CHAPTER

Activity Cost Behavior

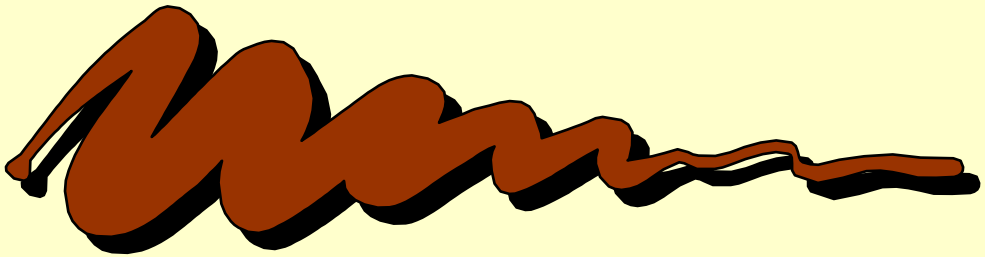
Objectives

1. Mendefinisikan perilaku biaya tetap , variabel dan campuran .
2. Menjelaskan peranan model penggunaan sumber daya dalam memahami perilaku biaya.
3. Memisahkan biaya campuran menjadi komponen tetap dan variabel menggunakan berbagai metode.

continued

Objectives

4. Mengevaluasi keandalan persamaan biaya.
5. Mendiskusikan peranan regresi berganda dalam penilaian perilaku biaya.
6. Menguraikan penggunaan pertimbangan material dalam penentuan perilaku biaya.

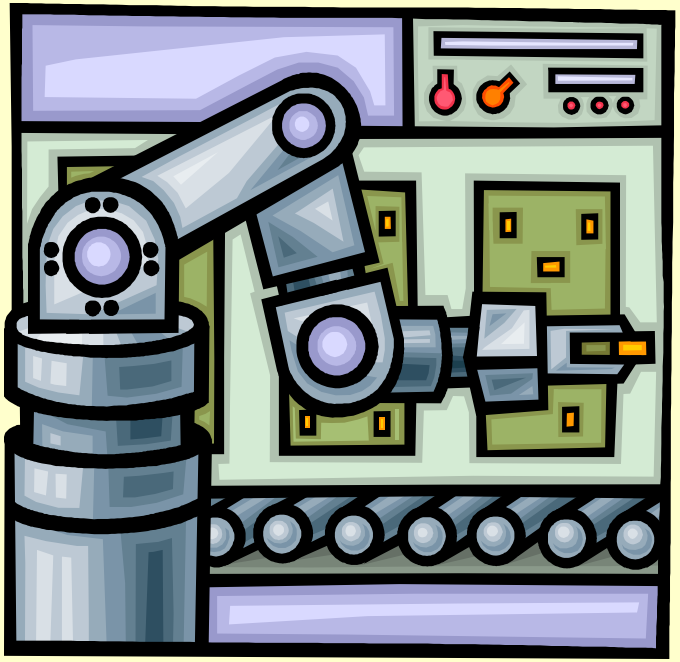


Fixed Costs

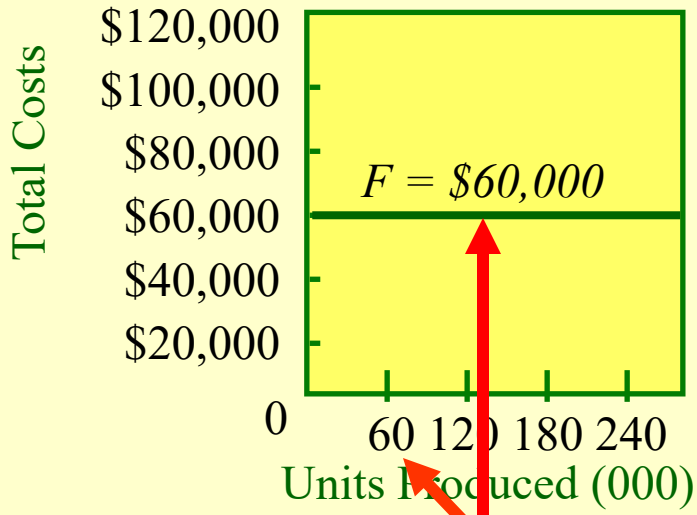
Adalah biaya yang tetap sama ketika output berubah.

Fixed Costs

Mesin Pemotong disewa dengan harga $60,000 per tahun dan memiliki kapasitas untuk memproduksi sampai dengan 240,000 unit setahun.



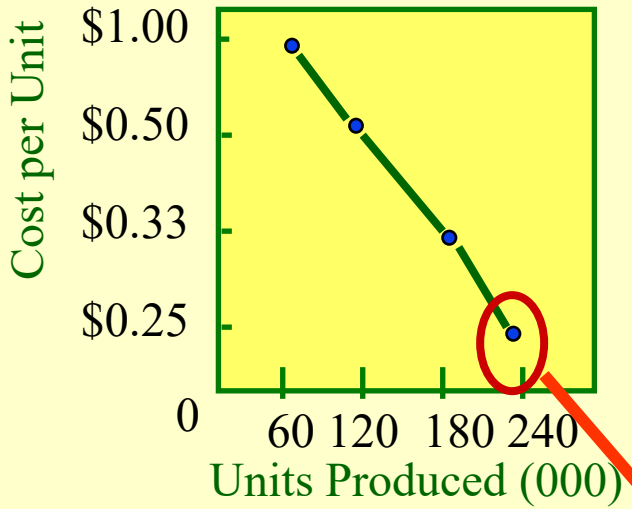
Total Fixed Cost Graph



Fixed Costs

Lease of Machines	Number of Units	Units Cost
$60,000	0	N/A
60,000	60,000	$1.00
60,000	120,000	0.50
60,000	180,000	0.33
60,000	240,000	0.25

Unit Fixed Cost Graph



Fixed Costs

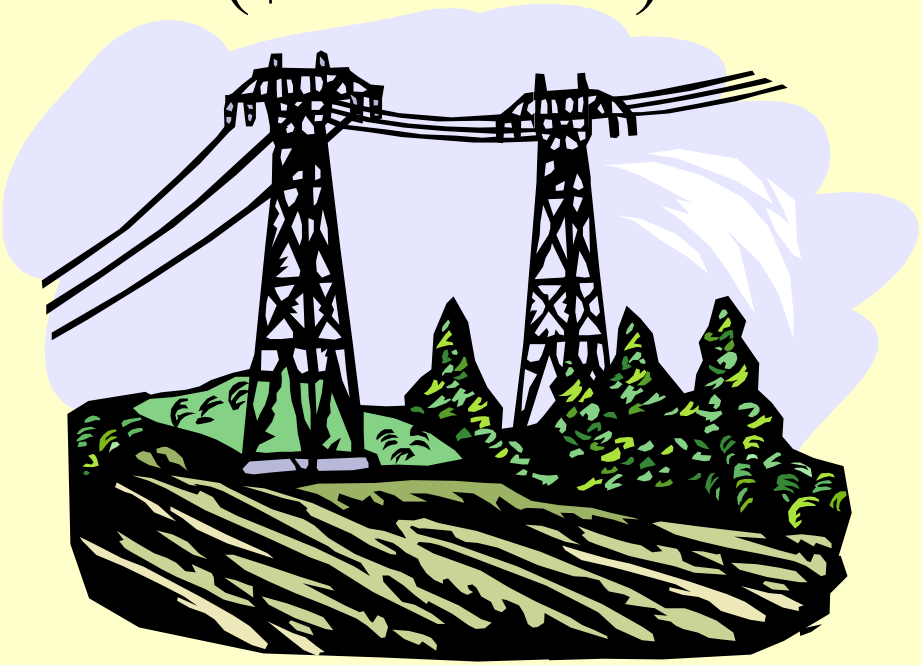
Lease of Machines	Number of Units	Units Cost
$60,000	0	N/A
60,000	60,000	$1.00
60,000	120,000	0.50
60,000	180,000	0.33
60,000	240,000	0.25

variable cost adalah biaya yang dalam jumlah total bervariasi secara proporsional terhadap perubahan out put.

