TOPIC 3

PROFIT PLANNING


PROFIT
PLANNING

Chapter Outline

- Basic framework of budgeting
- Preparing the master budget
- Flexible budgets
- Standard costs
- Variance analysis

Learning Objectives

- Define budgeting and discuss its role in planning, control and decision making.
- Define and prepare the master budget, identify its major components, and explain the interrelationships of its various components.
- Define and prepare the financial budget and the dimension of budgeting.
- Discuss the flexible budgeting and analyzing its cost behavior.
- Know and understand standard costing.
- Define variance analysis and identify types of variances.

BASIC FRAMEWORK BUDGETING

BASIC FRAMEWORK OF BUDGETING

A **budget** is a detailed quantitative plan for acquiring and using financial and other resources over a specified forthcoming time period.

1. The act of preparing a budget is called **budgeting**.
2. The use of budgets to control an organization's activity is known as **budgetary control**.

Advantages of Budgeting

Define goals and objectives

Think about and plan for the future

Means of allocating resources

Uncover potential problems

Coordinate activities

Communicate plans

Planning and Control

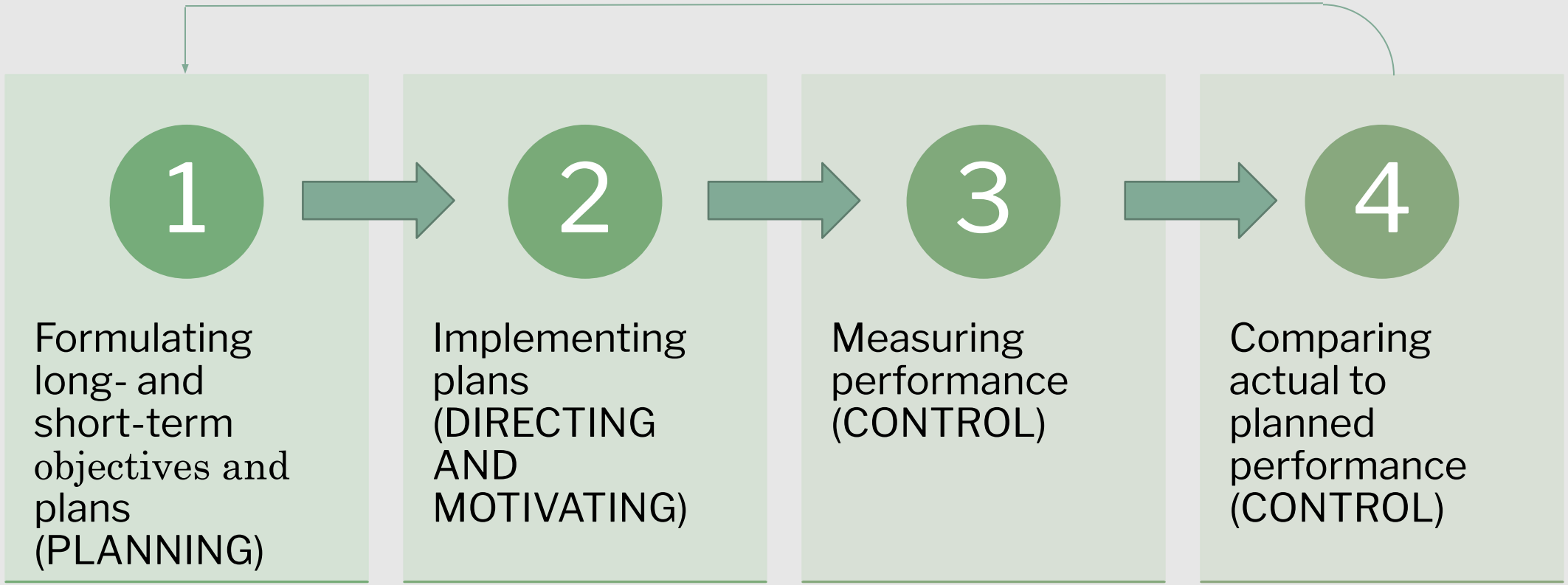
Planning

- involves developing objectives and preparing various budgets to achieve these objectives.

