# Celsius/Fahrenheit Temperature Conversion Project

The Fahrenheit temperature, "F," and the Celsius temperature "C," of an object are related by a linear function. Water boils at 100°C, or 212°F, and water freezes at 0°C, or 32°F. <u>In parts (c) through (g) and part (i), round to the nearest degree.</u>

*To get full credit for any part, you must show your reasoning step by step.*

(a) Think of the above facts as ordered pairs in the form (°C, °F). Find a linear equation expressing F in terms of C. Use slope-intercept form, and show each step in the process.

[18 points]

F = _____

(b) Transform the equation so that C is in terms of F. Any simplified form is fine.

[6 points]

C = _____

(c) Copper melts at a temperature of 1980°F. What is this temperature in degrees Celsius?

[6 points]

(d) If you had a fever thermometer calibrated in Celsius degrees, what would "normal" human body temperature (98.6°F) be on it?

[6 points]

(e) If the weather forecaster says it will be 39°C today, is this hot, cold, or medium? _____ Explain.

[6 points]

(f) The coldest possible temperature is absolute zero, -273.15°C (0 on the Kelvin scale). Convert this temperature to degrees Fahrenheit.

[6 points]

(g) For what temperature is the number of Fahrenheit degrees equal to the number of Celsius degrees? [Hint: Use F = C in either equation from (a) or (b).]

[6 points]

Refer to the formula you found in part (a) for parts (h)-(k).

(h) Find the slope of the line _____                                                [8 points]

If the temperature in °C changes 5 degrees, the temperature in °F changes _____ degrees. Show this fact in the table below.

| °C | 0 | 5 | 10 |
|---|---|---|---|
| °F | 32 | | |

(i) Find the x-intercept _____          Give the related temperature fact: ___ °C = ___ °F

[6 points]

(j) Find the y-intercept _____          Give the related temperature fact: ___ °C = ___ °F

[6 points]

(k) Multiple choice. Circle all that apply.                                          [6 points]

The weather forecaster calls for an overnight low temperature of 10°C. What should you plan to do?

(a) Sleep with the windows open.
(b) Protect your plants from frost.
(c) Sleep with the air conditioner on.
(d) Sleep with an extra blanket.

(l)  Plot the graph of the function you found in part (a), observing the domain implied by part (f).

(The graph should include at least 4 of the points given and found throughout this project. Be sure to include the original two points used in part (a), the point found in part (f) and another point of your choosing.)

Label each axis with ˚F and ˚C, and use a consistent scale on each axis. We suggest using 100 for your scale on each axis.
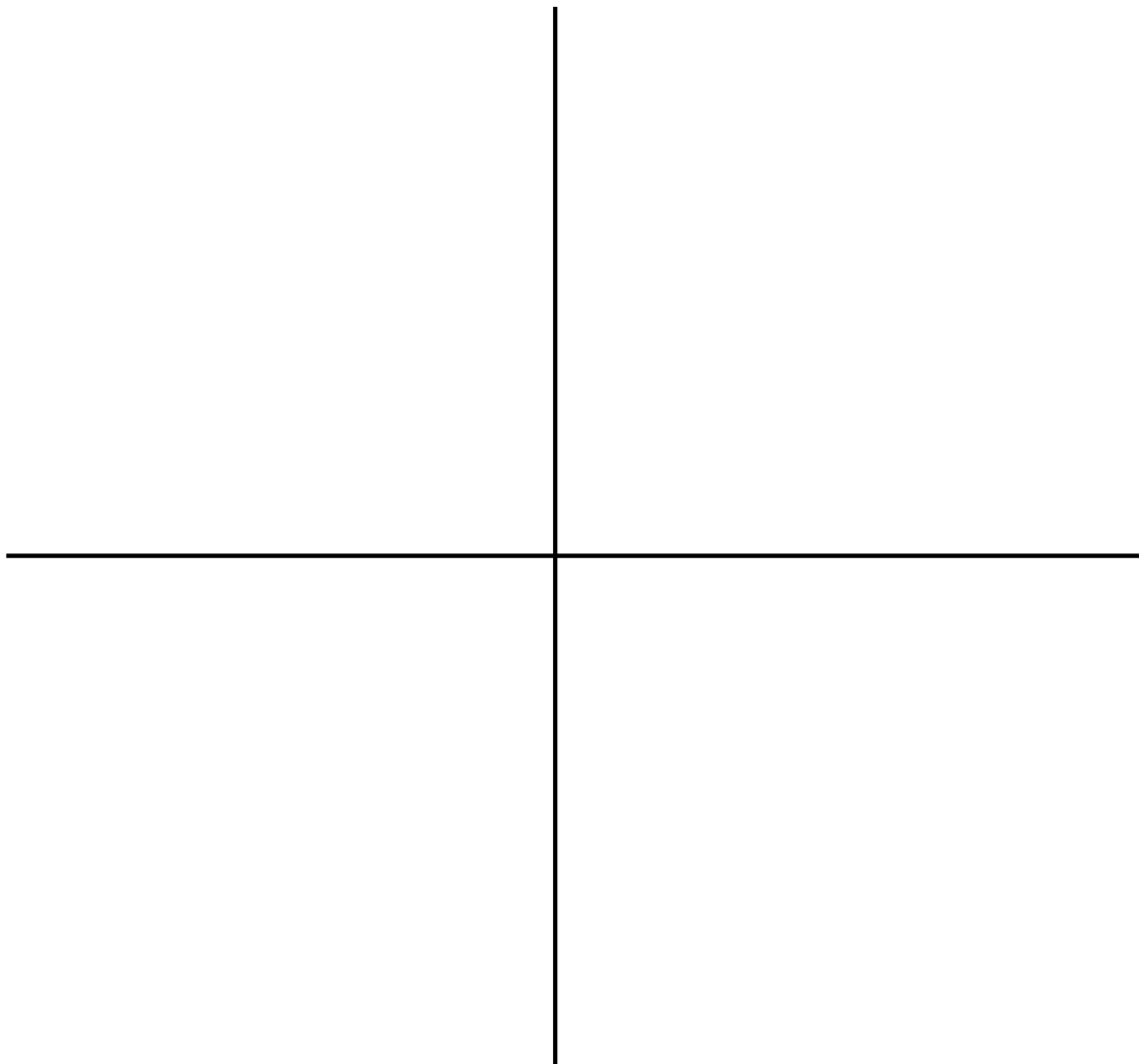
[20  points]

Worth up to 100 points

Due Date: _____

**Do Your Best! Live and Learn!**