

Variable Costing Based on Production Time

$$p_A := 98$$

$$p_B := 107$$

$$dmc_A := 30$$

$$dmc_B := 32$$

$$dlc_A := 10$$

$$dlc_B := 8$$

$$spc_A := 0$$

$$spc_B := 2$$

$$t1_A := 6\text{min}$$

$$t1_B := 4\text{min}$$

$$t2_A := 4\text{min}$$

$$t2_B := 2\text{min}$$

$$t3_A := 4\text{min}$$

$$t3_B := 3\text{min}$$

$$t4_A := 10\text{min}$$

$$t4_B := 8\text{min}$$

$$xp_A := 2100$$

$$xp_B := 4000$$

$$xs_A := 2100$$

$$xs_B := 3960$$

$$\text{IMCf} := 3820$$

$$\text{POH1f} := 28600$$

$$\text{POH2f} := 11480$$

$$\text{POH3f} := 27540$$

$$\text{POH4f} := 10600$$

$$\text{ACf} := 76326$$

$$\text{SCf} := 114489$$

$$\text{DMC} := dmc_A \cdot xp_A + dmc_B \cdot xp_B$$

$$\text{DMC} = 191000$$

$$\text{IMCv} := 0.03 \cdot \text{DMC}$$

$$\text{IMCv} = 5730$$

$$\text{poh1v} := 0.5\text{min}^{-1}$$

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$$\text{poh2v} := 0.3 \text{min}^{-1}$$

$$\text{poh3v} := 0.45 \text{min}^{-1}$$

$$\text{poh4v} := 0.3 \text{min}^{-1}$$

$$\text{POH1v} := \text{poh1v} \cdot t1_A \cdot xp_A + \text{poh1v} \cdot t1_B \cdot xp_B$$

$$\text{POH1v} = 14300$$

$$\text{POH2v} := \text{poh2v} \cdot t2_A \cdot xp_A + \text{poh2v} \cdot t2_B \cdot xp_B$$

$$\text{POH2v} = 4920$$

$$\text{POH3v} := \text{poh3v} \cdot t3_A \cdot xp_A + \text{poh3v} \cdot t3_B \cdot xp_B$$

$$\text{POH3v} = 9180$$

$$\text{POH4v} := \text{poh4v} \cdot t4_A \cdot xp_A + \text{poh4v} \cdot t4_B \cdot xp_B$$

$$\text{POH4v} = 15900$$

$$\text{imc}_A := \frac{\text{IMCv}}{\text{DMC}} \cdot \text{dmc}_A$$

$$\text{imc}_B := \frac{\text{IMCv}}{\text{DMC}} \cdot \text{dmc}_B$$

$$\text{imc}_A = 0.9$$

$$\text{imc}_B = 0.96$$

$$\text{poh1}_A := \frac{\text{POH1v}}{t1_A \cdot xp_A + t1_B \cdot xp_B} \cdot t1_A$$

$$\text{poh1}_B := \frac{\text{POH1v}}{t1_A \cdot xp_A + t1_B \cdot xp_B} \cdot t1_B$$

$$\text{poh1}_A = 3$$

$$\text{poh1}_B = 2$$

$$\text{poh2}_A := \frac{\text{POH2v}}{t2_A \cdot xp_A + t2_B \cdot xp_B} \cdot t2_A$$

$$\text{poh2}_B := \frac{\text{POH2v}}{t2_A \cdot xp_A + t2_B \cdot xp_B} \cdot t2_B$$

$$\text{poh2}_A = 1.2$$

$$\text{poh2}_B = 0.6$$

$$\text{poh3}_A := \frac{\text{POH3v}}{t3_A \cdot xp_A + t3_B \cdot xp_B} \cdot t3_A$$

$$\text{poh3}_B := \frac{\text{POH3v}}{t3_A \cdot xp_A + t3_B \cdot xp_B} \cdot t3_B$$

$$\text{poh3}_A = 1.8$$

$$\text{poh3}_B = 1.35$$

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$$\text{poh4}_A := \frac{\text{POH4v}}{t4_A \cdot xp_A + t4_B \cdot xp_B} \cdot t4_A$$

