

13th April

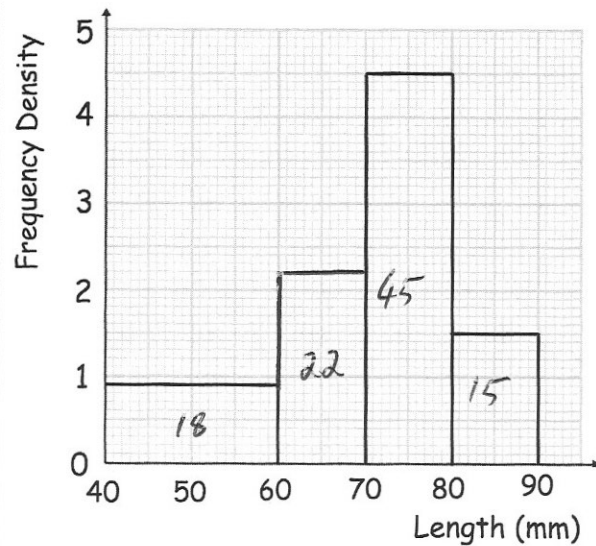
Higher Plus 5-a-day



Corbettmaths

100 students guess the length of a line.
The lowest guess was 41mm and the highest guess was 89mm.

Complete the histogram



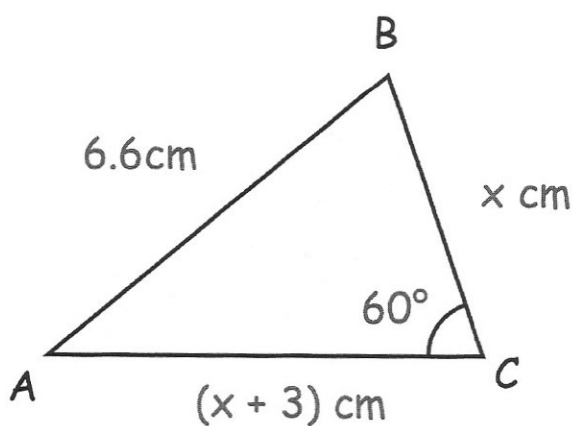
Work out an estimate for the mean of the guesses.

$$\begin{aligned}
 50 \times 1.8 &= 900 \\
 60 \times 2.2 &= 1320 \\
 70 \times 4.5 &= 3150 \\
 80 \times 1.5 &= 1200 \\
 \hline
 &6980 \div 100 = 69.8 \text{ mm}
 \end{aligned}$$

$w^4 < 25$ and $3y + w = 10$
 $w = 10 - 3y$
Find the possible range of values of y

$$\begin{aligned}
 (10 - 3y)^4 &< 25 \\
 -\sqrt{5} < 10 - 3y < \sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 -10 - \sqrt{5} < -3y < -10 + \sqrt{5} \\
 10 + \sqrt{5} > 3y > 10 - \sqrt{5} \\
 10 - \sqrt{5} < 3y < 10 + \sqrt{5} \\
 \frac{10 - \sqrt{5}}{3} < y < \frac{10 + \sqrt{5}}{3}
 \end{aligned}$$



Calculate the perimeter of ABC.
Give your answer to 1 decimal place.

$$\begin{aligned}
 6.6^2 &= x^2 + (x+3)^2 - 2x(x+3) \cos 60 \\
 43.56 &= x^2 + x^2 + 6x + 9 - x^2 - 3x \\
 43.56 &= x^2 + 3x + 9 \\
 0 &= x^2 + 3x - 34.56 \\
 a=1 \quad b=3 \quad c=-34.56 \\
 x &= \frac{-3 \pm \sqrt{147.24}}{2} \\
 x &= 4.56712 \quad \text{or} \quad x = -7.56712 \\
 &\quad \quad \quad \checkmark \quad \quad \quad \times \\
 6.6 + 4.56712 + 7.56712 & \\
 &= 18.734 \text{ cm} \\
 &= 18.7 \text{ cm to 1 dp}
 \end{aligned}$$