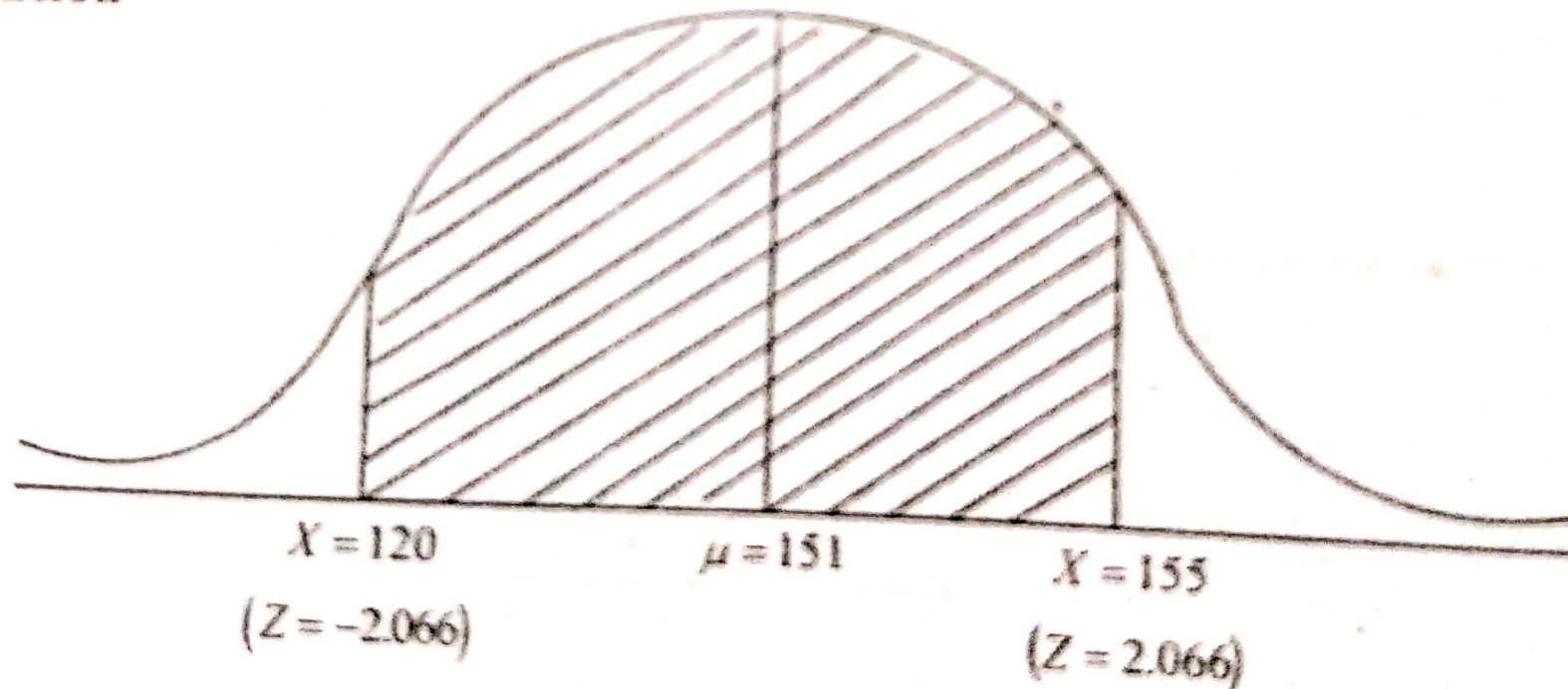


### Illustration 1

The mean weight of 500 Male students in a certain college is 151 lb and the S.D is 15 lb. Assuming the weights are normally distributed and how many students weigh.

- (a) Between 120 and 155 lb
- (b) More than 155 lb

### Solution



$$\bar{x} = 151 ; \sigma = 15/b$$

To find

$$(a) P(120 < x < 155)$$

$$\text{When } x = 120, Z = \frac{x - \mu}{\sigma} = -2.066$$

$$\text{When } x = 155, Z = \frac{x - \mu}{\sigma} = \frac{155 - 151}{15} = +0.266$$

$$\begin{aligned} \therefore P(120 < x < 155) &= P(-2.066 < Z < 0.266) \\ &= 0.4803 + 0.0636 = 0.5439 \end{aligned}$$

$$\begin{aligned} (b) P(x > 155) &= 1 - P(x \leq 155) \\ &= 1 - P(z \leq 0.266) \text{ [from (a)]} \\ &= 1 - 0.0636 \\ &= 0.9364 \end{aligned}$$

### Exercise 1

- The mean height of 500 female students in a certain college is 160cm and the SD is 16cm. Assuming that heights are normally distributed, find out how many students' height are (a) between 145cm and 165cm (b) More than 163cm.
- The mean no. of yeast cells in the square is 50 and the SD is 5. Assume that the no of yeast cells are normally distributed, find how many yeast cells are in a square (a) between 30 and 70 (b) More than 85.
- The Mean concentration of cobalamin in serum is 700 pg/ml and the S.D is 70 pg/ml. Assume that the concentration are normally distributed and what will be the concentration of cobalamin if it is (a) between 160 and 700 pg/ml (b) less than 800pg/ml.
- The mean molecular weight of a protein in serum is 120KDa and the SD 12 KDa. Assume that the molecular weight are normally distributed. Find what will be the molecular weight of the protein if it is distributed between (i) 60 to 140 KDa; (ii) More than 150 KDa.

### Exercise 2

- In a particular test, the percentage of patients found positive and more advanced for a particular disease were 72 and 14 respectively. Estimate the average value obtained by the patients if the minimum positive value and advanced value being 160mg/dl and 300mg/dl respectively.
- Packets of shampoo are filled with an average weight of 100ml and standard deviation of 10ml. If the weight of shampoo packets are normally distributed, find the percentage of packets having weight above 106.0ml.