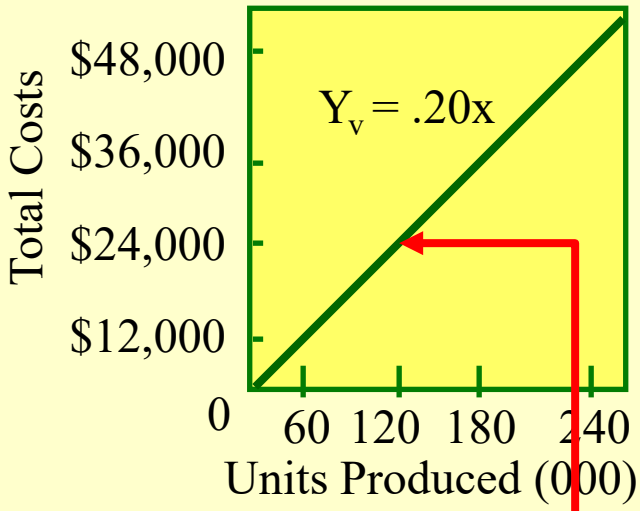
Variable Cost

Variable Cost

Untuk memotong satu potongan dibutuhkan 0.1 kilowatt-hour seharga $2.00 per kilowatt hour. Artinya biaya per unit potongan adalah $0.20 ($2.00 x 0.1).



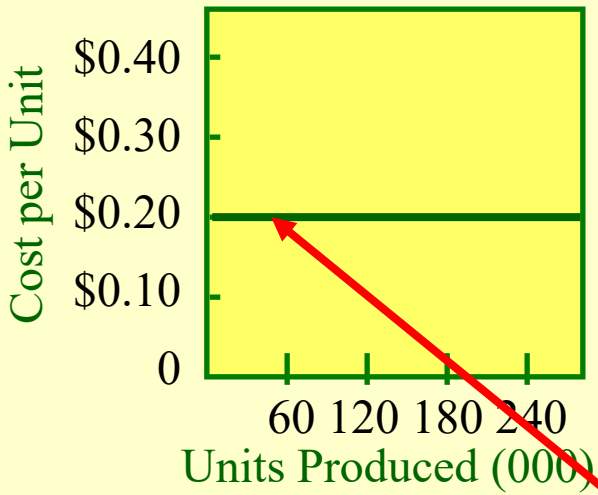
Total Variable Cost Graph



Variable Cost

Cost of Power	Number of Units	Units Cost
$ 0	0	$ 0
12,000	60,000	0.20
24,000	120,000	0.20
36,000	180,000	0.20
48,000	240,000	0.20

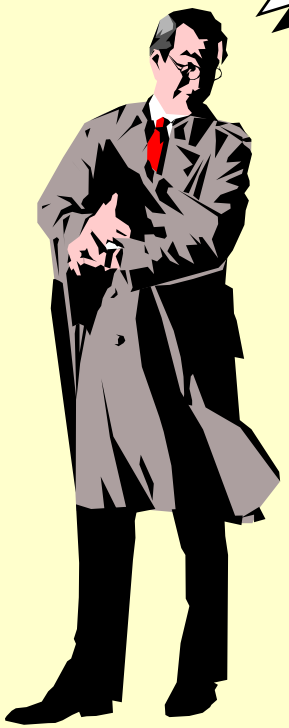
Unit Variable Cost Graph



Variable Cost

Cost of Power	Number of Units	Units Cost
$ 0	0	$ 0
12,000	60,000	0.20
24,000	120,000	0.20
36,000	180,000	0.20
48,000	240,000	0.20

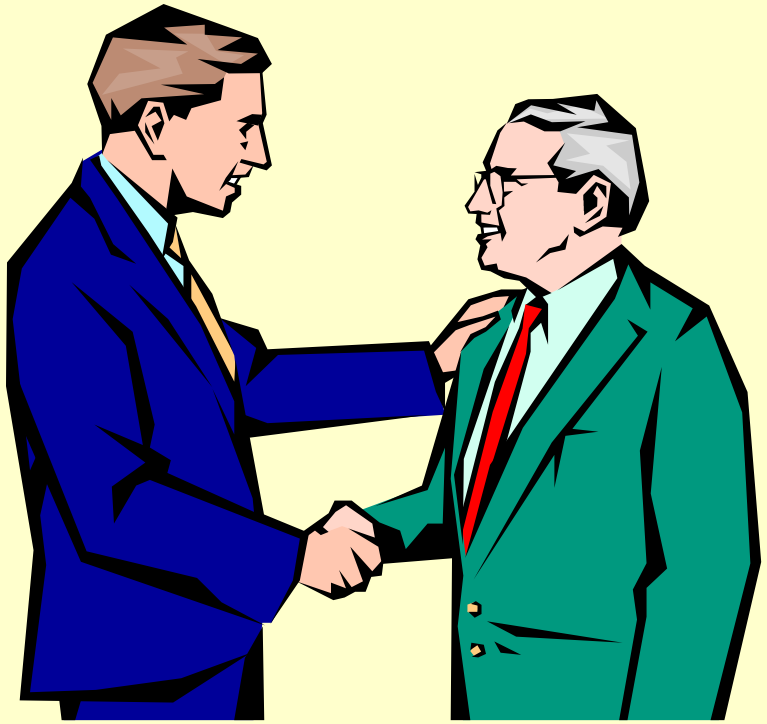
mixed cost adalah biaya campuran yang memiliki komponen tetap dan variabel



