Formulas

Binomial Pricing

$$C_{\delta} = \Delta S + B$$

$$\Delta d S e^{\delta h} + B e^{rh} = C_d \atop \Delta u S e^{\delta h} + B e^{rh} = C_u \Bigg\} \Rightarrow \begin{cases} C_0 = e^{-\delta T}\left(p^* C_u + (1-p^*) C_d \right) \\[2mm] p^* = \dfrac{e^{(r-\delta)T} - d}{u - d} \end{cases} \qquad \begin{cases} u = e^{(r-\delta)h + \sigma\sqrt{h}} \\[2mm] d = e^{(r-\delta)h + \sigma\sqrt{h}} \end{cases}$$

Put - Call Parity

$$C - P = S e^{-\delta T} - K e^{-rT}$$

Black - Scholes

$$C = S e^{-\delta T} N(d_1) - K e^{-rT} N(d_2)$$

$$P = K e^{-rT} N(d_2) - S e^{-\delta T} N(-d_1)$$

$$d_{1 \atop 2} = \frac{\ln(S/k) + \left(r - \delta \pm \tfrac{1}{2}\sigma^2\right)T}{\sigma\sqrt{T}}$$