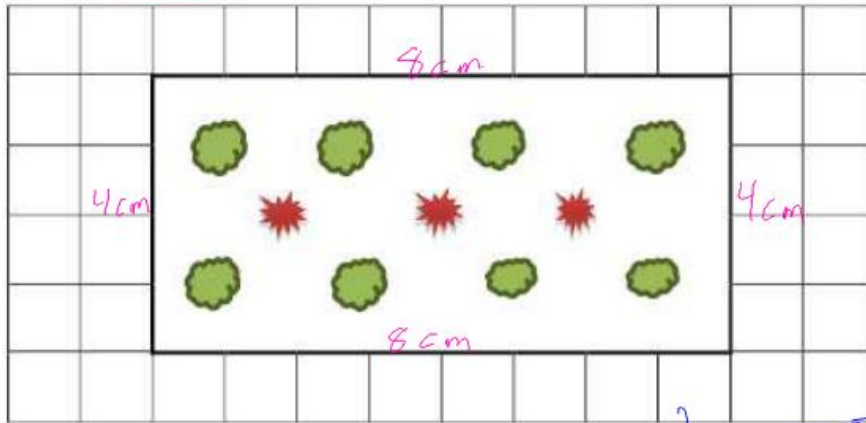


**Example 2**

The diagram shown represents a garden. The scale is 1 centimeter for every 20 meters. Each square in the drawing measures 1 cm by 1 cm. Find the actual length and width of the garden based upon the given drawing.



$1\text{ m} = 100\text{ cm}$   
 $20\text{ m} = 2000\text{ cm}$

Scale ratio

$r = \frac{\text{New}}{\text{original}}$

$r = \frac{20\text{ m}}{1\text{ cm}} = 20 \frac{\text{m}}{\text{cm}}$

$y = 20x$

Picture (x)	Scale	Length	Width
Garden (y)	1 cm	8 cm	4 cm
	20 m	160 m	80 m

$y = 20x$   
 $y = 20(8)$   
 $y = 160$

$y = 20x$   
 $y = 20(4)$   
 $y = 80$

The length of the garden is 160 m and the width is 80 m.

Scale factor

Picture (x)	Scale	Length	Width
Garden (y)	1 cm	8 cm	4 cm
	2000 cm	16000 cm	8000 cm
		160 m	80 m

$r = \frac{\text{New}}{\text{original}} = \frac{2000}{1} = 2000$

$y = 2000x$

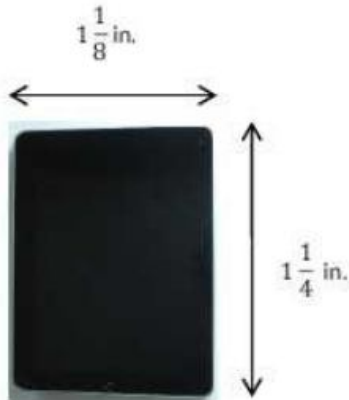
$y = 2000(8)$   
 $y = 16000\text{ cm}$

$16000\text{ cm} = 160\text{ m}$

$y = 2000x$   
 $y = 2000(4)$   
 $y = 8000\text{ cm}$   
 $8000\text{ cm} = 80\text{ m}$

**Example 3**

A graphic designer is creating an advertisement for a tablet. She needs to enlarge the picture given here so that 0.25 inches on the scale picture will correspond to 1 inch on the actual advertisement. What will be the length and width of the tablet on the advertisement?



Scale Picture of Tablet

$r = \frac{\text{New}}{\text{Original}}$   
 $r = \frac{1}{0.25} = 4$   
 $y = 4x$   
 $y = 4x$   
 $y = 4(1\frac{1}{8})$   
 $y = 4\frac{1}{2}$   
 $y = 4x$   
 $y = 4(1\frac{1}{4})$   
 $y = 5$

	Scale	Unit rate	Width	Length
Picture (x)	0.25	1	1 1/8	1 1/4
Advert (y)	1	4	4 1/2	5

**Exercises**

- Students from the high school are going to perform one of the acts from their upcoming musical at the atrium in the mall. The students want to bring some of the set with them so that the audience can get a better feel for the whole production. The backdrop that they want to bring has panels that measure 10 feet by 10 feet. The students are not sure if they will be able to fit these panels through the entrance of the mall since the panels need to be transported flat (horizontal). They obtain a copy of the mall floor plan, shown below, from the city planning office. Use this diagram to decide if the panels will fit through the entrance. Use a ruler to measure.

$r = \frac{\text{New}}{\text{Original}}$   
 $r = \frac{4\frac{1}{2}}{1\frac{1}{8}}$   
 $r = 36$   
 $y = 36x$   
 $y = 36(\frac{3}{8})$   
 $y = 13\frac{1}{2} \text{ ft}$

