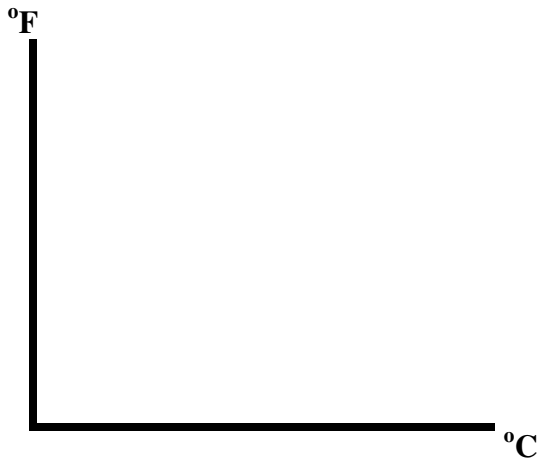# Comparing Two Temperature Scales

Introduction

Temperature is measured in degrees. There are two common temperature scales, the Fahrenheit scale (^{o}F) and the Celsius scale (^{o}C). Perhaps you recall that the freezing point of water is 32°F and 0°C and the boiling point of water (at sea level) is 212°F and 100°C.

Personal Predictions

There is a relationship between the two temperature scales. That is, there are functional models relating temperatures in ^{o}F and temperatures in ^{o}C. Draw a sketch indicating your guess concerning the shape of the graph of a function relating ^{o}F and ^{o}C.

^{o}F

^{o}C

Develop a table relating values on the two temperature scales.

| Degrees Celsius	Degrees Fahrenheit	
	-13	
		water freezes
25		
	122	
75		
		water boils

Group Predictions

Discuss within your working group individual predictions concerning a rule for relating the two temperature scales, and write a final version representing the group's prediction for that rule. Define the meaning of any symbols you introduce.

What is the average rate of change in temperature in $^{\circ}$F with respect to temperature in $^{\circ}$C between the temperatures where water freezes and where water boils?

What is the average rate of change in $^{\circ}$C with respect to $^{\circ}$F between the temperatures where water freezes and where water boils?

Graph the relationship between the two temperature scales. Label the axes and place an appropriate title on the graph.
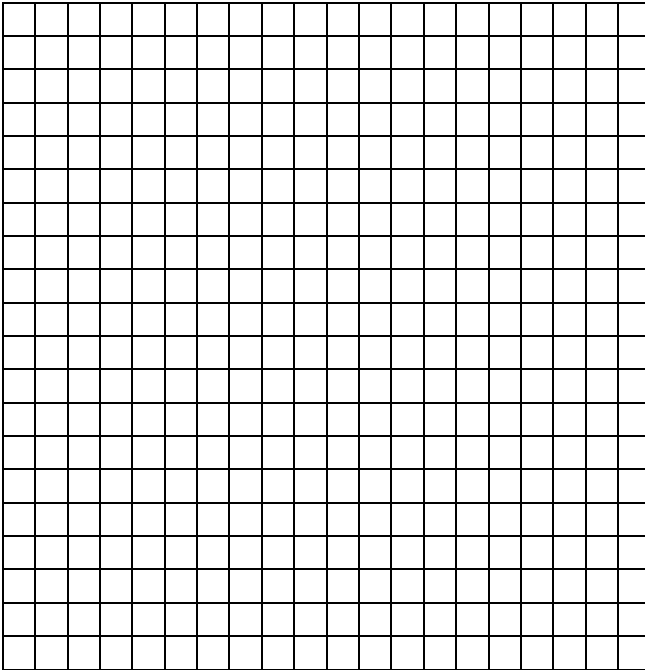
Write a formula we can use to convert Celsius temperatures to corresponding Fahrenheit temperatures.