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Reference Guide to Routine Formulas

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REFERENCE GUIDE FOR ROUTINE FORMULAS

by Harvey N. Rose

Lybrand, Ross Bros. & Montgomery

This compilation brings together in one place for convenient reference some of the most frequently used business equations.

EACH of us has probably had the slightly maddening experience of needing a routine formula — which we know very well — and completely forgetting what it is. This very brief resume is intended to serve as a handy reference for use on those frustrating occasions. None of the formulas is new but

they are all time-tested, accurate, and, if this page is kept near at hand, instantly available.

So the next time the need for information arises at the least favorable place and time, we hope that one of these twelve simple formulas reproduced below will meet the need.

Direct Labor

Labor Performance (%) =

$$\frac{\text{Pieces Produced} \times \text{Standard Hours per Piece}}{\text{Number of Hours Worked}} \times 100$$

$$\text{Labor Turnover} = \frac{\text{Number of Terminations}}{\text{Average Number of Employees}}$$

Actual Cost per Standard Hour =

$$\frac{\text{Payroll (\$)}}{\text{Pieces Produced} \times \text{Standard Hours per Piece}}$$

Production Control Effectiveness

$$\text{Schedule Performance (\%)} = \frac{\text{Number of Orders Shipped}}{\text{Number of Orders Scheduled to be Shipped}} \times 100$$

Inventory

$$\text{Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory at Cost}}$$

$$\text{Service Level (\%)} = \frac{\text{Number of Items Available When Requested}}{\text{Total Number of Items Requested}} \times 100$$

Maintenance

$$\text{Maintenance Index} = \frac{\text{Maintenance Cost (\$)}}{\text{Plant Investment (\$)}}$$

$$\text{Product Cost Contribution} = \frac{\text{Maintenance Direct Labor Hours}}{\text{Number of 1000 Units Produced}} \times 100$$

Maintenance

$$\text{Ratio of Maintenance to Production Labor} = \frac{\text{Total Maintenance Man Hours}}{\text{Total Production Man Hours}} \times 100$$

$$\text{Preventive Maintenance Influence Index} = \frac{\text{Critical Equipment Breakdown Hours}}{\text{Total Hours Critical Equipment Operated}} \times 100$$

Machine Utilization

$$\text{Utilization (\%)} = \frac{\text{Actual Hours in Use}}{\text{Total Machine Capacity (Hours)}} \times 100$$

Indirect Labor

(Expediteurs, dispatchers, material handlers, etc.)

$$\text{Indirect Labor Ratio} = \frac{\text{Hours Worked (Indirect)}}{\text{Hours Worked (Direct)}}$$

Quality of Work

$$\text{Rejection Rate} = \frac{\text{Number of Pieces Rejected}}{\text{Total Pieces Produced}} \times 100$$



HARVEY N. ROSE is a management consultant in the Boston office of Lybrand, Ross Bros. & Montgomery. In the past he has served as senior industrial engineer at Kaman Aircraft and as administrative engineer at United Aircraft. Mr. Rose is a member of the American Institute of Industrial Engineers and the American Production and Inventory Control Society. His article, "The Field Service Story," was published in the November, 1961, issue of *Advanced Management*.