# 4.2 Graphing Linear Equations   TEKS *a.5*

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 $\frac{5}{9}$.

```
Y1 = (5/9)(X-32)
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=
```
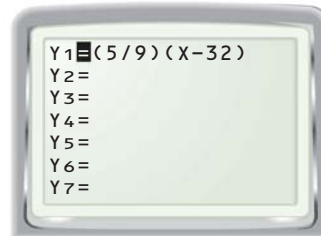
STEP 2 *Set window*

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 $-100 \le y \le 100$.

```
Xmin=-94
Xmax=94
Xscl=10
Ymin=-100
Ymax=100
Yscl=10
```
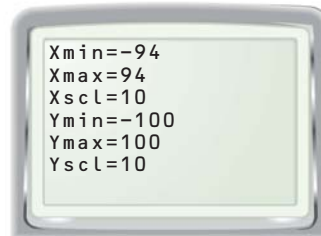
STEP 3 *Graph and trace equation*

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.


```
X=-40        Y=-40
```
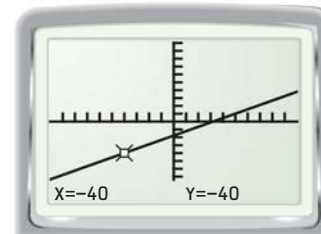
PRACTICE

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.