

UTS
MANAJEMEN SAINS



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①

Produk	Bahan		
	x	y	z
A	3	5	4
B	5	6	3

* fungsi tujuan

harga jual - harga variabel

$$\begin{aligned} \rightarrow \text{Produk A (x)} & \rightarrow \text{Produk B (y)} \\ = 1.500.000 - 550.000 & = 1.800.000 - 750.000 \\ = 950.000 & = 1.050.000 \end{aligned}$$

fungsi tujuan

$$z = 950.000x + 1.050.000y$$

* Batasan

$$3x + 5y \leq 260$$

$$5x + 6y \leq 380$$

$$4x + 3y \leq 200$$

* Koordinat

$$\textcircled{1} 3x + 5y = 260$$

$$x = 0$$

$$y = 0$$

$$3(0) + 5y = 260$$

$$3x + 5(0) = 260$$

$$y = 52 (0,52)$$

$$x = 86,6$$

$$= 87 (87,0)$$

$$\textcircled{2} 5x + 6y = 380$$

$$x = 0$$

$$y = 0$$

$$5(0) + 6y = 380$$

$$5x + 6(0) = 380$$

$$y = 63,3$$

$$x = 76 (76,0)$$

$$= 63 (0,63)$$

$$\textcircled{3} 4x + 3y = 200$$

$$x = 0$$

$$y = 0$$

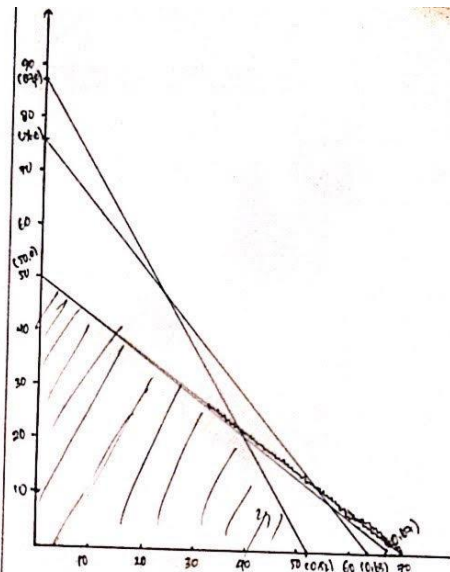
$$4(0) + 3y = 200$$

$$4x + 3(0) = 200$$

$$y = 66,7$$

$$x = 50 (50,0)$$

$$= 67 (0,67)$$



$$3x + 5y = 260 \quad \times 4 \quad 12x + 20y = 1040$$

$$4x + 3y = 200 \quad \times 3 \quad 12x + 9y = 600$$

$$11y = 440$$

$$y = 40$$

$$4x + 3(40) = 200$$

$$4x = 80$$

$$x = 20$$

$$z = 950.000x + 1.050.000y$$

$$A. (0,0) \times$$

$$B. (0,52) \Rightarrow 950.000(0) + 1.050.000(52)$$

$$\Rightarrow 54.600.000$$

$$C. (20,40) \Rightarrow 950.000(20) + 1.050.000(40)$$

$$\Rightarrow 19.000.000 + 42.000.000$$

$$\Rightarrow 61.000.000$$

$$D. (50,0) \Rightarrow 950.000(50) + 1.050.000(0)$$

$$\Rightarrow 47.500.000$$

∴ kesimpulannya untuk mendapatkan laba maksimal harus memproduksi produk A sebanyak 20 buah dan produk B sebanyak 40 buah dengan laba maksimal Rp. 61.000.000.

(3)

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	205	95	185	165
B	105	75	135	205
C	180	110	145	175
D	85	70	110	125

Ditanya apakah salesman yang cocok sesuai pasarnya? (dengan maksimum)

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	$205 - 205 = 0$	$205 - 95 = 110$	$205 - 185 = 20$	$205 - 165 = 40$
B	$205 - 105 = 100$	$205 - 75 = 130$	$205 - 135 = 70$	$205 - 205 = 0$
C	$180 - 180 = 0$	$180 - 110 = 70$	$180 - 145 = 35$	$180 - 175 = 5$
D	$125 - 85 = 40$	$125 - 70 = 55$	$125 - 110 = 15$	$125 - 125 = 0$

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	0	$95 - 20 = 75$	$95 - 50 = 45$	40
B	100	0	0	0
C	0	$95 - 60 = 35$	$95 - 35 = 60$	5
D	40	$95 - 75 = 20$	$95 - 55 = 40$	0

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	0	110	20	40
B	100	130	70	0
C	0	70	35	5
D	40	55	15	0

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	0	55	$40 - 15 = 25$	40
B	100	0	0	0
C	0	15	$40 - 90 = 0$	5
D	40	0	$40 - 20 = 20$	0

