Crib Sheet

$$\text{Productivity} = \frac{Output}{Input}$$

$$\text{Labour Productivity} = \frac{Units\ produced}{Labour\ hours\ used}$$

$$\text{Multifactor Productivity} = \frac{Output}{Labour + Material + Energy + Capital + Miscellaneous}$$

R_s =Reliability of system

R_i =Reliability of component i

P_i =Probability that component i works

i= *1, 2, 3, …, n*

Series System:	$R_s = R_1 \times R_2 \times R_3 \times \ldots \times R_n$
Parallel System:	$R_s = P_1 + (1 - P_1) \times P_2$

$$\text{FR}(\%) = \frac{Number\ of\ failures}{Number\ of\ units\ tested(used)} \times 100\%$$

$$\text{FR}(N) = \frac{Number\ of\ failures}{Number\ of\ unit\ hours\ of\ operation\ time}$$

$$MTBF = \frac{1}{\text{FR}(N)}$$

$$\text{Cycle Time} = \frac{Production\ time\ available\ per\ day}{Units\ required\ per\ day}$$

$$\text{Takt Time} = \frac{Total\ work\ time\ available}{Units\ required}$$

$$\text{Number of workers (operators) required} = \frac{Total\ operatiopn\ time\ required}{Takt\ time}$$

$$\text{Efficiency} = \frac{\sum Task\ times}{(Actual\ number\ of\ work\ stations) \times (Largest\ assigned\ cycle\ time)}$$