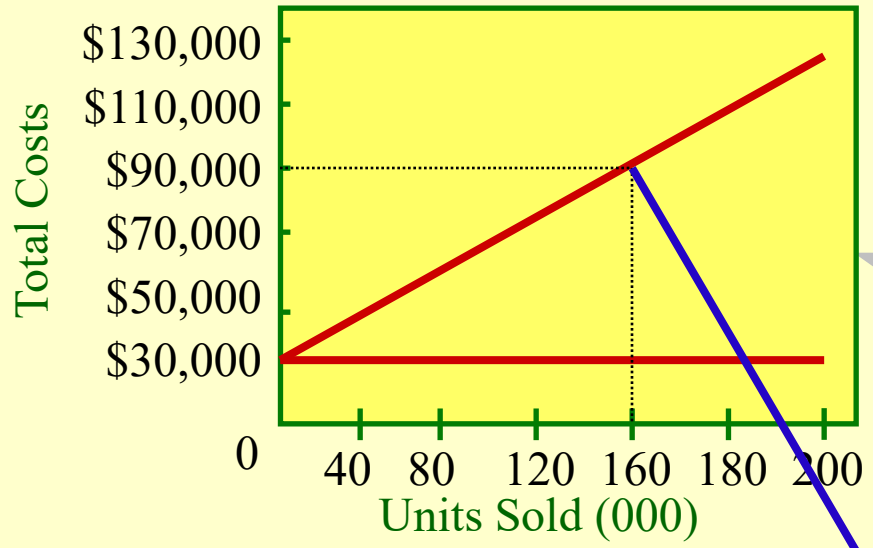
Mixed Costs

Mixed Costs

Agen Penjualan sering mendapat gaji yang ditambah komisi penjualan.



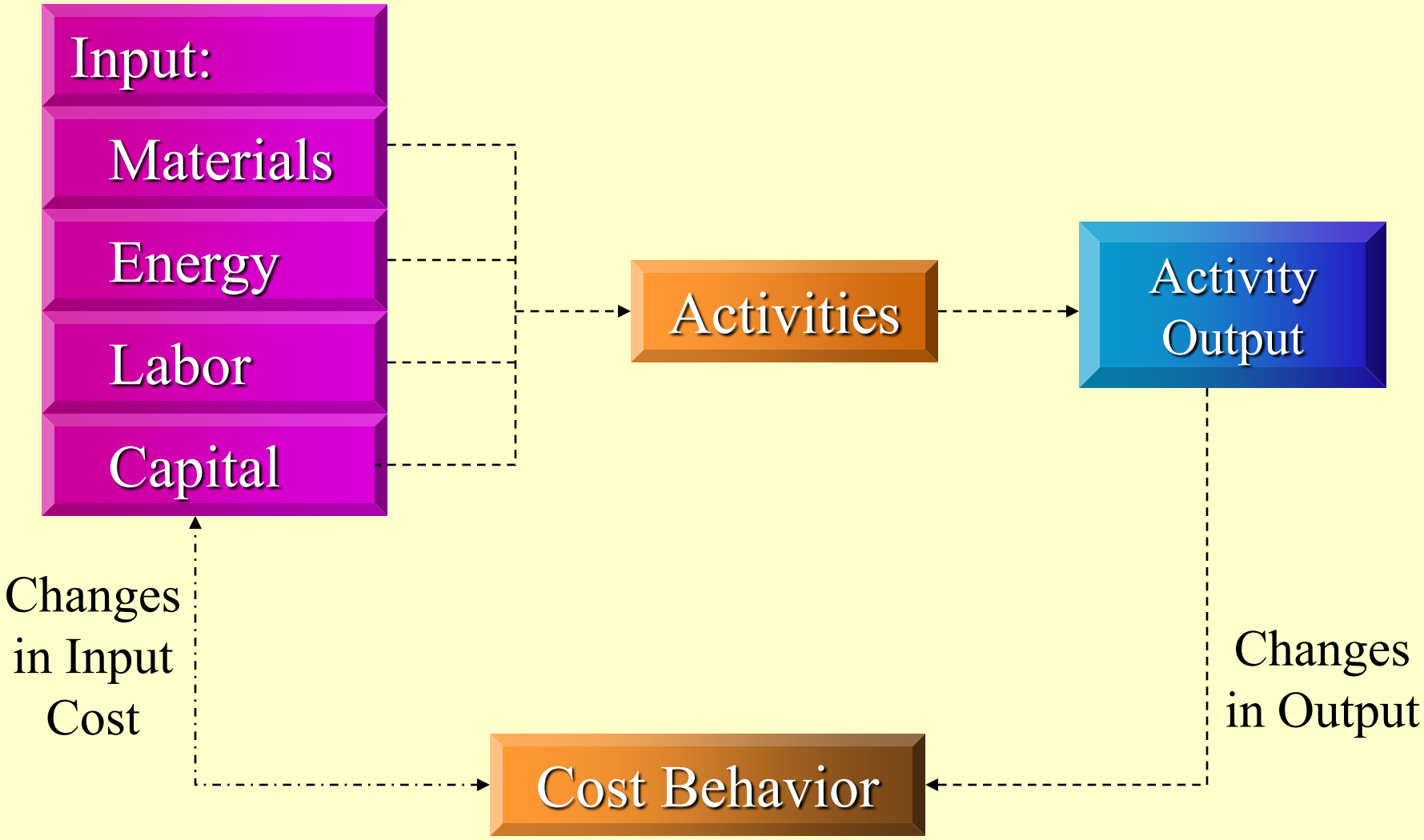
Mixed Cost Behavior



Mixed Costs

Inserts Sold	Variable Cost of Selling	Fixed Cost of Selling	Total Selling Cost	Selling Cost per Unit
40,000	$ 20,000	$30,000	$ 50,000	$1.25
80,000	40,000	30,000	70,000	0.86
120,000	60,000	30,000	90,000	0.75
160,000	80,000	30,000	110,000	0.69
200,000	100,000	30,000	130,000	0.65

Model Perilaku Biaya Aktivitas



Flexible Resources

Flexible resources adalah sumber daya yang dipasok saat digunakan atau dibutuhkan.Contohnya Bahan Baku dan Energi.

