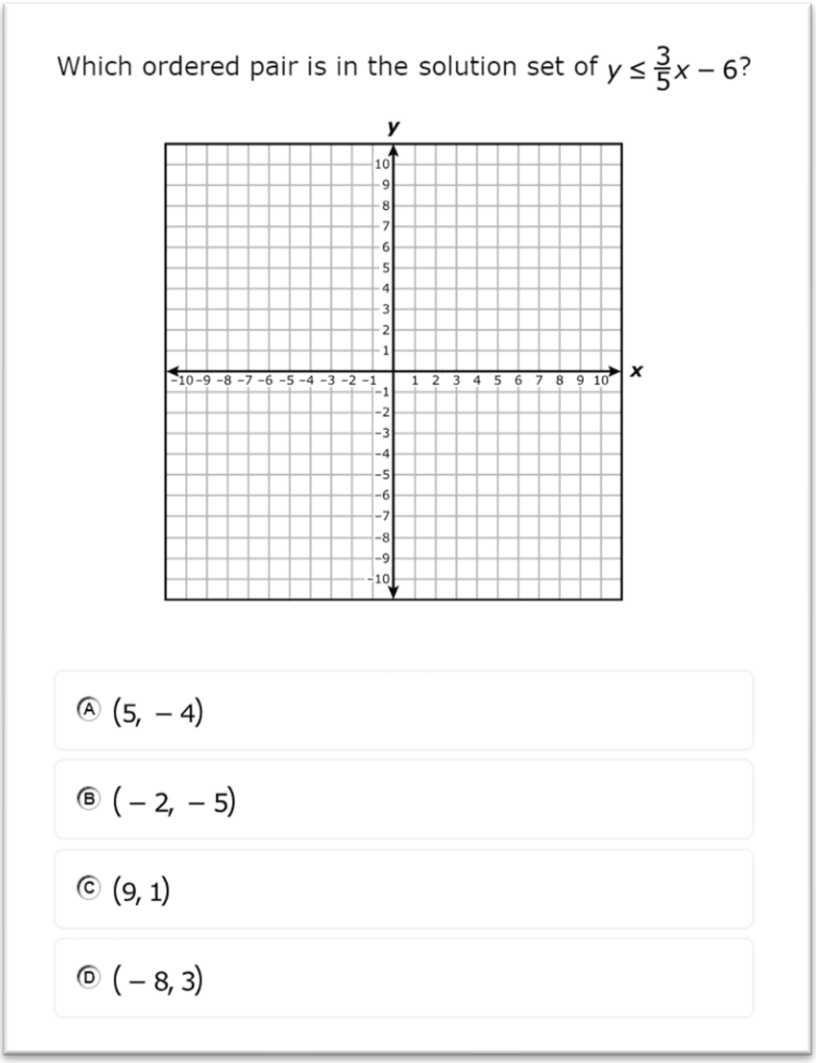
# Graphing Inequalities

## Tutorial Overview

In this tutorial, you will learn how to graph an inequality with the TI-Nspire™ CX. Follow the steps below to solve problems that include determining the solution set of an inequality as shown in the example below from the 2023 STAAR Algebra 1 Released Test (item 17).

