MARGINAL COSTING

STATEMENT OF PROFIT

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>***</td>
</tr>
<tr>
<td>Less: Variable cost</td>
<td>***</td>
</tr>
<tr>
<td>Contribution</td>
<td>***</td>
</tr>
<tr>
<td>Less: Fixed cost</td>
<td>***</td>
</tr>
<tr>
<td>Profit</td>
<td>***</td>
</tr>
</tbody>
</table>

1. Sales = Total cost + Profit = Variable cost + Fixed cost + Profit
2. Total Cost = Variable cost + Fixed cost

*Variable cost = It changes directly in proportion with volume*

1. Variable cost Ratio = \( \frac{\text{Variable cost}}{\text{Sales}} \) * 100
2. Sales – Variable cost = Fixed cost + Profit
3. Contribution = Sales * P/V Ratio

**PROFIT VOLUME RATIO [P/V RATIO]**:

1. \( \frac{\text{Contribution}}{\text{Sales}} \) * 100
2. \( \frac{\text{Contribution per unit}}{\text{Sales per unit}} \) * 100
3. \( \frac{\text{Change in profit}}{\text{Change in sales}} \) * 100
4. \( \frac{\text{Change in contribution}}{\text{Change in sales}} \) * 100

**BREAK EVEN POINT [BEP]**:

1. Fixed cost / Contribution per unit [in units]
2. Fixed cost / P/V Ratio [in value] (or) Fixed Cost * Sales value per unit
   1. (Sales – Variable cost per unit)

**MARGIN OF SAFETY [MOP]**

1. Actual sales – Break even sales
2. Net profit / P/V Ratio
3. Profit / Contribution per unit [In units]
4. Sales unit at Desired profit = \( \frac{\text{Fixed cost + Desired profit}}{\text{Cont. per unit}} \)
5. Sales value for Desired Profit = \( \frac{\text{Fixed cost + Desired profit}}{\text{P/V Ratio}} \)
5. At BEP Contribution = Fixed cost

\[
\text{Variable cost Ratio} = \frac{\text{Change in total cost}}{\text{Change in total sales}} \times 100
\]

6. Indifference Point = Point at which two Product sales result in same amount of profit

\[
\frac{\text{Change in fixed cost}}{\text{Change in variable cost per unit}} = \frac{\text{Change in fixed cost}}{\text{Change in contribution per unit}} = \frac{\text{Change in Fixed cost}}{\text{Change in P/Ratio}} = \frac{\text{Change in Fixed cost}}{\text{Change in Variable cost ratio}}
\]

7. Shut down point = Point at which each of division or product can be closed

\[
= \text{Maximum (or) Specific (or) Available fixed cost} \div \text{P/V Ratio (or) Contribution per unit}
\]

**If sales are less than shut down point then that product is to shut down.**

**Note**
1. When comparison of profitability of two products if P/V Ratio of one product is greater than P/V Ratio of other Product then it is more profitable.
2. In case of Indifference point if, (Sales Indifference point)
   a. Select option with higher fixed cost (or) select option with lower fixed cost.
STANDARD COSTING

MATERIAL
1. Material cost variance \( = \) SP * SQ – AP * AQ
2. Material price variance \( = \) SP * AQ – AP * AQ
3. Material usage variance \( = \) SP * SQ – SP * AQ
4. Material mix variance \( = \) SP * RSQ – SP * AQ
5. Material yield variance \( = \) SP * SQ – SP * RSQ

LABOUR
1. Labour Cost variance \( = \) SR*ST – AR*AT
2. Labour Rate variance \( = \) SR*AT (paid) – AR*AT
3. Labour Efficiency variance \( = \) SR*ST – SR*AT (paid)
4. Labour mix variance \( = \) SR*RST – SR*AT (worked)
5. Labour Idle time variance \( = \) SR*AT (worked) – SR*AT (paid)

VARIABLE OVERHEADS COST VARIANCE
Variable Overheads Cost Variance \( = \) SR*ST – AR*AT
Variable Overheads Expenditure Variance \( = \) SR*AT – AR*AT
Variable Overheads Efficiency Variance \( = \) SR*ST – SR*AT
Where,
SR=Standard rate/hour
Budgeted variable OH
Budgeted Hours

FIXED OVERHEADS COST VARIANCE
Fixed Overheads Cost Variance \( = \) SR*ST – AR*AT(paid)
Fixed Overheads Budgeted Variance \( = \) SR*BT – AR*AT(paid)
Fixed Overheads Efficiency Variance \( = \) SR*ST – SR*AT(worked)
Fixed Overheads Volume Variance \( = \) SR*ST – SR*BT
Fixed Overheads Capacity Variance \( = \) SR*AT(worked) – SR*RBT
Fixed Overheads Calendar Variance \( = \) SR*RBT – SR*BT