$$\text{poh4}_B := \frac{\text{POH4v}}{t4_A \cdot xp_A + t4_B \cdot xp_B} \cdot t4_B$$

$$\text{poh4}_A = 3$$

$$\text{poh4}_B = 2.4$$

$$\text{mc}_A := \text{dmc}_A + \text{imc}_A + \text{dlc}_A + \text{poh1}_A + \text{poh2}_A + \text{poh3}_A + \text{poh4}_A + \text{spc}_A$$

$$\text{mc}_B := \text{dmc}_B + \text{imc}_B + \text{dlc}_B + \text{poh1}_B + \text{poh2}_B + \text{poh3}_B + \text{poh4}_B + \text{spc}_B$$

$$\text{mc}_A = 49.9$$

$$\text{mc}_B = 49.31$$

$$\text{MCOGS}_A := \text{mc}_A \cdot \text{xs}_A$$

$$\text{MCOGS}_B := \text{mc}_B \cdot \text{xs}_B$$

$$\text{MCOGS}_A = 104790$$

$$\text{MCOGS}_B = 195267.6$$

$$\text{MCOGS} := \text{MCOGS}_A + \text{MCOGS}_B$$

$$\text{MCOGS} = 300057.6$$

$$\text{ACv} := 0 \cdot \text{MCOGS}$$

$$\text{SCv} := 0 \cdot \text{MCOGS}$$

$$\text{ac}_A := \frac{\text{ACv}}{\text{MCOGS}} \cdot \text{mc}_A$$

$$\text{ac}_B := \frac{\text{ACv}}{\text{MCOGS}} \cdot \text{mc}_B$$

$$\text{ac}_A = 0$$

$$\text{ac}_B = 0$$

$$\text{sc}_A := \frac{\text{SCv}}{\text{MCOGS}} \cdot \text{mc}_A$$

$$\text{sc}_B := \frac{\text{SCv}}{\text{MCOGS}} \cdot \text{mc}_B$$

$$\text{sc}_A = 0$$

$$\text{sc}_B = 0$$

$$\text{tc}_A := \text{mc}_A + \text{ac}_A + \text{sc}_A$$

$$\text{tc}_B := \text{mc}_B + \text{ac}_B + \text{sc}_B$$

$$\text{tc}_A = 49.9$$

$$\text{tc}_B = 49.31$$

$$\text{cm}_A := p_A - \text{tc}_A$$

$$\text{cm}_B := p_B - \text{tc}_B$$

$$\text{cm}_A = 48.1$$

$$\text{cm}_B = 57.69$$

Cost-of-sales results accounting

$$\text{CM}_A := \text{cm}_A \cdot \text{xs}_A$$

$$\text{CM}_B := \text{cm}_B \cdot \text{xs}_B$$

Variable Costing Based on Production Time

$$CM_A = 101010$$

$$CM_B = 228452.4$$

$$CM := CM_A + CM_B$$

$$CM = 329462.4$$

$$Cf := IMCf + POH1f + POH2f + POH3f + POH4f + ACf + SCf$$

$$Cf = 272855$$

$$R := CM - Cf$$

$$R = 56607.4$$

Total cost results accounting

$$S_A := p_A \cdot xs_A$$

$$S_B := p_B \cdot xs_B$$

$$S_A = 205800$$

$$S_B = 423720$$

$$S := S_A + S_B$$

$$S = 629520$$

$$IC_A := mc_A \cdot (xp_A - xs_A)$$

$$IC_B := mc_B \cdot (xp_B - xs_B)$$

$$IC_A = 0$$

$$IC_B = 1972.4$$

$$IC := IC_A + IC_B$$

$$IC = 1972.4$$

$$TP_A := S_A + IC_A$$

$$TP_B := S_B + IC_B$$

$$TP_A = 205800$$

$$TP_B = 425692.4$$

$$TP := TP_A + TP_B$$

$$TP = 631492.4$$

$$MCOP_A := mc_A \cdot xp_A$$

$$MCOP_B := mc_B \cdot xp_B$$

$$MCOP_A = 104790$$

$$MCOP_B = 197240$$

$$MCOP := MCOP_A + MCOP_B$$

Variable Costing Based on Production Time

$$\text{MCOP} = 302030$$

$$\text{ACv}_A := \text{ac}_A \cdot \text{xs}_A$$

$$\text{ACv}_B := \text{ac}_B \cdot \text{xs}_B$$

$$\text{ACv}_A = 0$$

$$\text{ACv}_B = 0$$

$$\text{ACv} := \text{ACv}_A + \text{ACv}_B$$

$$\text{ACv} = 0$$

$$\text{SCv}_A := \text{sc}_A \cdot \text{xs}_A$$

$$\text{SCv}_B := \text{sc}_B \cdot \text{xs}_B$$

$$\text{SCv}_A = 0$$

$$\text{SCv}_B = 0$$

$$\text{SCv} := \text{SCv}_A + \text{SCv}_B$$

$$\text{SCv} = 0$$

