




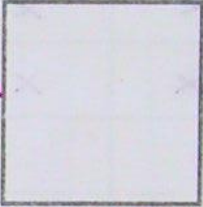
## Finding the Length of Segments


Given the area of the following squares, find the length of each side.


$s = 2 \text{ cm}$   Area:  $4 \text{ cm}^2$   
 Side:  $\sqrt{4} = 2 \text{ cm}$   
 $s = 2 \text{ cm}$

$s = 3 \text{ cm}$   Area:  $9 \text{ cm}^2$   
 Side:  $\sqrt{9} = 3 \text{ cm}$   
 $s = 3 \text{ cm}$

$s = 9 \text{ cm}$   Area:  $81 \text{ cm}^2$   
 Side:  $\sqrt{81} = 9 \text{ cm}$   $s = 15 \text{ cm}$   
 $s = 9 \text{ cm}$

$s = 15 \text{ cm}$   Area:  $225 \text{ cm}^2$   
 Side:  $\sqrt{225} = 15$   
 $s = 15 \text{ cm}$

$s = 29 \text{ cm}$   Area:  $841 \text{ cm}^2$   
 Side:  $\sqrt{841} = 29$   
 $s = 29 \text{ cm}$

$s = \sqrt{8}$   Area:  $8 \text{ cm}^2$   
 Side:  $\sqrt{8} \text{ cm}$   
 $s = \sqrt{8}$   $\sqrt{8} \cdot \sqrt{8} = 8$

When you know the area of a square, you can take the square root of the area to get the side length of the square.

Given a square's area,  $\sqrt{\text{area}} = \text{side length}$

## Finding Lengths of Segments with Irrational Measurements

**Notes:** Draw a Square. Find the area of the square. Use the area to find the length of the side. Estimate your answer by measuring with a ruler and using your calculator.

1)



Area of square =  $2\text{ cm}^2$

Length of the segment =  $\sqrt{2}\text{ cm}$

Length with a ruler  $\approx 1.4\text{ cm}$

Estimate the length with a calculator  $\approx 1.4\text{ cm}$

2)



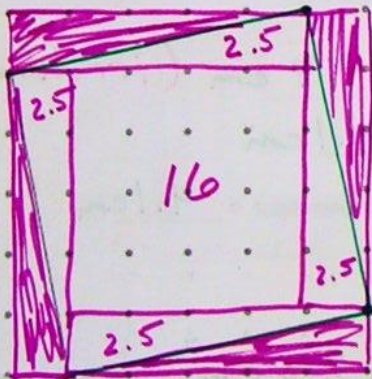
Area of square =  $5\text{ cm}^2$

Length of the segment =  $\sqrt{5}\text{ cm}$  (irrational #)

Length with a ruler  $\approx 2.3\text{ cm}$

Estimate the length with a calculator  $\approx 2.2\text{ cm}$

3)



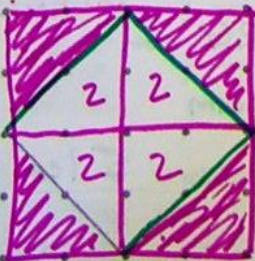
Area of square =  $26\text{ cm}^2$

Length of the segment =  $\sqrt{26}\text{ cm}$

Length with a ruler  $\approx 5.2\text{ cm}$

Estimate the length with a calculator  $\approx 5.1\text{ cm}$

4)



Area of square =  $8\text{ cm}^2$

Length of the segment =  $\sqrt{8}\text{ cm}$

Length with a ruler  $\approx 2.8\text{ cm}$

Estimate the length with a calculator  $\approx 2.8\text{ cm}$