SALES VALUE VARIANCE
Sales value variance \( = \) AP*AQ – Budgeted Price*BQ
Sales price variance \( = \) AP*AQ – BP*AQ
Sales volume variance \( = \) BP*AQ – Budgeted Price*BQ
Sales mix variance \( = \) BP*AQ – BP*Budgeted mix
Sales quantity variance \( = \) BP*Budgeted mix – Budgeted Price*BQ
Note:-
Actual margin per unit (AMPU) = Actual sale price – selling cost per unit
Budgeted margin per unit (BMPU) = Budgeted sale price – selling price per unit

**SALES MARGIN VARIANCE**

Sales margin variance = AMPU*AQ – BMPU*BQ
Sales margin price variance = AMPU*AQ – BMPU*AQ
Sales margin volume variance = BMPU*AQ – BMPU*BQ
Sales margin mix variance = BMPU*AQ – BMPU*Budgeted mix
Sales margin quantity variance = BMPU*Budgeted mix – BMPU*BQ

**CONTROL RATIO**

\[
\text{Efficiency Ratio} = \frac{\text{Standard hours for actual output}}{\text{Actual hours worked}} \times 100
\]

\[
\text{Capacity Ratio} = \frac{\text{Actual Hours Worked}}{\text{Budgeted Hours}} \times 100
\]

\[
\text{Activity Ratio} = \frac{\text{Actual Hours Worked}}{\text{Budgeted Hours}} \times 100
\]

Verification: Activity Ratio = Efficiency * Capacity Ratio

**SHORT WORDS USED IN THE FORMULAE**

| SC = Standard Cost, | AC = Actual Cost |
| SP = Standard Price, | SQ = Standard Quantity |
| AP = Actual Price, | AQ = Actual Quantity |
| AY = Actual Yield, | SY = Standard Yield |
| RSQ = Revised Standard Quantity, | SR = Standard Rate, |
| ST = Standard Time | AR = Actual Rate, |
| AT = Actual Time | RST = Revised Standard Time, |
| BP = Budgeted Price, | BQ = Budgeted Quantity |
| RBT = Revised Budgeted Time | BMPU = Budgeted Margin per Unit |
| AMPU = Actual Margin per Unit |
### STANDARD COSTING

#### MATERIAL

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material cost variance =</td>
<td>SC – AC = (SQ<em>AQ) – (AQ</em>AP)</td>
</tr>
<tr>
<td>Material price variance =</td>
<td>AQ (SP – AP)</td>
</tr>
<tr>
<td>Material usage variance =</td>
<td>SP (SQ – AQ)</td>
</tr>
<tr>
<td>Material mix variance =</td>
<td>SP (RSQ – AQ)</td>
</tr>
<tr>
<td>Material yield variance =</td>
<td>(AY – SY for actual input) Standard material cost per unit of output</td>
</tr>
<tr>
<td>Material revised usage variance (calculated instead of material yield variance) =</td>
<td>[standard quantity – Revised standard for actual output quantity] * Standard price</td>
</tr>
</tbody>
</table>

#### LABOUR

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour Cost variance =</td>
<td>SC – AC = (SH<em>SR) – (AH</em>AR)</td>
</tr>
<tr>
<td>Labour Rate variance =</td>
<td>AH (SR - AR)</td>
</tr>
<tr>
<td>Labour Efficiency or time variance =</td>
<td>SR (SH –AH)</td>
</tr>
<tr>
<td>Labour Mix or gang composition Variance =</td>
<td>SR(RSH-AH)</td>
</tr>
<tr>
<td>Labour Idle Time Variance =</td>
<td>Idle hours * SR</td>
</tr>
<tr>
<td>Labour Yield Variance =</td>
<td>[Actual Output – Standard output for actual input] X Standard labour cost/unit of output</td>
</tr>
<tr>
<td>Labour Revised Efficiency Variance (instead of LYV) =</td>
<td>[Standard hours for actual output – Revised standard hours] X Standard rate</td>
</tr>
</tbody>
</table>

#### Notes:

1. LCV = LRV + LMV + ITV + LYV
2. LCV = LRV + LEV + ITV
3. LEV = LMV, LYV (or) LREV

#### OVERHEAD VARIANCE

(GENERAL FOR BOTH VARIABLE AND FIXED)

Standard overhead rate (per hour) = \( \frac{\text{Budgeted Overheads}}{\text{Budgeted Hours}} \)

Standard hours for actual output = \( \frac{\text{Budgeted hours}}{\text{Budgeted output}} \) X Actual Output

Standard OH = Standard hrs for actual output X Standard OH rate per hour

Absorbed OH = Actual hrs X Standard OH rate per hour
Budgeted OH = Budgeted hrs \times \text{Standard OH rate per hour}

