

A hall-room 39 m 10 cm long and 35 m 70 cm broad is to be covered with equal square tiles. Find the largest tile so that the tiles exactly fit and also find no. of tiles required.

**Solution:**

Length of the room:

$$39 \text{ m } 10 \text{ cm} = 39 \cdot 100 + 10 = 3910 \text{ cm}$$

Width of the room:

$$35 \text{ m } 70 \text{ cm} = 35 \cdot 100 + 70 = 3570 \text{ cm}$$

Now we can factor the distances (length and width):

$$3910 = 2 \cdot 5 \cdot 17 \cdot 23$$

$$3570 = 2 \cdot 3 \cdot 5 \cdot 7 \cdot 17$$

GCF of the length and width is:

$$\text{GCF}(3910, 3570) = 2 \cdot 5 \cdot 17 = 170 \text{ cm}$$

Hence, the side of the tile is equal to 170cm, so the area of one tile is

$$S_{\text{tile}} = (170\text{cm})^2 = 28900 \text{ cm}^2.$$

The area of the room:

$$S_{\text{room}} = 3910 \cdot 3570 = 13958700 \text{ cm}^2$$

Number of tiles:

$$N = \frac{S_{\text{room}}}{S_{\text{tile}}} = \frac{13958700}{28900} = 483 \text{ tiles}$$

**Answer:** side of the tile is 170 cm, number of tiles: 483.