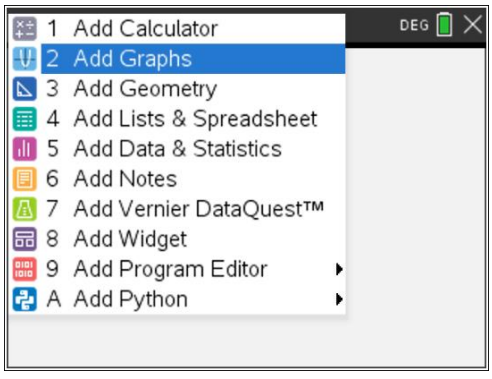





## Determining the Solution Set of an Inequality by Graphing

**Step 1**: Create a graphs application page.

Press [on], select **1 New Document**, and **2 Add Graphs.**



# Graphing Inequalities

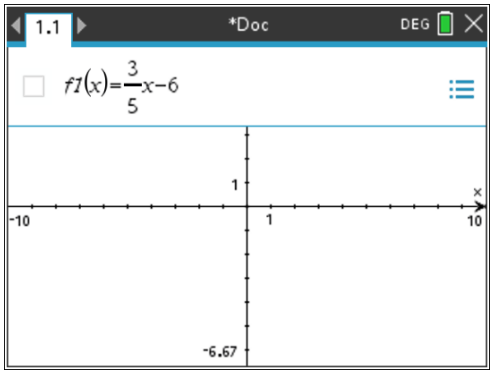
## Determining the Solution Set of an Inequality by Graphing

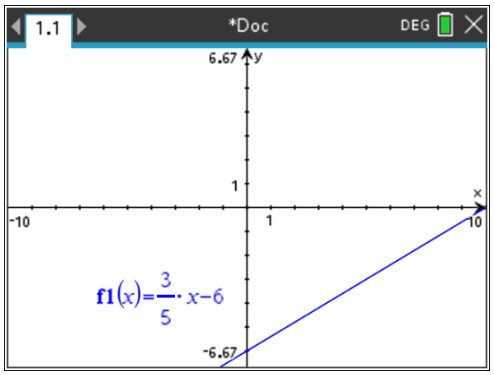
**Step 2**: Enter the equation that represents the boundary line for the inequality.

The corresponding equation for the inequality $y \leq \frac{3}{5}x - 6$ is $y = \frac{3}{5}x - 6$.

Press ctrl ÷ to set up the fraction after *f1*(*x*)= and enter $\frac{3}{5}\boldsymbol{x} - \boldsymbol{6}$.

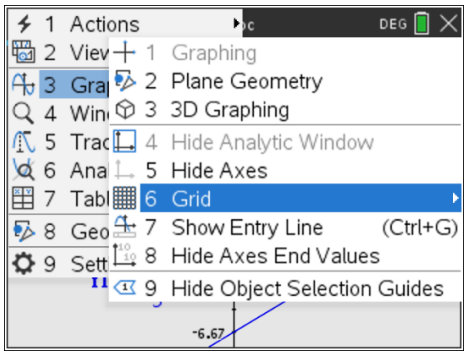
Press enter to view the graph.

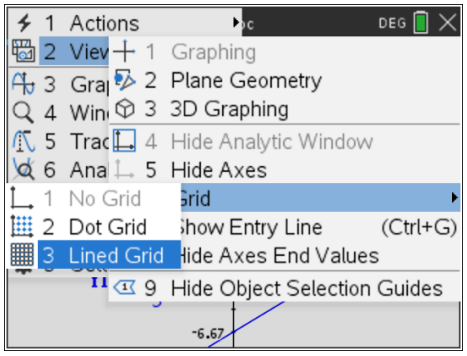


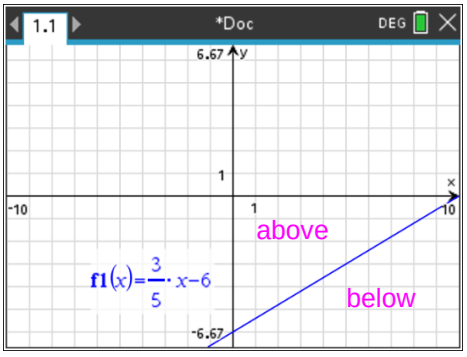




**Step 3**: Turn on grid.

Press menu, **2 View**, **6 Grid**, and **3 Lined Grid** to help locate points above, below, and on the line. These points will be tested to determine the solution region.

