

## Example 2

Temperatures can be measured in degrees Celsius or degrees Fahrenheit. A temperature of 32°F is equal to a temperature of 0°C.

The table shows how some temperatures in Fahrenheit and Celsius compare.

- a) Determine the regression equation for the data.

$$y = 0.56x - 17.78$$

$$C = 0.56F - 17.78$$

Temperature in Degrees Fahrenheit	Temperature in Degrees Celsius
32	0
212	100
77	25
96.8	36

- b) We can now use our equation to substitute given values of  $x$  (degrees Fahrenheit) to find values of  $y$  (degrees Celsius). Determine the temperature in degrees Celsius if the temperature is 10°F.

2nd TRACE ENTER  $x = 10$ ,  $y = -12.22^\circ\text{C}$

-12.22°C

## Example 3: Quadratic Regression

The concentration (in milligrams per liter) of a medication in a patient's blood as time passes is given by the data in the following table.

- a) Determine the equation that models this data.

$$y = -74.83x^2 + 170.96x + 3.77$$

Time (Hours)	Concentration (mg/l)
0	0
0.5	78.1
1	99.8
1.5	84.4
2	50.1

- b) Predict the concentration of medication in the blood after 1.7 hours.

2nd TRACE ENTER  $x = 1.7$  ENTER

$y = 78.14$

78.14 mg/L

- c) Predict the concentration of medication in the blood after 4 hours.

2nd TRACE ENTER  $x = 4$   $y = -509.67 \text{ mg/l}$

-509.67 mg/l