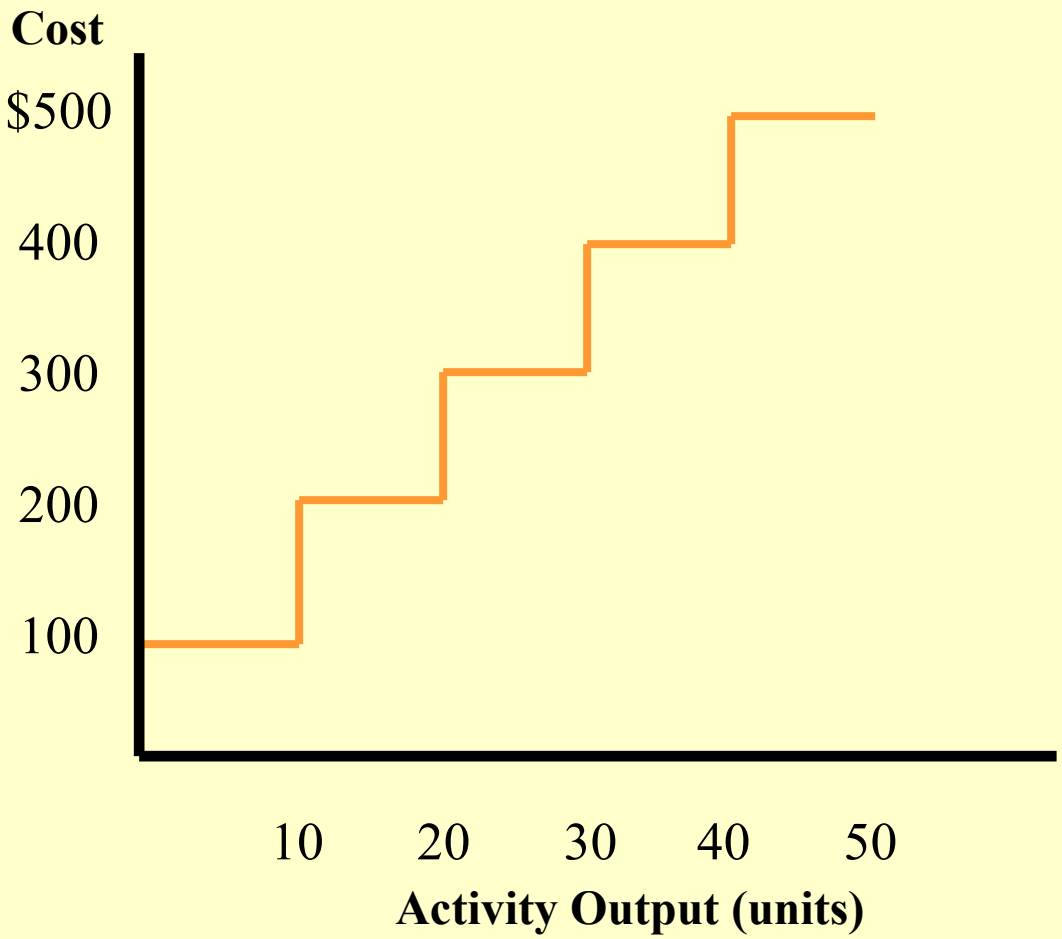
Committed Resources

Committed resources adalah Sumber daya yang dipasok sebelum digunakan. Contohnya gedung harus disiapkan sebelum aktivitas usaha dimulai

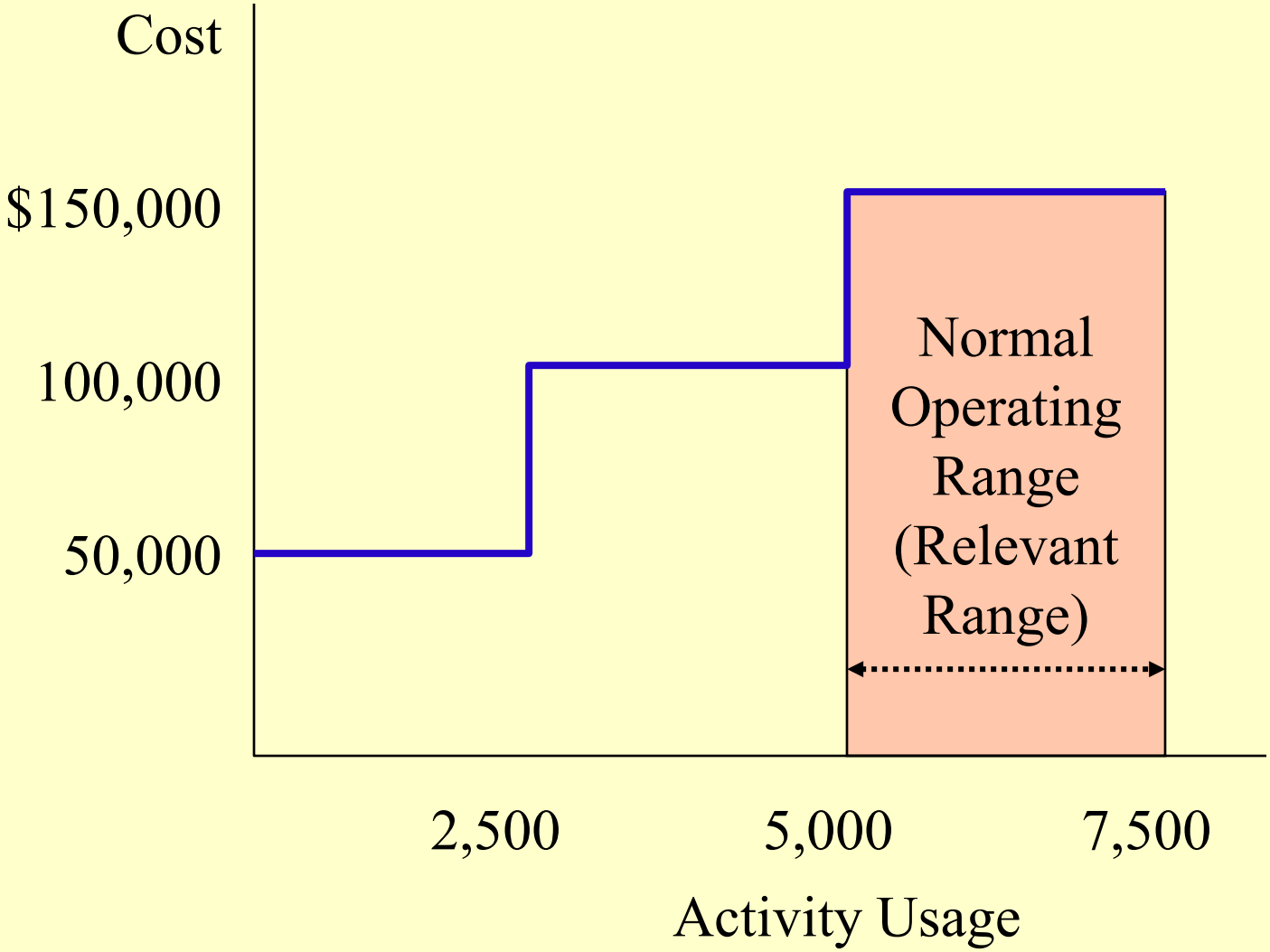
step cost / Biaya Bertahap :
Menampilkan tingkat biaya konstan untuk rentang out put tertentu.

Step-Cost Behavior

Step-Cost Behavior



Step-Fixed Costs



Step-Cost Behavior

- ✓ **Tiga teknisi masing masing dibayar $50,000**
- ✓ **Tiap teknisi mampu memproses 2500 pesanan perubahan.**
- ✓ **$90,000 dihabiskan untuk perlengkapan aktivitas teknis. Sumber Daya Fleksibel.**
- ✓ **Ada 6,000 Pesanan Proses.**
- ✓ **Perusahaan memiliki kemampuan memproses 7,500 pesanan**

Step-Cost Behavior

Pesanan Tersedia = Psn digunakan + Psn tdk digunakan

7,500 orders = 6,000 orders + 1,500 orders

Fixed engineering rate = $150,000/7,500

= $20 per change order

Variable engineering rate = $90,000/6,000

= $15 per change order

Step-Cost Behavior

Hubungan antara SD yang tersedia dengan SD yang digunakan adalah sebagai berikut :

