Implementation: implement the above procedure

\[ C_M = DC \]
\[ \text{[units] \text{[\$/unit]} \text{[\$/year]} \text{[\$/year]} \text{[\$/unit]}] \]

If \( D \) is the annual demand, and each shipment has \( Q_L \) units, then the (\# of shipments)/year = \( \frac{D}{Q_L} \)

\[ \text{[units] / [units]} = \left( \frac{\text{[units]}}{\text{[years]}} \right) / \left( \frac{\text{[units]}}{\text{[shipments]}} \right) = \frac{\text{[shipments]}}{\text{[year]}} \]

If \( S \) is the shipping cost per shipment, then the annual shipping cost, \( C_S = \left( \frac{D}{Q_L} \right) S \)
\[ C_I = \text{annual inventory} = \text{[average inventory]} \times \text{[holding cost per unit]} \]

\[ = \left[ \frac{Q_L}{2} \right] (hC) \]

\[ C_S = \frac{D}{Q_L} S \]

\[ C_T = C_M + C_S + C_I \]

\[ C_M = \text{material cost} = DC \]

\[ Q_L^* \text{ (optimal lot size)} \]

\[ \frac{dC_T}{dQ_L} = 0 + \left( -\frac{D}{Q_L^2} \right) S + \left( \frac{1}{2} \right) hC = 0 \]
\[
\frac{DS}{Q_l^2} = \frac{hc}{2} \quad \Rightarrow \quad Q_l^* = \sqrt{\frac{2DS}{hc}}
\]