

Q. The longest side of a triangle is 3 times the shortest side and the third side is 2 cm shorter than the longest side. If the perimeter of the triangle is at least 61 cm, find the minimum length of the shortest side.

Sol.

Let us assume the length of the shortest side of the triangle be x cm.

Acc. to question. length of longest side = $3x$ cm

and, length of third side = $(3x-2)$ cm.

as, least perimeter of triangle = 61 cm

Thus

$$x + 3x + (3x - 2) \geq 61$$

$$= 7x - 2 \geq 61$$

$$= 7x - 2 + 2 \geq 61 + 2$$

$$= 7x \geq 63$$

$$= \frac{7x}{7} \geq \frac{63}{7}$$

$$= x \geq 9$$

Hence minimum length of shortest side will be 9 cm.