characteristics

1. Use `snorm()` from `NCStats` to answer the following questions. [*Hint: Click the gear icon and then use the slider bars to answer the two questions below.*]
    1. What happens to the normal distribution if μ is increased?
    2. What happens to the normal distribution if σ is increased?
2. For each situation below, (i) identify μ, (ii) identify σ, and (iii) draw the normal distribution with an approximately accurate scale on the x-axis.
    1. X~N(75,10)
    2. Y~N(5500,600)

Hand Calculations

Answer each question below, **without using R**, assuming that X~N(75,10). Show your work with a careful drawing for each question.

1. What percent of X values are less than 95?
2. What percent of X values are greater than 105?
3. What percent of X values are between 65 and 85?
4. What percent of X values are between 55 and 85?
5. What is the value X such that 2.5% of X values are lower?
6. What is the most common 95% of X values?
7. What is the largest 2.5% of X values?

Carpenter Ants I

Suppose that the distribution of number of Carpenter Ants (*Camponotus* spp.) in a nest is known to be N(1400,300). From this, answer the following questions.

1. What is an individual?
2. What is the variable?
3. What type of variable is that?
4. What is μ?
5. What is σ?

Additionally, identify the type of question (e.g., “forward-left”, “reverse-between”) for each question below (you will answer the question in the next assignment).

6. What percentage of nests have more than 1900 ants?
7. What is the number of ants such that 15% of nests have more ants?
8. What is the number of ants such that 33% of nests have fewer ants?
9. What percentage of nests have between 700 and 1900 ants?
10. What percentage of nests have fewer than 300 ants?
11. What is the number of ants such that 5% of nests have more ants?
12. The most common 80% of nests have between what two numbers of ants?