

Common Formulas

Inventory Turns

$$\frac{\text{Material Cost of Goods Sold}}{\text{Average Material Value of Inventory}}$$

Time Values for Sequence of Events

$$\text{Optimistic} + (4) \text{ Most Likely} + (1) \text{ Pessimistic}$$

$$6 \text{ Observations}$$

Takt per Process

$$\frac{\text{Effective Minutes per shift} \times \# \text{ of Shifts per day}}{\Sigma T_p}$$

Common Formulas

Option Throughput

$$\text{Throughput (Tp)} = (\text{Tp}_{\text{OUT}} \times \text{Option \%})$$

Rework Throughput

$$\text{Tp} = (\text{Tp}_{\text{OUT}} \times (2 - \text{Yield\%})) \\ (\text{Tp}_{\text{OUT}} \times (1 + \text{Rework\%}))$$

Scrap Throughput

$$\text{Tp} = (\text{Tp}_{\text{OUT}} \div \text{Yield\%}) \\ (\text{Tp}_{\text{OUT}} \div (1 - \text{Scrap\%}))$$

Flow Rate

$$\frac{\text{Daily Sales Volume (Dr)}}{\text{Effective Minutes per Day}}$$

Common Formulas

Number of Workstations, *Dedicated Line*

$$\frac{\text{Standard Time Labor}}{\text{Takt}}$$

Number of Machines or Pieces, *Dedicated Line*

$$\frac{\text{Standard Time Machine}}{\text{Takt}}$$

Inventory and Time Balancing Tool

$$\text{IPK} = \frac{\text{I} \times \text{C}}{\text{Takt}}$$

I = Imbalance, St – Takt

C = Cycles of Imbalance,

$$\text{C} = \frac{\text{Eff. Minutes/Day}}{\text{Standard Time}}$$

Common Formulas

Standard Time Weighted

$$\text{Stw} = \frac{\sum(\text{Tp} \times \text{St})}{\sum \text{Tp}} \quad \text{Labor and Machines}$$

Number of Resources, Mixed Products

$$\frac{\text{Standard Time Weighted Labor}}{\text{Takt}}$$

Number of Machines/Pieces, Mixed Products

$$\frac{\text{Standard Time Weighted Machine}}{\text{Takt}}$$

Time Per Operation

$$\frac{\text{Stw}}{\text{Takt}} = \# \text{ Operations} \quad \frac{\text{Standard Time per Product}}{\# \text{ Operations}} = \text{Time per Operation}$$

Common Formulas

Kanban Sizing

$$\frac{\text{Daily Demand X Replenishment Time}}{\text{Package Size (Optional)}}$$

Daily Staffing Per Process

$$\text{People} = \frac{\sum(\text{Dr x St})}{\text{Eff. Min. (S)}}$$