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Keystrokes

Graphing Linear Equations

MATHEMATICAL PRACTICES
Use appropriate tools strategically.

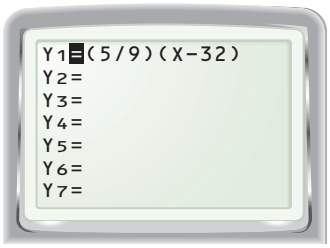
QUESTION How do you graph an equation on a graphing calculator?

EXAMPLE Use a graph to solve a problem

The formula to convert temperature from degrees Fahrenheit to degrees Celsius is $C = \frac{5}{9}(F - 32)$. Graph the equation. At what temperature are degrees Fahrenheit and degrees Celsius equal?

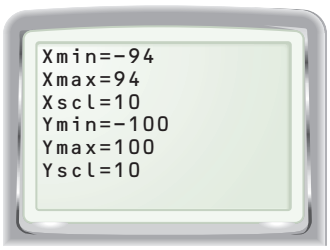
STEP 1 Rewrite and enter equation

Rewrite the equation using x for F and y for C. Enter the equation into the Y= screen. Put parentheses around the fraction $\frac{5}{9}$.



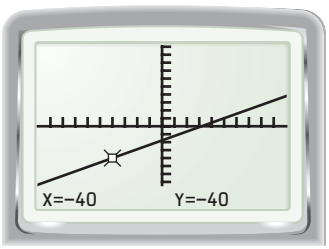
STEP 2 Set window

The screen is a "window" that lets you look at part of a coordinate plane. Press WINDOW to set the borders of the graph. A friendly window for this equation is $-94 \le x \le 94$ and $-100 \le y \le 100$.



STEP 3 Graph and trace equation

Press TRACE and use the left and right arrows to move the cursor along the graph until the x-coordinate and y-coordinate are equal. From the graph, you can see that degrees Fahrenheit and degrees Celsius are equal at -40.



PRACTICE

Graph the equation. Find the unknown value in the ordered pair.

1. $y = 8 - x$; (2.4, ?) **2.** $y = 2x + 3$; (?, 0.8) **3.** $y = -4.5x + 1$; (1.4, ?)

4. SPEED OF SOUND The speed s (in meters per second) of sound in air can be modeled by $s = 331.1 + 0.61T$ where T is the air temperature in degrees Celsius. Graph the equation. Estimate the speed of sound when the temperature is 20°C.