Resources available = Resources used + Unused capacity

Step-Cost Behavior

Cost of orders supplied = Cost of orders used + Cost of unused orders

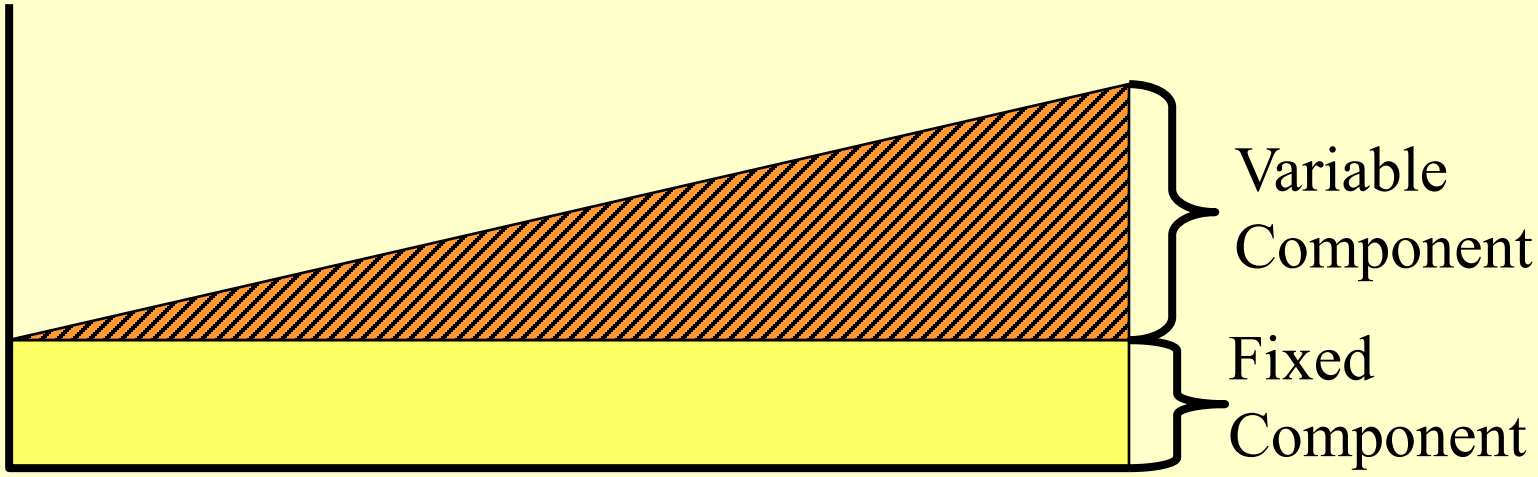
= [($20 + $15) x 6,000] + ($20 x 1,500)

= $240,000

$30,000 kelebihan Kapasitas berarti produk baru dapat diajukan tanpa meningkatkan pengeluaran teknis.

Methods for Separating Mixed Costs

- **The High-Low Method**
- **The Scatterplot Method**
- **The Method of Least Squares**



The *linearity assumption* assumes that variable costs increase in direct proportion to the number of units produced (or activity units used).

Methods for Separating Mixed Costs

$Y = a + b x$

Total Cost

Total Fixed Cost

Variable Cost per Unit

Number of Units

The High-Low Method

Month	Setup Costs	Setup Hours
January	$1,000	100
February	1,250	200
March	2,250	300
April	2,500	400
May	3,750	500

Step 1: Solve for variable cost (b)

The High-Low Method

Month	Setup Costs	Setup Hours
January	$1,000	100
February	1,250	200
March	2,250	300
April	2,500	400
May	3,750	500

$$b = \frac{\text{High Cost} - \text{Low Cost}}{\text{High Units} - \text{Low Units}}$$

The High-Low Method

Month	Setup Costs	Setup Hours
January	$1,000	100
February	1,250	200
March	2,250	300
April	2,500	400
May	3,750	500

$$b = \frac{\$3{,}750 - \text{Low Cost}}{500 - \text{Low Units}}$$

The High-Low Method

Month	Setup Costs	Setup Hours
January	$1,000	100
February	1,250	200
March	2,250	300
April	2,500	400
May	3,750	500

$$b = \frac{\$3,750 - \$1,000}{500 - 100}$$

The High-Low Method

$$b = \frac{\$3{,}750 - \$1{,}000}{500 - 100}$$

$$b = \$6.875$$

Step 2: Using either the high cost or low cost, solve for the total fixed cost (a).

The High-Low Method

$$Y = a + b(x)$$

$$\$3{,}750 = a + \$6.875(500)$$

$$\$312.50 = a$$

High End

$$Y = a + b(x)$$

$$\$1{,}000 = a + \$6.875(100)$$

$$\$312.50 = a$$

Low End

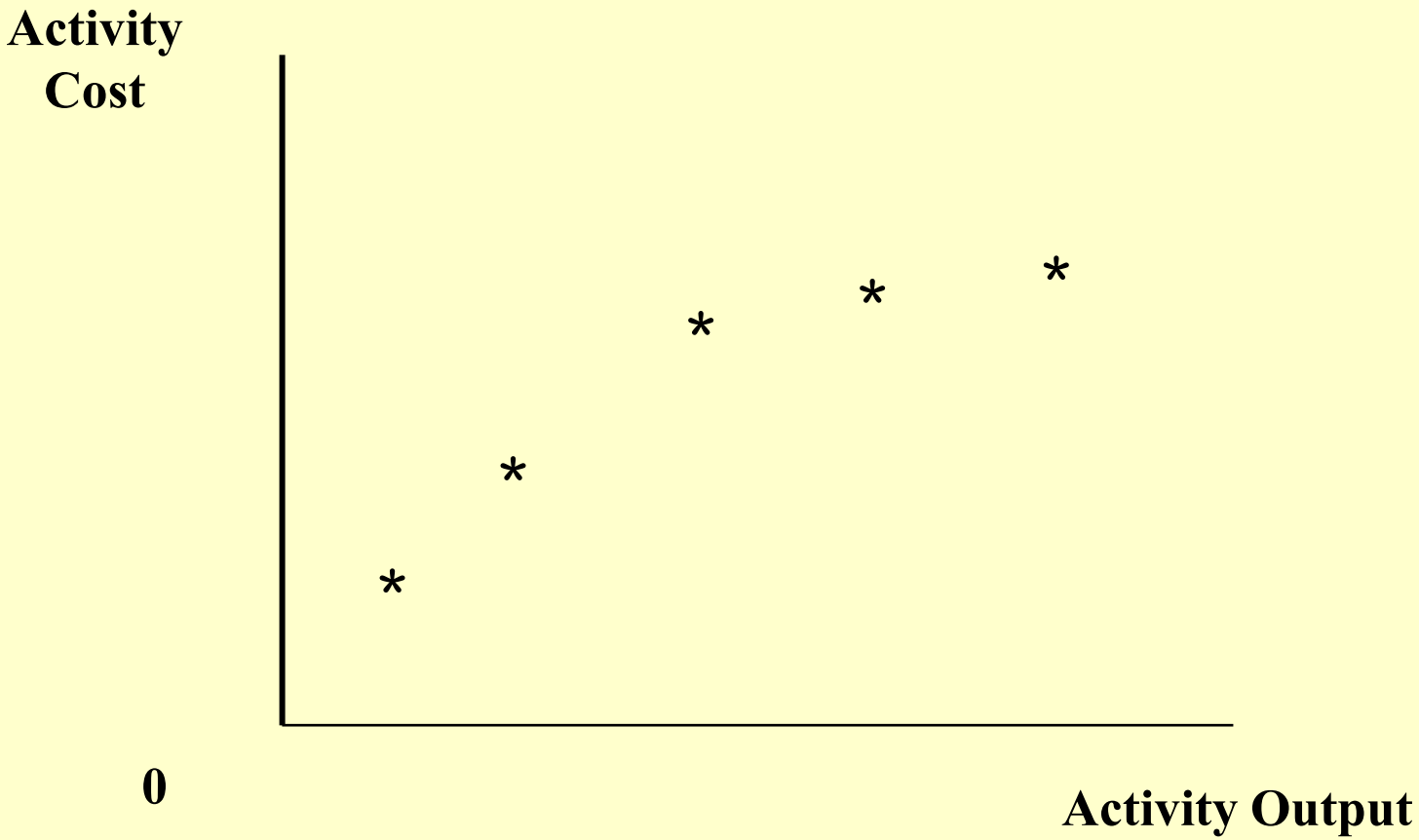
The cost formula using the high-low method is:

