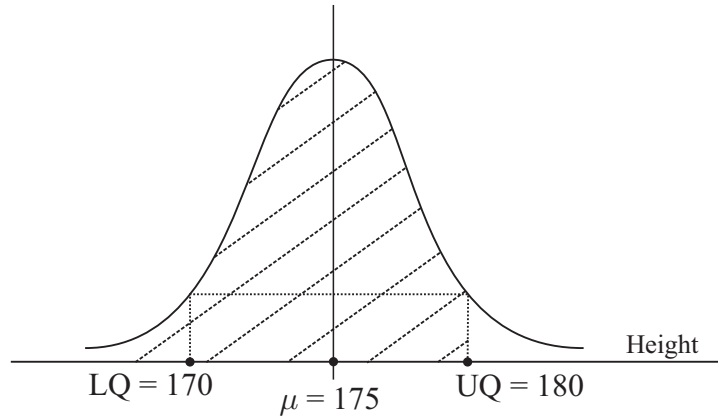


SAMPLE PAPER 4: PAPER 2

QUESTION 4 (25 MARKS)



Question 4 (a)

- (i) Median $M = 175$ cm
- (ii) Lower quartile (LQ) = 170 cm
- (iii) Interquartile range = $180 - 170 = 10$ cm

Question 4 (b)

75% of students have a height less than 180 cm.

Question 4 (c)

$$P(x \leq 180) = 0.75$$

$$P(z \leq Z) = 0.75 \Rightarrow z = 0.675$$

$$x = 180 : z = \frac{x - \mu}{\sigma} \Rightarrow 0.675 = \frac{180 - 175}{\sigma}$$

$$\therefore \sigma = \frac{180 - 175}{0.675} = 7.4 \text{ cm}$$

Question 4 (d)

$$x = 170 : z = \frac{170 - 175}{7.4} = -0.675$$

$$x = 180 : z = \frac{180 - 175}{7.4} = 0.675$$

$$\begin{aligned}
 &P(170 \leq x \leq 180) \\
 &= P(-0.675 \leq z \leq 0.675) \\
 &= P(z \leq 0.675) - P(z \leq -0.675) \\
 &= P(z \leq 0.675) - \{1 - P(z \leq 0.675)\} \\
 &= 2P(z \leq 0.675) - 1 \\
 &= 2(0.75) - 1 \\
 &= 1.5 - 1 \\
 &= 0.5
 \end{aligned}$$