$$\text{TCOP}_A := \text{MCOP}_A + \text{ACv}_A + \text{SCv}_A$$

$$\text{TCOP}_B := \text{MCOP}_B + \text{ACv}_B + \text{SCv}_B$$

$$\text{TCOP}_A = 104790$$

$$\text{TCOP}_B = 197240$$

$$\text{TCOP} := \text{TCOP}_A + \text{TCOP}_B$$

$$\text{TCOP} = 302030$$

$$\text{CM}_A := \text{TP}_A - \text{TCOP}_A$$

$$\text{CM}_B := \text{TP}_B - \text{TCOP}_B$$

$$\text{CM}_A = 101010$$

$$\text{CM}_B = 228452.4$$

$$\text{CM} := \text{CM}_A + \text{CM}_B$$

$$\text{CM} = 329462.4$$

$$\text{R} := \text{CM} - \text{Cf}$$

$$\text{R} = 56607.4$$

Variable Costing Based on Production Time

Legend:

Subscript A, B for products

p = Selling price

dmc = Direct cost of materials per unit

dlc = Direct cost of labour per unit

spc = Special direct production cost per unit

t1 = Production time in Direct Production Cost Centre 1 per unit

t2 = Production time in Direct Production Cost Centre 2 per unit

t3 = Production time in Direct Production Cost Centre 3 per unit

t4 = Production time in Direct Production Cost Centre 4 per unit

xp = Quantity of goods produced

xs = Quantity of goods sold

IMCf = Fixed indirect cost of materials

POH1f = Fixed production overhead 1 (in Direct Production Cost Centre 1)

POH2f = Fixed production overhead 2 (in Direct Production Cost Centre 2)

POH3f = Fixed production overhead 3 (in Direct Production Cost Centre 3)

POH4f = Fixed production overhead 4 (in Direct Production Cost Centre 4)

ACf = Fixed administration cost

SCf = Fixed sales cost

DMC = Direct cost of material

IMCv = Variable indirect cost of material

poh1v = Variable production overhead 1 (in Direct Production Cost Centre 1) per minute

poh2v = Variable production overhead 2 (in Direct Production Cost Centre 2) per minute

poh3v = Variable production overhead 3 (in Direct Production Cost Centre 3) per minute

poh4v = Variable production overhead 4 (in Direct Production Cost Centre 4) per minute

POH1v = Variable production overhead 1 (in Direct Production Cost Centre 1)

POH2v = Variable production overhead 2 (in Direct Production Cost Centre 2)

POH3v = Variable production overhead 3 (in Direct Production Cost Centre 3)

POH4v = Variable production overhead 4 (in Direct Production Cost Centre 4)

imc = Indirect cost of materials per unit

poh1 = Production overhead 1 per unit

poh2 = Production overhead 2 per unit

poh3 = Production overhead 3 per unit

poh4 = Production overhead 4 per unit

mc = Manufacturing cost per unit

MCOGS = Manufacturing cost of goods sold

ACv = Variable administration cost

SCv = Variable sales cost

ac = Administration cost per unit

sc = Sales cost per unit

tc = Total cost per unit

cm = Contribution margin per unit

CM = Contribution margin

Cf = Fixed cost

R = Result

S = Sales (value), turnover

IC = Change in inventory of finished goods

TP = Total performance

MCOP = Manufacturing cost of goods produced

TCOP = Total cost of goods produced