



calculatoratoz.com



unitsconverters.com

Manufacturing and Purchase Model Formulas

Calculators!

Examples!

Conversions!

Bookmark calculatoratoz.com, unitsconverters.com

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

[Please leave your feedback here...](#)



List of 12 Manufacturing and Purchase Model Formulas

Manufacturing and Purchase Model

1) EOQ Manufacturing Model with No Shortage

$$\text{fx } \text{EOQ}_{\text{m}} = \sqrt{\frac{2 \cdot C_0 \cdot D}{C_c \cdot \left(1 - \frac{D}{K}\right)}}$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

$$\text{ex } 1414.214 = \sqrt{\frac{2 \cdot 200 \cdot 10000}{4 \cdot \left(1 - \frac{10000}{20000}\right)}}$$

2) EOQ Manufacturing Model with Shortage

$$\text{fx } \text{EOQ}_{\text{ms}} = \sqrt{2 \cdot D \cdot C_0 \cdot \frac{C_s + C_c}{C_c \cdot C_s \cdot \left(1 - \frac{D}{K}\right)}}$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

$$\text{ex } 1523.155 = \sqrt{2 \cdot 10000 \cdot 200 \cdot \frac{25 + 4}{4 \cdot 25 \cdot \left(1 - \frac{10000}{20000}\right)}}$$



3) EOQ Purchase Model with No Shortage

[Open Calculator !\[\]\(4729e517bc6a7cd81c8025b9646574fb_img.jpg\)](#)

$$\text{fx } \text{EOQ}_{Q_p} = \sqrt{2 \cdot D \cdot \frac{C_0}{C_c}}$$

$$\text{ex } 1000 = \sqrt{2 \cdot 10000 \cdot \frac{200}{4}}$$

4) EOQ Purchase Model with Shortage

[Open Calculator !\[\]\(e474458956c9a37fbf9586ddb60a7fa1_img.jpg\)](#)

$$\text{fx } \text{EOQ}_{Q_{ps}} = \sqrt{2 \cdot D \cdot \frac{C_0}{C_c} \cdot \left(\frac{C_s + C_c}{C_s} \right)}$$

$$\text{ex } 1077.033 = \sqrt{2 \cdot 10000 \cdot \frac{200}{4} \cdot \left(\frac{25 + 4}{25} \right)}$$

5) Maximum Inventory Manufacturing Model

[Open Calculator !\[\]\(4fe57c3593bf1b21d272ae7ac8dfaf77_img.jpg\)](#)

$$\text{fx } Q_{\text{mfg}} = \left(1 - \frac{D}{K} \right) \cdot \text{EOQ}_{Q_{ms}} - Q_1$$

$$\text{ex } 97.4437 = \left(1 - \frac{10000}{20000} \right) \cdot 500 - 152.5563$$



6) Maximum Inventory Purchase Model 

$$\text{fx } Q_{\text{purch}} = \sqrt{2 \cdot D \cdot \frac{C_0}{C_c} \cdot \left(\frac{C_s}{C_s + C_c} \right)}$$

Open Calculator 

$$\text{ex } 928.4767 = \sqrt{2 \cdot 10000 \cdot \frac{200}{4} \cdot \left(\frac{25}{25 + 4} \right)}$$

7) Maximum Stock Out Manufacturing Model 

$$\text{fx } Q_1 = \sqrt{2 \cdot D \cdot C_0 \cdot C_s \cdot \frac{1 - \frac{D}{K}}{C_c \cdot (C_c + C_s)}}$$

Open Calculator 

$$\text{ex } 656.5322 = \sqrt{2 \cdot 10000 \cdot 200 \cdot 25 \cdot \frac{1 - \frac{10000}{20000}}{4 \cdot (4 + 25)}}$$

8) Maximum Stock Out Purchase Model 

$$\text{fx } Q_2 = \text{EOQ}_{\text{ps}} - Q_{\text{purch}}$$

Open Calculator 

$$\text{ex } 148.5563 = 1077.033 - 928.4767$$

9) Number of Order for Purchase Models with No Shortage 

$$\text{fx } N = \frac{D}{\text{EOQ}_{\text{p}}}$$

Open Calculator 

$$\text{ex } 10 = \frac{10000}{1000}$$




10) Total Cost for Purchase Model with No Shortage 

$$\text{fx } \text{TC}_p = D \cdot P + \sqrt{2 \cdot D \cdot C_c \cdot C_0}$$

Open Calculator 

$$\text{ex } 204000 = 10000 \cdot 20 + \sqrt{2 \cdot 10000 \cdot 4 \cdot 200}$$

11) Total Optimum Cost for Manufacturing Model 

$$\text{fx } \text{TOC}_m = \sqrt{2 \cdot D \cdot C_c \cdot C_0 \cdot \left(1 - \frac{D}{K}\right)}$$

Open Calculator 

$$\text{ex } 2828.427 = \sqrt{2 \cdot 10000 \cdot 4 \cdot 200 \cdot \left(1 - \frac{10000}{20000}\right)}$$

12) Total Optimum Cost for Purchase Model 

$$\text{fx } \text{TOC}_p = \sqrt{2 \cdot D \cdot C_c \cdot C_0 \cdot \frac{C_s}{C_s + C_c}}$$

Open Calculator 

$$\text{ex } 3713.907 = \sqrt{2 \cdot 10000 \cdot 4 \cdot 200 \cdot \frac{25}{25 + 4}}$$



Variables Used

- C_0 Order Cost
- C_c Carrying Cost
- C_s Shortage Cost
- D Demand per Year
- EOQ_m EOQ Manufacturing Model No Shortage
- EOQ_{ms} EOQ Manufacturing Model with Shortage
- EOQ_p EOQ Purchase Model No Shortage
- EOQ_{ps} EOQ Purchase Model
- K Production Rate
- N Number of Order Purchase Models no Shortage
- P Purchase Price
- Q_1 Maximum Stock out Manufacturing Model
- Q_2 Maximum Stock out Purchase Model
- Q_{mfg} Maximum Inventory Manufacturing Model
- Q_{purch} Maximum Inventory Purchase Model
- TC_p Total Cost for Purchase Model No Shortage
- TOC_m Total Optimum Cost for Manufacturing Model
- TOC_p Total Optimum Cost for Purchase Model



Constants, Functions, Measurements used

- **Function:** `sqrt`, `sqrt(Number)`
Square root function



Check other formula lists

- [Basics of Industrial Engineering Formulas](#) 
- [Industrial Parameters Formulas](#) 
- [Manufacturing and Purchase Model Formulas](#) 
- [Manufacturing Period Formulas](#) 
- [Time Estimation Formulas](#) 

Feel free to SHARE this document with your friends!

PDF Available in

[English](#) [Spanish](#) [French](#) [German](#) [Russian](#) [Italian](#) [Portuguese](#) [Polish](#) [Dutch](#)

11/21/2023 | 11:53:36 PM UTC

[Please leave your feedback here...](#)