Actual OH = Actual hrs \times \text{Actual OH rate per hour}

OH cost variance = \text{Absorbed OH} – \text{Actual OH}

**VARIABLE OVERHEADS VARIANCE**

Variable OH Cost Variance = \text{Standard OH} – \text{Actual OH}
Variable OH Exp. Variance = \text{Absorbed OH} – \text{Actual Variable OH}
Variable OH Efficiency Variance = \text{Standard OH} – \text{Absorbed OH}

= \text{Standard hours for Actual output hours} \times \text{Standard rate for variable OH}

**FIXED OVERHEADS VARIANCE**

<table>
<thead>
<tr>
<th>Fixed OH Cost Variance =</th>
<th>Standard OH – Actual OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed OH expenditure variance =</td>
<td>Budgeted OH – Actual OH</td>
</tr>
<tr>
<td>Fixed OH Efficiency Variance =</td>
<td>Standard OH (units based) – Absorbed OH (Hours based)</td>
</tr>
<tr>
<td>Fixed OH Volume Variance =</td>
<td>Standard OH – Budgeted OH</td>
</tr>
<tr>
<td>Fixed OH volume Variance =</td>
<td>[Standard hrs for – Budgeted actual output hours] \times \text{Standard rate}</td>
</tr>
<tr>
<td>Fixed OH capacity variance =</td>
<td>Absorbed OH–Budgeted OH</td>
</tr>
<tr>
<td>Fixed OH Calendar Variance =</td>
<td>[Revised budgeted hrs – Budgeted hrs] \times \text{Standard rate/hrs}</td>
</tr>
</tbody>
</table>

When there is calendar variance capacity variance is calculated as follows:

Capacity variance = [Actual hours – Revised Budgeted hrs] \times \text{Standard rate/hour}

**VERIFICATION**

Variable OH cost variance = Variable OH Exp Variance + Variable OH Efficiency variance

Fixed OH cost variance = Fixed OH Exp Variance + Fixed OH volume Variance

Fixed OH volume variance = Fixed OH Eff variance + Capacity variance + Calendar Variance
SALES VARIANCES

TURNOVER METHOD (OR) SALES VALUE METHOD:-

Sales value variance = Actual Sales – Budgeted Sales

Sales price variance = [Actual Price – Standard price] X Actual quantity
                     = Actual sales – standard sales

Sales volume variance = [Actual-Budgeted quantity] X Standard price
                      = Standard sales – Budgeted sales
Sales mix variance = [Actual quantity – Revised standard quantity] * Standard Price
                    = Standard sales – Revised sales

Sales quantity variance = [Revised standard variance – Budgeted quantity] X Standard price
                        = Revised Standard sales – Budgeted sales

PROFIT METHOD

Total sales margin variance = (Actual Profit–Budgeted price)
                           = {Actual quantity * Actual profit p. u} – {Budgeted quantity * Standard profit p. u}

Sales margin price variance=Actual profit–Standard profit
                          = {Actual Profit p. u – Standard profit p. u} * Actual quantity of sales

Sales margin volume variance = Standard profit – Budgeted Profit
                              = {Actual quantity – Budgeted quantity} * Standard profit per unit

Sales margin mix variance = Standard profit – Revised Standard profit
                          = {Actual quantity – Revised standard quantity} * Standard profit per unit

Sales margin quantity variance = Revised standard profit – Budgeted profit
                                = {Revised standard quantity – Budgeted quantity} * Standard profit per unit

FIXED OVERHEAD VARIANCE

Standard OH = Standard hrs for actual output * Standard OH rate per hour
Absorbed OH = Actual hrs * Standard OH rate per hour
Budgeted OH = Budgeted hrs * Standard OH rate per hour
Actual OH = Actual hrs * Actual OH rate per hour
Revised Budgeted Hour = Actual Days * Budgeted Hours per day
                       (Expected hours for actual days worked)

When Calendar variance is asked then for capacity variance Budgeted Overhead is
(Budgeted days * Standard OH rate per day)
Revised Budgeted Hr (Budgeted hrs for actual days) = Actual days * Budgeted hrs per day
SALES VARIANCES
Sales value variance = Actual Sales – Budgeted Sales

SALES MARGIN VARIANCES
Total sales margin variance = (Actual Profit–Budgeted price)

= (Actual quantity * Actual profit per unit) - (Budgeted quantity * Standard profit per unit)

RECONCILIATION

Reconciliation statement is prepared to reconcile the actual profit with the budgeted profit

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>FAVORABLE</th>
<th>UNFAVORABLE</th>
<th>(RS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgeted Profit :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add Favorable variances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less Unfavorable variances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales Variances :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales price variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales mix variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales quantity variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost variance :-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usage variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mix variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mix variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idle time variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed overhead variance :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenditure variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed overhead variance :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenditure variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar variance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>