Normal distribution

Exercise 1.

The height of certain plants follows a normal distribution with an average of 70 cm and a standard deviation of 10cm.

a) What is the percentage of the plants with a height between 58 and 65 cm?

b) What is the height exceeded by 20% of the plants?

c) Whitin those plants that exceed 75cm, what is the percentage that exceeds the 80 cm?

Answers: a) 19.35% b) 78.4cm c) 51.42%

Exercise 2

The height of the students at certain school is normally distributed with an average of 160 cm and a standard deviation of 20 cm.

a) What is the percentage of students whose height exceeds 172 cm?

b) What is the percentage of students whose height is between 152 and 166 cm?

c) What is the percentage of students whose height is between 140 and 148 cm?

Answers: a) 27.43% b) 27.33% c) 11.56%

Exercise 3

The time that a worker spends to finalise a task follows a normal distribution with an average of 28 minutes and a standard deviation of 4 minutes. The technical department informs that the maximum time tolerated to complete that task will be from now on 30 minutes to avoid delays in the process. If a worker exceeds this time, he will have to do a workshop to improve the performance.

a) What is the percentage of the workers who will have to attend the workshop?

b) Due to financial issues, the company cannot send more than 5% of the employees to the workshop. In this case, what should be the maximum time tolerated by the Technical Department?

Answers: a) 30.85% b) 34.56 minutes

Exercise 4

The weight in kilograms of certain packages follows a normal distribution (mean = 95 and sd= 10). What is the probability to find a package heavier than 105 kg.

Answer: 0.84134

Exercise 5

The grades of certain Statistics course are normally distributed with an average of 52 points and a standard deviation of 10 points.

a) What is the probability of not passing the course (the minimum grade to pass is 40 points)?

b) What is the probability of getting more than 70 points?

c) What is the probability of getting exactly 50 points?

d) What is the probability of getting 60 points at most?

Answers: a) 0.11507 b) 0.03593 c) 0 d) 0.78814