Option Valuation

$$V_c = P_0 N_{d_1} - \frac{X}{e^{k_{RF} t}} N_{d_2}$$

The value of a call option can be found as follows:

$$d_1 = \frac{\left[\ln\left(\frac{P_0}{X}\right) + (k_{RF} + .5\sigma^2)t \right]}{\sigma\sqrt{t}}$$

where

$$d_2 = d_1 - \sigma\sqrt{t}$$

and

V_c = Value of the call option
P_0 = Current Stock Price
k_{RF} = risk-free rate of interest
t = time remaining to maturity (fraction of a year)
N_{d1} = Cumulative area under the normal distribution curve to d_1
N_{d2} = Cumulative area under the normal distribution curve to d_2
X = Strike (exercise) price of the option
σ = volatility (standard deviation) of exchange rate

The value for a put option, can then be found from the following put-call parity relationship.

$$V_p = V_c + \frac{X}{e^{k_{RF} T}} - P_0$$