**[Que-33] - If the height of 500 students are normally distributed with mean 65 inch and standard deviation 5 inch. How many students have height : a) greater than 70 inch. b) between 60 and 70 inch.**

To determine the number of students with heights in specified ranges, we can again use the Z-score formula and the properties of the normal distribution.

Given:

* Mean (μ) = 65 inches
* Standard deviation (σ) = 5 inches
* Number of students = 500

### **(a) Number of students with height greater than 70 inches**

1. Calculate the Z-score for 70 inches: Z = (70−65)/5 =5/5 =1
2. Using the standard normal distribution table, find the cumulative probability for Z=1.

The cumulative probability for Z=1 is approximately 0.8413. This is the proportion of students who are shorter than 70 inches.

1. To find the proportion of students who are taller than 70 inches: P(X>70)=1−P(X≤70)=1−0.8413=0.1587
2. Calculate the number of students:

Number of students=0.1587×500=79.35

Approximately 79 students have a height greater than 70 inches.

### **(b) Number of students with height between 60 and 70 inches**

1. Calculate the Z-score for 60 inches: Z=(60−65)/5 = (−5)/5 =−1
2. Using the standard normal distribution table, find the cumulative probability for Z=−1.

The cumulative probability for Z=−1 is approximately 0.1587. This is the proportion of students who are shorter than 60 inches.

1. We already have the cumulative probability for Z=1 which is approximately 0.8413 (proportion of students shorter than 70 inches).
2. To find the proportion of students with heights between 60 and 70 inches: P(60<X<70)=P(X≤70)−P(X≤60)=0.8413−0.1587=0.6826
3. Calculate the number of students: Number of students=0.6826×500=341.3

Approximately 341 students have a height between 60 and 70 inches.