Control

- involves the steps taken by management to increase the likelihood that the objectives set down while planning are attained and that all parts of the organization are working together toward that goal.

Planning and Control Cycle



Responsibility Accounting

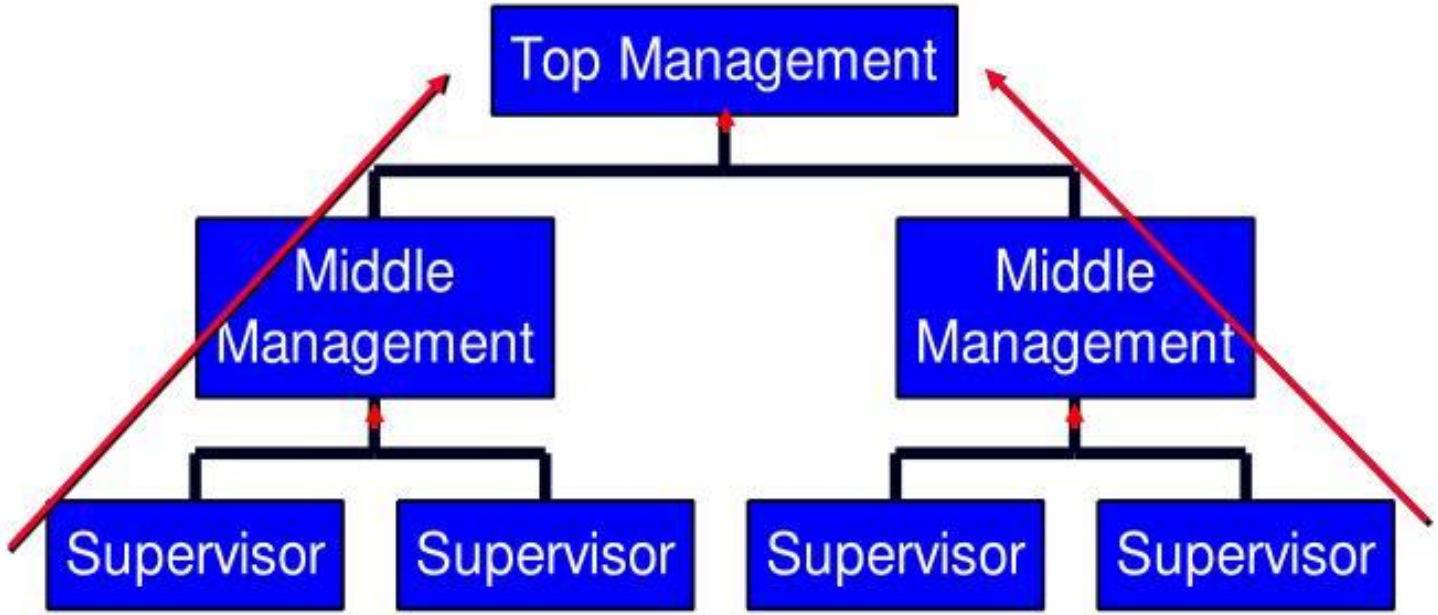
- Managers should be held responsible for all those items and - ***only*** those items - that they can actually control to a significant extent.

The Master Budget

The ***master budget*** is the comprehensive financial plan for the organization as a whole.

- ❑ The master budget is for a one-year period, corresponding to the fiscal year of the company.
- ❑ Yearly budgets are broken down into quarterly and monthly budgets.
- ❑ Some organizations have developed a continuous budgeting philosophy.
  - A continuous budget is a moving 12-month budget.
- ❑ As a month expires in the budget, an additional month in the future is added so that the company always has a 12-month plan on hand.

