$N := 4$ **Number of steps**

$R := 7\,in$ **Stair rise before cutting**

$\tau_0 := -1.5\,in$ **First stair is off by this amount**

$$R' := \frac{N \cdot 7\,in - \tau_0}{N} = 7.375 \cdot in$$

$i := 0 .. 4$ **Four stairs**

$\tau_i := \tau_0 \cdot \left(\frac{N - i}{N}\right)$ **Shim height formula**

$$\tau = \begin{pmatrix} -1.5 \\ -1.125 \\ -0.75 \\ -0.375 \\ 0 \end{pmatrix} \cdot in$$ **Shim heights at each level**

$N := 4$ **Number of steps**

$R := 7\,in$ **Stair rise before cutting**

$\tau_0 := 2\,in$ **First stair is off by this amount**

$$R' := \frac{N \cdot 7\,in - \tau_0}{N} = 6.5 \cdot in$$

$i := 0..4$ **Four stairs**

$\tau_i := \tau_0 \cdot \left(\frac{N-i}{N}\right)$ **Shim height formula**

$\tau = \begin{pmatrix} 2 \\ 1.5 \\ 1 \\ 0.5 \\ 0 \end{pmatrix} \cdot in$ **Shim heights at each level**

$N := 4$ **Number of steps**

$R := 6.5\,in$ **Stair rise before cutting**

$\tau_N := 1.5\,in$ **First stair is off by this amount**

$$R' := \frac{N \cdot R + \tau_0}{N} = 7 \cdot in$$

$i := 0 .. 4$ **Four stairs**

$$\tau_i := \tau_N \cdot \left(\frac{i}{N}\right)$$ **Shim height formula**

$$\tau = \begin{pmatrix} 0 \\ 0.375 \\ 0.75 \\ 1.125 \\ 1.5 \end{pmatrix} \cdot in$$ **Shim heights at each level**

$$\tau_{\mathbf{L}}(\mathbf{N},\mathbf{R},\delta_{\mathbf{L}}) := \left| \begin{array}{l} \text{"Determine the shim size for a changed bottom floor"} \\ \textbf{for}\quad \mathbf{i} \in 0..\,\mathbf{N} \\ \quad \tau_{\mathbf{i}} \leftarrow \delta_{\mathbf{L}} \cdot \left(\dfrac{\mathbf{N}-\mathbf{i}}{\mathbf{N}}\right) \\ \left(\begin{array}{c} \dfrac{\mathbf{R}\cdot\mathbf{N}-\delta_{\mathbf{L}}}{\mathbf{N}} \\ \tau \end{array}\right) \end{array} \right.$$

$$\tau_{\mathbf{I}} := \tau_{\mathbf{L}}(4, 7\cdot\mathbf{in}, 2\cdot\mathbf{in}) = \begin{bmatrix} 6.5 \\ \begin{pmatrix} 2 \\ 1.5 \\ 1 \\ 0.5 \\ 0 \end{pmatrix} \end{bmatrix} \cdot \mathbf{in}$$

$$\tau_U(N, R, \delta_U) := \left| \begin{array}{l} \text{"Determine the shim size for a changed bottom floor"} \\ \textbf{for } i \in 0..N \\ \quad \tau_i \leftarrow \delta_U \cdot \left(\dfrac{i}{N}\right) \\ \begin{pmatrix} \dfrac{R \cdot N + \delta_U}{N} \\ \tau \end{pmatrix} \end{array} \right.$$

$$\tau_U(4, 7in, 2in) = \begin{bmatrix} 7.5 \\ \begin{pmatrix} 0 \\ 0.5 \\ 1 \\ 1.5 \\ 2 \end{pmatrix} \end{bmatrix} \cdot in$$

$$\tau_T(N, \delta_L, \delta_U, R) := \left| \begin{array}{l} \text{"Changes to Top and Bottom Floor"} \\ R' \leftarrow \dfrac{R \cdot N - \delta_L}{N} \\ \tau' \leftarrow \tau_L(N, R, \delta_L)_1 \\ R'' \leftarrow \dfrac{R' \cdot N + \delta_U}{N} \\ \tau'' \leftarrow \tau_U(N, R', \delta_U)_1 \\ \begin{pmatrix} R'' \\ \tau' + \tau'' \end{pmatrix} \end{array} \right.$$

$$\tau_T(4, -1.5\text{in}, 2\text{in}, 7\text{in}) = \begin{bmatrix} 7.875000 \\ \begin{pmatrix} -1.500000 \\ -0.625000 \\ 0.250000 \\ 1.125000 \\ 2.000000 \end{pmatrix} \end{bmatrix} \cdot \text{in}$$