

CHM 101 GENERAL CHEMISTRY
FALL QUARTER 2008
Section 2

Problem Solving

Suppose someone asks you to convert the Fahrenheit temperature, 59 °F, to the equivalent Celsius temperature, °C. What is the best way to proceed?

1. Punch the number, 59, into your programmable calculator and press the button, (°F → °C)?
2. Write down the formula you have memorized for converting °F to °C, plug in the number, 59, and do the calculation?
3. First, recall that a difference of 9 degrees on the Fahrenheit scale is the same as a difference of 5 degrees on the Celsius scale, and that water freezes at 0 °C, or equivalently, at 32 °F. Then, compute $59 - 32 = 27$ F° above freezing. Finally, compute $27 * (5/9) = 15$ °C, which is the desired answer?
4. Derive the formula for converting °F to °C from basic principles (see above option). Then plug in the number 59, and do the calculation.
5. Knowing that 50 °F is the same as 10 °C and that 68 °F is the same as 20 °C, do an interpolation and get 15 °C, the desired answer?