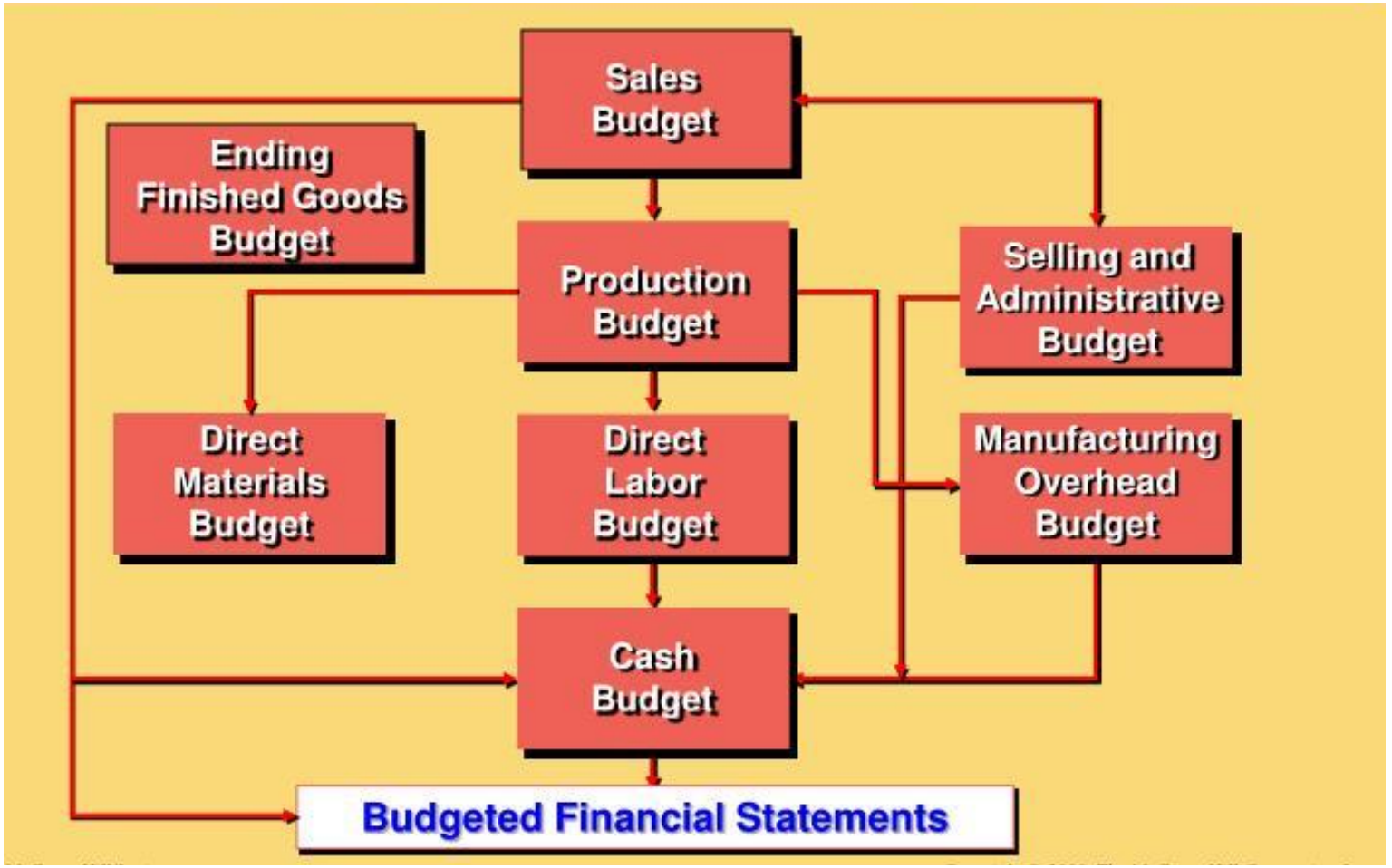
Self-imposed Budget



A self-imposed budget or participative budget is a budget that is prepared with the full cooperation and participation of managers at all levels.