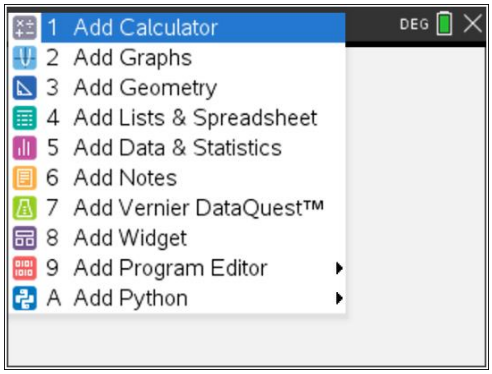



**Step 4**: Create a calculator application page.

Press ctrl doc and **1 Add Calculator**.



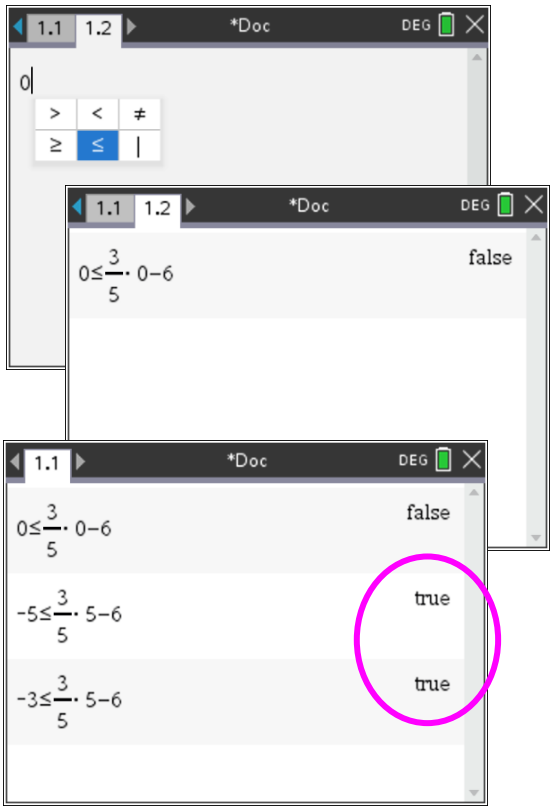
# Graphing Inequalities

## Determining the Solution Set of an Inequality by Graphing

**Step 5**: Test points to determine solution region.

The point $(0,0)$ is above the line $y \leq \frac{3}{5}x - 6$. Substituting 0 for $x$ and 0 for $y$ in the inequality we have $0 \leq \frac{3}{5}(0) - 6$. To input the inequality sign, $\leq$, press ctrl =.

Press ENTER to evaluate the inequality. Since the inequality is false, then the region above the line is NOT included in the solution region.




Repeat this process for the point $(5,-5)$ below the line and for the point $(5,-3)$ on the line.

Both points are included in the solution region since the inequalities were evaluated to both be true. This means that the line and the area below the line are part of the solution region.

**Step 6**: Evaluate answer choices.

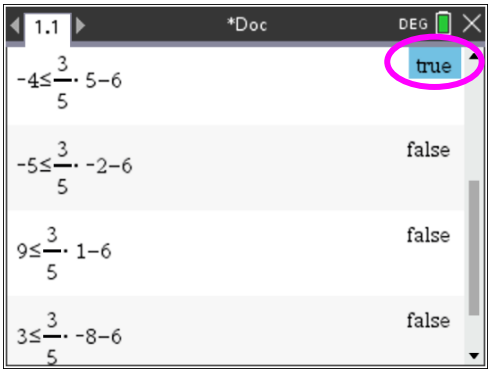
Test the answer choices using the process shown in step 5. Answer choice A is the correct answer since it is true. $(5,-4)$ is also in the solution region since it is below the line.

Ⓐ $(5, -4)$

Ⓑ $(-2, -5)$

Ⓒ $(9, 1)$

Ⓓ $(-8, 3)$




Choices B, C, and D are incorrect as shown by the false statements on the calculator application screen.