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	0	$130 - 110 = 20$	$90 - 10 = 80$	40
B	100	$130 - 130 = 0$	$70 - 70 = 0$	0
C	0	$130 - 20 = 110$	$70 - 35 = 35$	5
D	40	$130 - 55 = 75$	$70 - 15 = 55$	0

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	0	55	15	40
B	100	0	0	0
C	0	15	0	5
D	40	0	20	0

Pasar Salesman	Kalasan	Ngemplak	Ngaglik	Depok
A	0	20	50	40
B	100	0	0	0
C	0	60	35	5
D	40	75	55	0

Schedule penjualan	Biaya
Mr. A = Kalasan	205
Mr. B = Depok	205
Mr. C = Ngaglik	145
Mr. D = Ngemplak	70
Total	625

← kesimpulan

④

Pekerjaan Karyawan	Design	Analisis	Programming	Testing
W	35	30	30	34
X	25	32	35	30
Y	23	27	29	32
Z	26	29	25	27

Ditanya optimasi agar karyawan memperoleh gaji paling sedikit.

Pekerjaan

Karyawan	Design	Analisis	Programming	Testing
W	$35-30=5$	$30-30=0$	$30-30=0$	$34-30=4$
X	$25-25=0$	$32-25=7$	$35-25=10$	$30-25=5$
Y	$23-23=0$	$27-23=4$	$29-23=6$	$32-23=9$
Z	$26-25=1$	$29-25=4$	$25-25=0$	$27-25=2$

Karyawan	Design	Analisis	Programming	Testing
W	5	0	0	$4-2=2$
X	0	7	10	$5-2=3$
Y	0	4	6	$9-2=7$
Z	1	4	0	$2-2=0$

Karyawan	Design	Analisis	Programming	Testing
W	5	0	0	2
X	0	$7-3=4$	$10-3=7$	$3-3=0$
Y	0	$4-3=1$	$6-3=3$	$7-3=4$
Z	1	4	0	0

Karyawan	Design	Analisis	Programming	Testing
W	5*	0*	0	2
X	0	4	7	0*
Y	0*	1	3	4
Z	1	4	0*	0

ii kesimpulan

Schedule pekerjaan	upah
Mr. W (Analisis)	\$ 30
Mr. X (Testing)	\$ 30
Mr. Y (Design)	\$ 23
Mr. Z (programming)	\$ 25

Total = \$108

⑤ A. Formula

$$Z = 10 \times G_{1A} + 15 \times G_{1B} + 11 \times G_{1C} + 8 \times G_{2A} + 12 \times G_{2B} + 14 \times G_{2C} + 6 \times G_{3A} + 8 \times G_{3B} + 10 \times G_{3C}$$

→ Penawaran / pasokan

$$- X_{G_{1A}} + X_{G_{1B}} + X_{G_{1C}} = 110$$

$$- X_{G_{2A}} + X_{G_{2B}} + X_{G_{2C}} = 90$$

$$- X_{G_{3A}} + X_{G_{3B}} + X_{G_{3C}} = 50$$

→ Permintaan

$$- X_{G_{1A}} + X_{G_{1B}} + X_{G_{1C}} = 50$$

$$- X_{G_{2A}} + X_{G_{2B}} + X_{G_{2C}} = 100$$

$$- X_{G_{3A}} + X_{G_{3B}} + X_{G_{3C}} = 100$$

B. - NWC

	A	B	C	Pasokan
G ₁	10 50	15 60	11	110
G ₂	8	12 40	14 50	90
G ₃	6	8	10 50	50
Permintaan	50	100	100	250

$$\begin{aligned} NWC &= (50 \times 10) + (60 \times 15) + (40 \times 12) + (50 \times 14) + (50 \times 10) \\ &= 500 + 900 + 480 + 700 + 500 \\ &= 3.080 \end{aligned}$$

- VAM

	A	B	C	Pasokan	Penalti
G ₁	10 ×	15 10	11 100	110	11 - 10 = 1
G ₂	8 50	12 40	14 ×	90	12 - 8 = 4
G ₃	6 ×	8 50	10 ×	50	8 - 6 = 2
Permintaan	50	100	100	250	
Penalti	8 - 6 = 2	12 - 8 = 4	11 - 10 = 1		

$$\begin{aligned} VAM &= (50 \times 8) + (15 \times 10) + (40 \times 12) + (50 \times 8) + (100 \times 11) \\ &= 400 + 150 + 480 + 400 + 1100 \\ &= 2.530 \end{aligned}$$

A c. Berdasarkan 2 metode diatas, metode VAM memiliki biaya terkecil dengan 2.530. Dengan ini bisa dialokasikan sebagai berikut:

- Gudang G₁ → kota B = 150 unit
- Gudang G₁ → kota C = 1100 unit
- Gudang G₂ → kota A = 400 unit
- Gudang G₂ → kota B = 480 unit
- Gudang G₃ → kota B = 400 unit