Inventory Formulas

Basic E.O.Q. (Economic Oreder Quantity)

D	Annual demand.
c_h	Annual holding cost.
c_o	Ordering cost.
Q	Order quantity.
Q^*	Optimal order quantity
TC	Total annual inventory cost.

$TC = c_h\frac{Q}{2} + c_o\frac{D}{Q}$; $\quad Q^* = \sqrt{\frac{2Dc_o}{c_h}}$; $\quad$ Ordering $\frac{D}{Q^*}$ times a year.

Discount Pricing

Q	TC	Purchase cost$\times D$	Total
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Stochastic Demand

d	Daily demand.
σ	Standard deviation of Daily demand.
L	Lead time (days).
z	Safety factor
c_h	Annual holding cost.
R	Reordering point.
Ex	Extra cost per year.

$R = Ld + z\sigma\sqrt{L}$; $\quad Ex = c_h \times z\sigma\sqrt{L}$

Production Model

P	Daily production rate of Machine I
D	Daily demand by Machine II.
c_h	Daily holding cost.
c_o	Set-up cost.
Q	Order quantity.
Q^*	Optimal order quantity
TC	Total daily inventory cost.

$TC = c_h\frac{Q}{2}\left(1 - \frac{D}{P}\right) + c_o\frac{D}{Q}$; $\quad Q^* = \sqrt{\frac{2Dc_o}{c_h\left(1-\frac{D}{P}\right)}}$; $\quad$ Production time $\frac{Q^*}{P}$; $\quad$ Idle time $\frac{Q^*}{D} - \frac{Q^*}{P}$.