Total cost = $312.50 + ($6.875 x Setup hours)

The Scatterplot Method

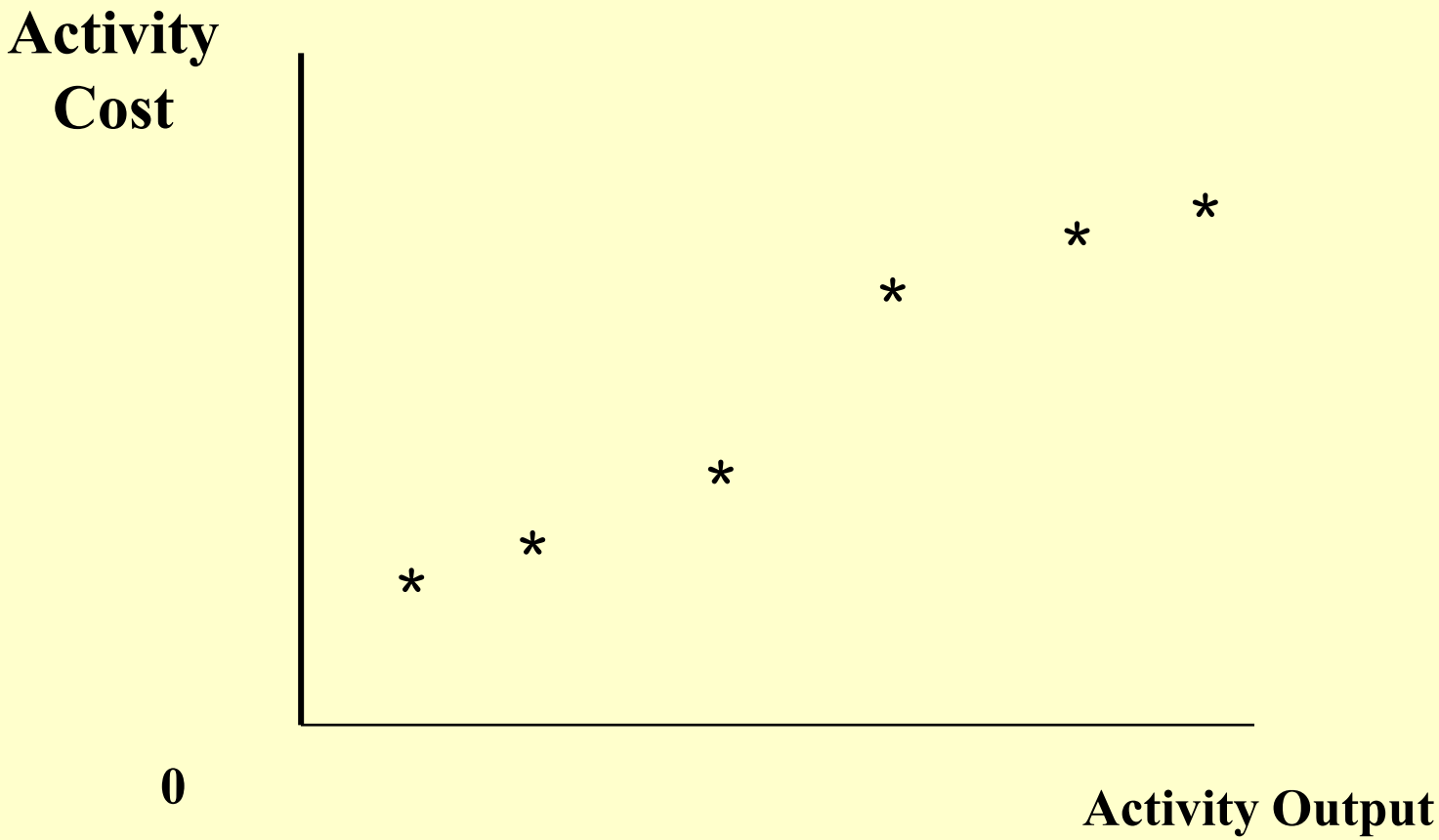
The Scatterplot Method

Nonlinear Relationship



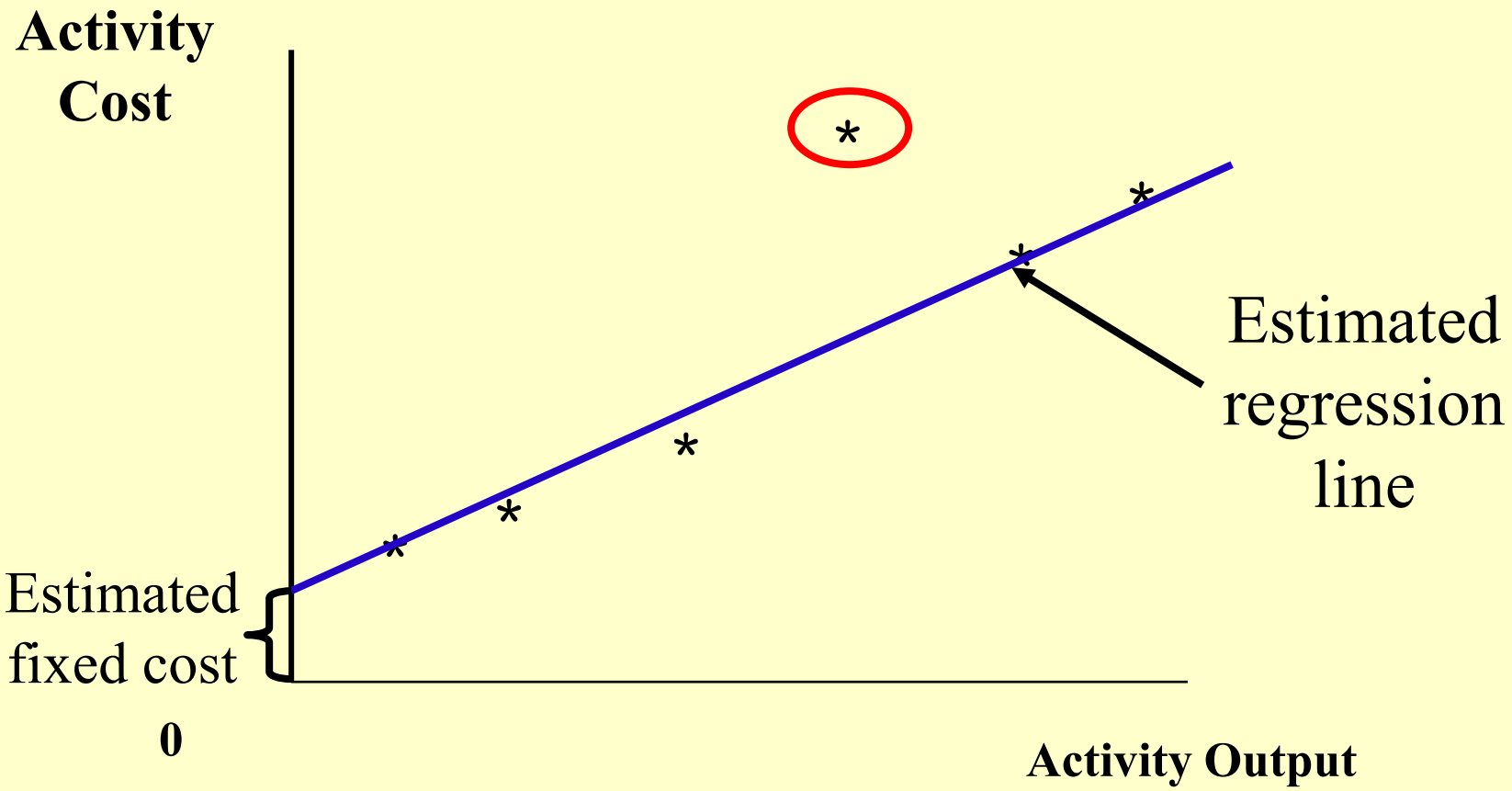
The Scatterplot Method

Upward Shift in Cost Relationship



The Scatterplot Method

Presence of Outliers



The Method of Least Squares

Month	Setup Costs	Setup Hours			
Jan	1,000	100			
Feb	1,250	200			
Mar	2,250	300			
Apr	2,500	400			
May	3,750	500			

Spreadsheet Data for
Larson Company

The Method of Least Squares

