--“Vector” is to C++ as “table” is to Mathematica
--a table is a list of items between curly braces

**Generating a Table:**

→ Brute force: just type it in
→ `Table[expression as function of j, {j, minimum j, maximum j, step size}]`
→ semicolon suppresses output

→ Can make a table of tables (i.e. a matrix)
  `Table[{j,2*j},{j,1,4,1}]`

**Plotting Contents of a Table:**

→ `sample = Table[3*j,{j,2,14,3}]`
→ `ListPlot[sample] and ListPlot[sample, PlotJoined→True]`

→ How to plot sample’s data vs. 20, 50, 80, 110, and 140 instead of 1, 2, 3, 4, and 5?

**Operating on Tables:**

→ `3 + sample`
→ `sample + sample`
→ `sample*sample` (remember “period” = matrix multiplication)
→ `sample/sample`
→ `sample[[4]]` references 4th item…first item is index number 1
→ `Length[sample]`
→ `Append[sample,7]`, `Prepend[sample,7]`, and `Insert[sample,7,2]`

**Loops:**

→ `For[j = 2, j ≤ Length[sample], j = j + 1, sample[[j]] = sample[[j-1]]*3]`
**Application:**

Use Mathematica to numerically approximate the solution to \( \frac{dy}{dt} = 1.2y + .3 \), over the interval \( 0 \leq t \leq 2.0 \), subject to the initial condition \( y(0) = 4 \). Use Euler’s Method with a step size of one-thousandth of a second. Graph this approximate solution.

**More on Matrices:**

→ \( \text{Inverse[], Det[], Tr[], Transpose[], Eigenvalues[], Eigenvectors[], Conjugate[]} \)

→ from Oct. 14 class: