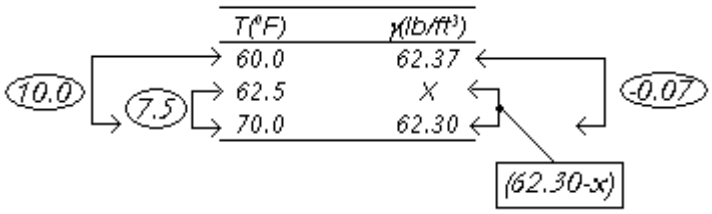
Linear interpolation from a table

Suppose that you are to find the specific weight (γ) for water at at temperature $T = 62.5^oF$. Table A.1, Appendix A, p. 732, in *Finnemore and Franzini (2002)*, shows values of γ for $T = 60^oF$ and $T = 70^oF$. Since the temperature of interest is between these two values, we can put together the following interpolating table, where x is the unknown value sought:



The brackets in the table represent differences of the various elements in the table, from bottom to top, i.e., *70.0 – 60.0 = 10.0, 70.0-62.5 = 7.5, 62.30 – 62.37 = -0.07,* and (*62.30-x)*. Then, we can set up the following proportions among the differences shown above, i.e.,

$$\frac{(62.30-x)}{-0.07}=\frac{7.5}{10}$$

Solving for x, we get:

$$x=62.30-(-0.07\frac{7.5}{10})=62.3525 \quad ,$$

i.e., the result sought is $\gamma = 62.3525\ lb/ft^3$.