Square root and GeoGebra

Step 1: Create a Slider selector

Let's add a **slide selector** to allow the user to choose a number and view its square root.

Create one **selector** ranging from 1 to 100 in increment of 1

Ô	GeoGebra Classic 5					
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Folha Algébrica X Folha Gráfica 2D						
	Seletor					
	Número Ângulo Inteiro Aleatório Intervalo Seletor Animação Min: 1 Max: 100 Incremento: 1					
	OK Cancelar					
	-4 -3 -2 -1 0 1 2 3 4					

Step 2: Create a Square with Area n

How we want to visualize **perfect squares**, we will draw a square whose area is n.

1. Set a fixed point:



2. Create a second point based on the square root of n:

	-2
Entrada:	

3. Construct the other vertices of the square:

```
C = (sqrt(n), sqrt(n))
D = (0, sqrt(n))
```

4. Form the square by connecting the dots:

```
quadrado = Polygon(A, B, C, D)
```

Step 3: Add Dynamic Text

We want to dynamically display the square root of the chosen number.

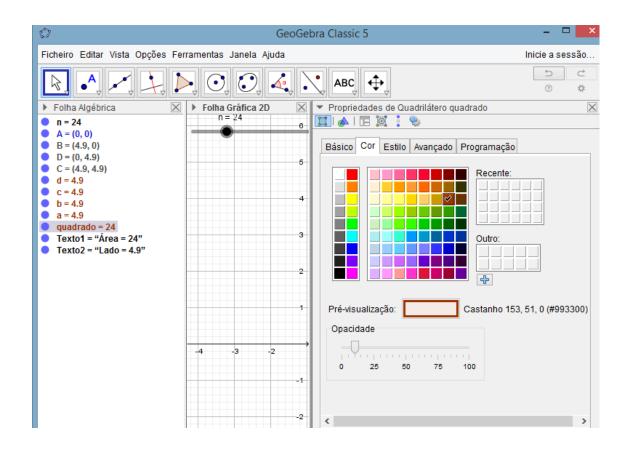
1. Create text that shows the value of n and its square root:

```
Text1 = Text("Area = " + n, (0, sqrt(n) + 0.5))
Text2 = Text("Side = " + sqrt(n), (sqrt(n)/2, -0.5))
```

Note: (0, sqrt(n) + 0.5) represents the location of the graphic sheet where the text will appear **Area**

Step 4: Improve Visualization

1. Fill and Colors: Click on the square and go to "Properties" \rightarrow "Color" \rightarrow "Opacity". Choose a soft color.



2. Make the Square Root More Visible:

 Add a straight segment of (0,0) until (sqrt(n), 0) to highlight the square root and, in properties, change the color and thickness of the line.

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 Folha Algébr n = 43 	Reta (Dois Pontos)		X	12D ➤ Propriedades de Segmento de Reta a 143 □□ △ □□ ○	X
A = (0, 0) B = (6.56, 0) D = (0, 6.56)	Segmento de Reta (Dois Pontos)	8		Básico Cor Estilo Avançado Progr	amação
C = (6.56, 6. d = 6.56	Segmento de Reta (Ponto, Comprimento)	Área = 43 c	c	Espessura da Linha	
c = 6.56 b = 6.56 a = 6.56	Semirreta (Dois Pontos)	0		0 1 3 5 7 9 11 13	
• quadrado = • Texto1 = "Á	Linha Poligonal			Opacidade da linha	
Texto2 = "L	Vetor (Origem, Extremidade)	d d	b	4 0 25 50 75 100	
	Vetor aplicado num Ponto	2		Estilo da Linha:	~
				Decoração:	~
	-6 -4 -2	0 2 &ad∂=6.56	6 8	-4 -2	
		-2		-2-	
Entrada:			\$?		\$

Step 5: Change the number of decimal places in the side and area measurements.

 In the algebra sheet, click the **Texto1=Area** and go to "Properties" → "text" → "Rounding" → 15 decimal places. Also change the font size to **Big** and click **B** (bold).

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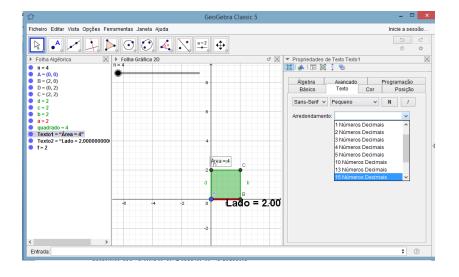
 Image: Second Classic 5
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- 2. Follow the same steps for the Text2=Side.



Step 6: Test and Save the Applet

Interact with the slider selector and see how the area of the square changes.

Step 7: Questionnaire

1- Knowing that a square has an area of 49 cm², what is the length of the side of this square? $\sqrt{49}$ is it a rational or irrational number?

2- Consider a square with an area of 24 cm². Can the side length of this square be expressed as a natural number or a non-repeating infinite decimal? Explain if $\sqrt{24}$ is a number rational or irrational.

3- Between each natural numbers is the number $\sqrt{31}$? Justify.

Good work!