	Regression Output:		
Constant			125
Std. Err of Y Est			299.304749934466
R Squared			0.944300518134715
No. of Observation			5
Degrees of Freedom			3
X Coefficient(s)		6.75	
Std. Err of Coef.		0.9464847243	

Regression Output for Larson Company

The Method of Least Squares

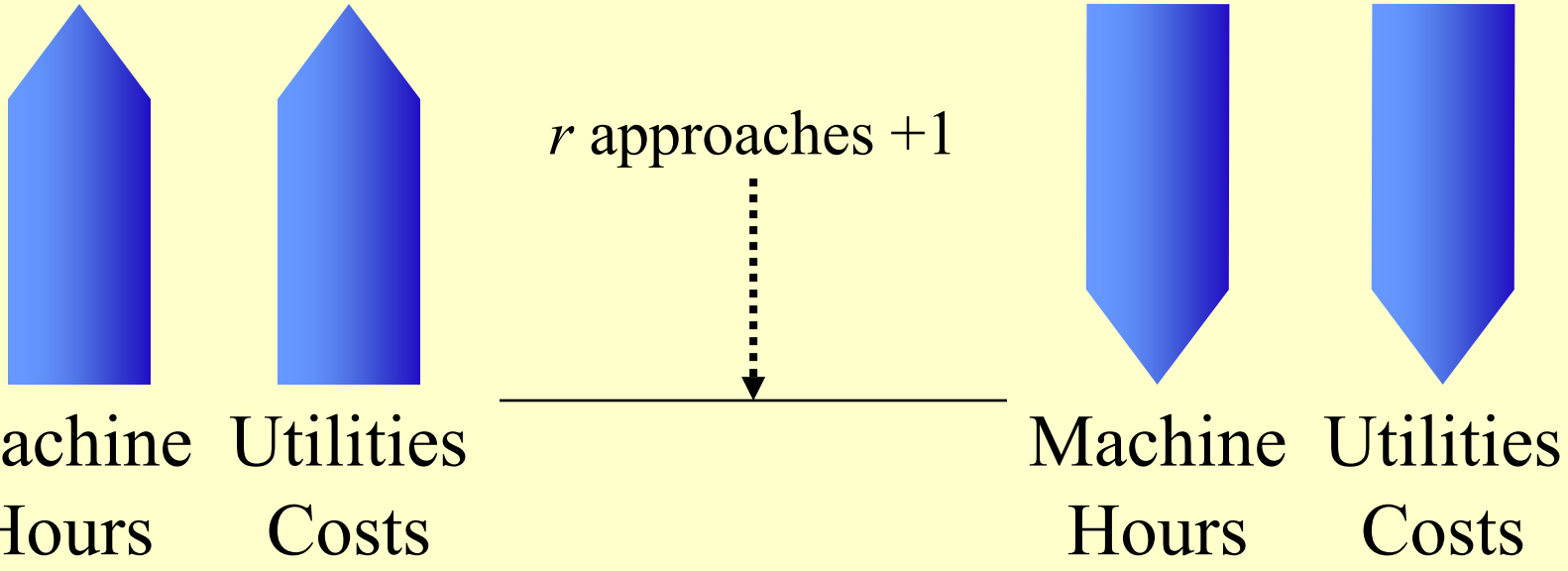
The results give rise to the following equation:

Setup costs = $125 + ($6.75 x Setup hours)

R^2 = *.944*, or *94.4 percent of the variation in setup costs is explained by the number of setup hours variable.*

