

Question #74783, Math / Statistics and Probability

The height of 100 students of a study center of IGNOU is approximately normally distributed with mean (μ) 65 inches and standard deviation 2.5 inches. Find the no of students whose height is

- (i) less than 65 inches,
- (ii) between 60 inches and 70 inches

Solution

(i) 50% of the dataset falls to either side of the mean. Therefore, there must be about 50 students with height less than 65 inches.

$$(ii) z_1 = \frac{x - \mu}{\sigma} = \frac{60 - 65}{2.5} = -2;$$

$$z_2 = \frac{70 - 65}{2.5} = 2$$

According to the empirical rule, at least 95% of dataset falls within two standard deviations from the mean. Therefore, about 95 students are expected to have height between 60 and 70 inches.

Using standard normal table, the area under the standard normal curve between the mean and ± 2 is 0.4772, hence $2 \times 0.4772 = 0.9544$. The result is consistent with the one obtained using the empirical rule.

Answer: (i) 50, (ii) 95.

Answer provided by <https://www.AssignmentExpert.com>