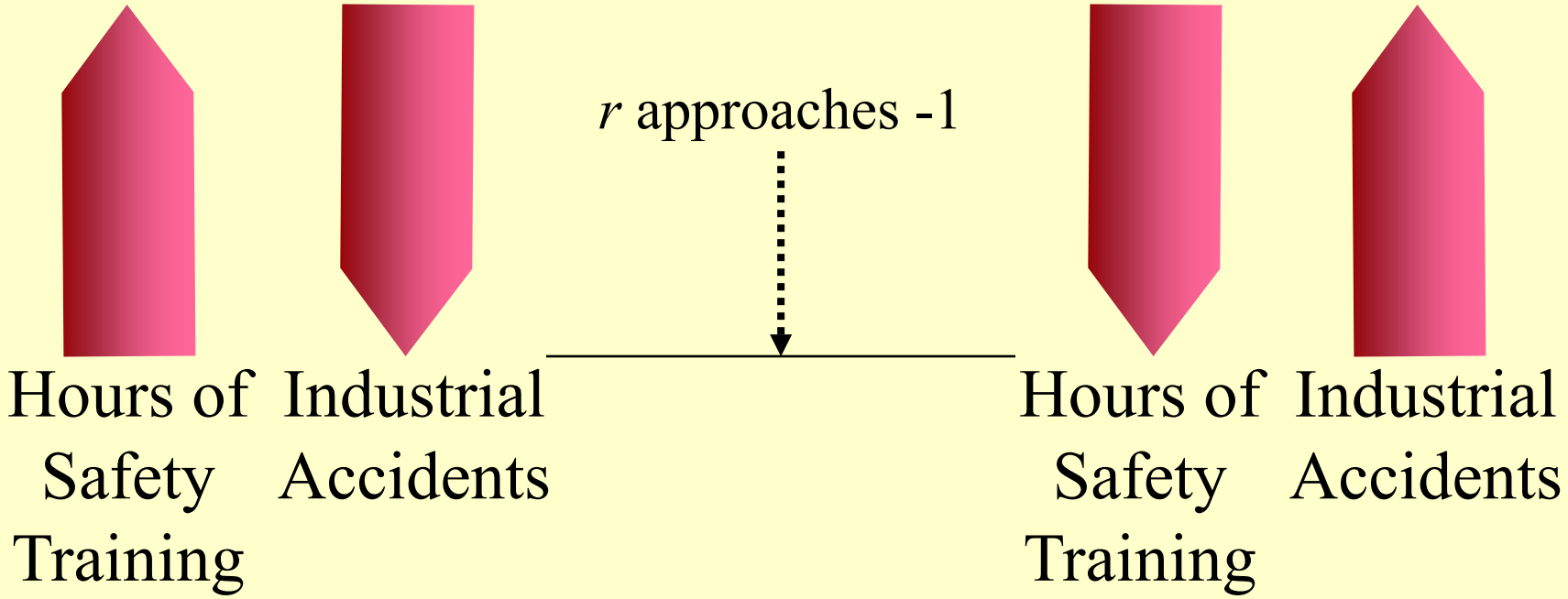
Coefficient of Correlation

Positive Correlation



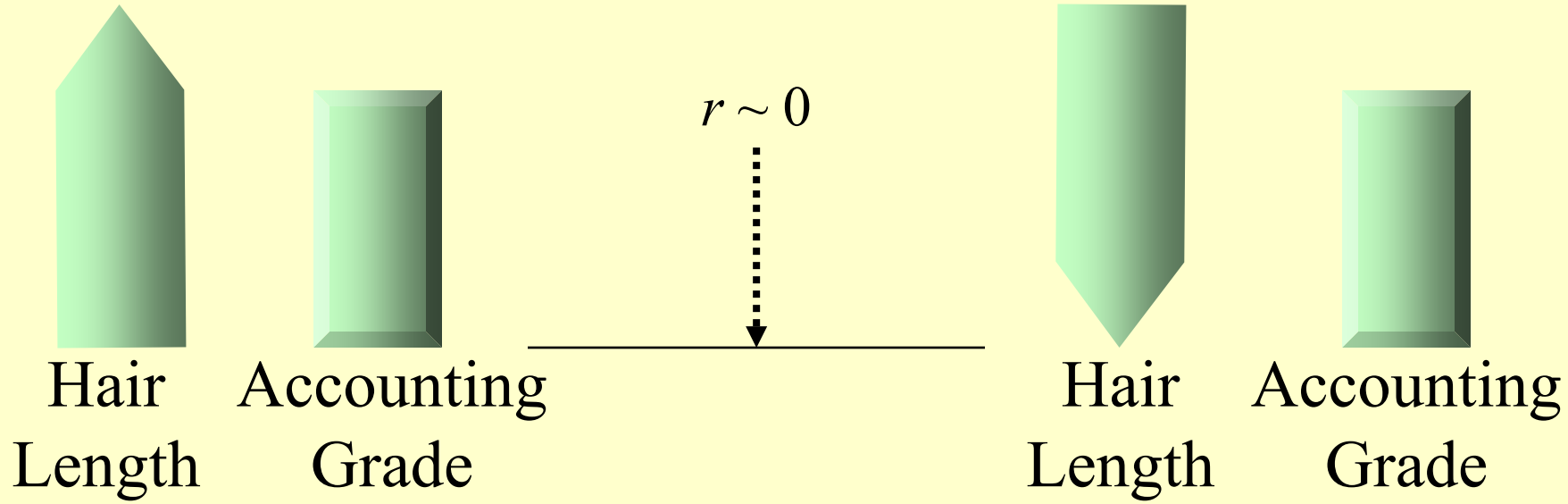
Coefficient of Correlation

Negative Correlation



Coefficient of Correlation

No Correlation



Multiple Regression

$$TC = b_0 + (b_1X_{1)} + (b_2X_{2)} + \ . \ . \ .$$

b_0 = the fixed cost or intercept

b_1 = the variable rate for the first independent variable

X_1 = the first independent variable

b_2 = the variable rate for the second independent variable

X_2 = the second independent variable

Multiple Regression

Month	Mhrs		Summer		Utilities Cost	
Jan	1,340		0		$1,688	
Feb	1,298		0		1,636	
Mar	1,376		0		1,734	
April	1,405		0		1,770	
May	1,500		1		2,390	
June	1,432		1		2,304	
July	1,322		1		2,166	
August	1,416		1		2,284	
Sept	1,370		1		1,730	
Oct	1,580		0		1,991	
Nov	1,460		0		1,840	
Dec	1,455		0		1,833	

Data for Phoenix Factory
Utilities Cost Regression

Multiple Regression

Constant		243.1114997159
Std Err of Y Est		55.5082829356447
R Squared		0.96717927255452
No. of Observation		12
Degrees of Freedom		9
X Coefficient(s)	1.0971575051946	510.49073361447
Std Err of Coef.	0.210226332115593	32.5489464532519

Multiple Regression for Phoenix Factory Utilities Cost

Multiple Regression

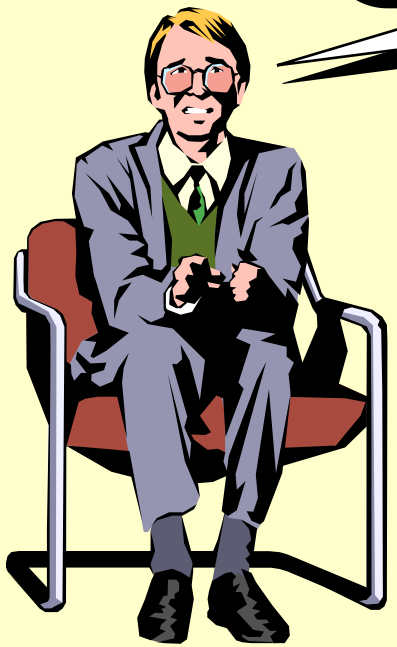
The results gives rise to the following equation:

Utilities cost = $243.11 + $1.097(Machine hours) + ($510.49 x Summer)

R^2 = *.967*, or *96.7 percent of the variation in utilities cost is explained by the machine hours and summer variables.*

Managerial Judgment

Managerial judgment is critically important in determining cost behavior, and it is by far the most widely used method in practice.



Chapter Three

The End