Advantages of Self-Imposed Budgets

- Individuals at all levels of the organization are viewed as members of the team whose judgments are valued by top management.
- Motivation is generally higher when individuals participate in setting their own goals than when the goals are imposed from above.
- Budget estimates prepared by front-line managers are often more accurate than estimates prepared by top managers.
- A manager who is not able to meet a budget imposed from above can claim that it was unrealistic. Self-imposed budgets eliminate this excuse.



MASTER BUDGET OVERVIEW

PREPARING THE MASTER BUDGET

SALES BUDGET

SALES BUDGET

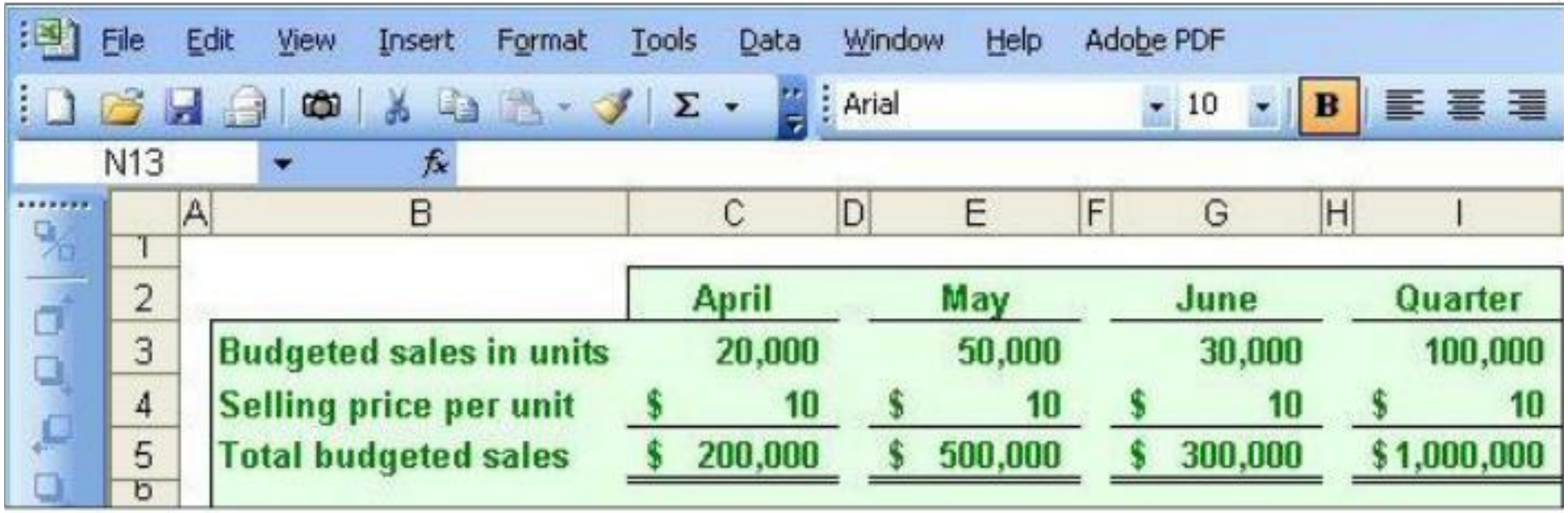
- The sales budget is approved by the budget committee and describes expected sales in units and dollars.
- The first step in creating a sales budget is to develop the sales forecast.
- The sales forecast is just the initial estimate, and it is often adjusted by the budget committee.

Budgeting Example:

1) Royal Company is preparing budgets for the quarter ending June 30th.
2) Budgeted sales for the next five months are:
   - April 20,000 units
   - May 50,000 units
   - June 30,000 units
   - July 25,000 units
   - August 15,000 units
3) The selling price is $10 per unit.

Sales Budget

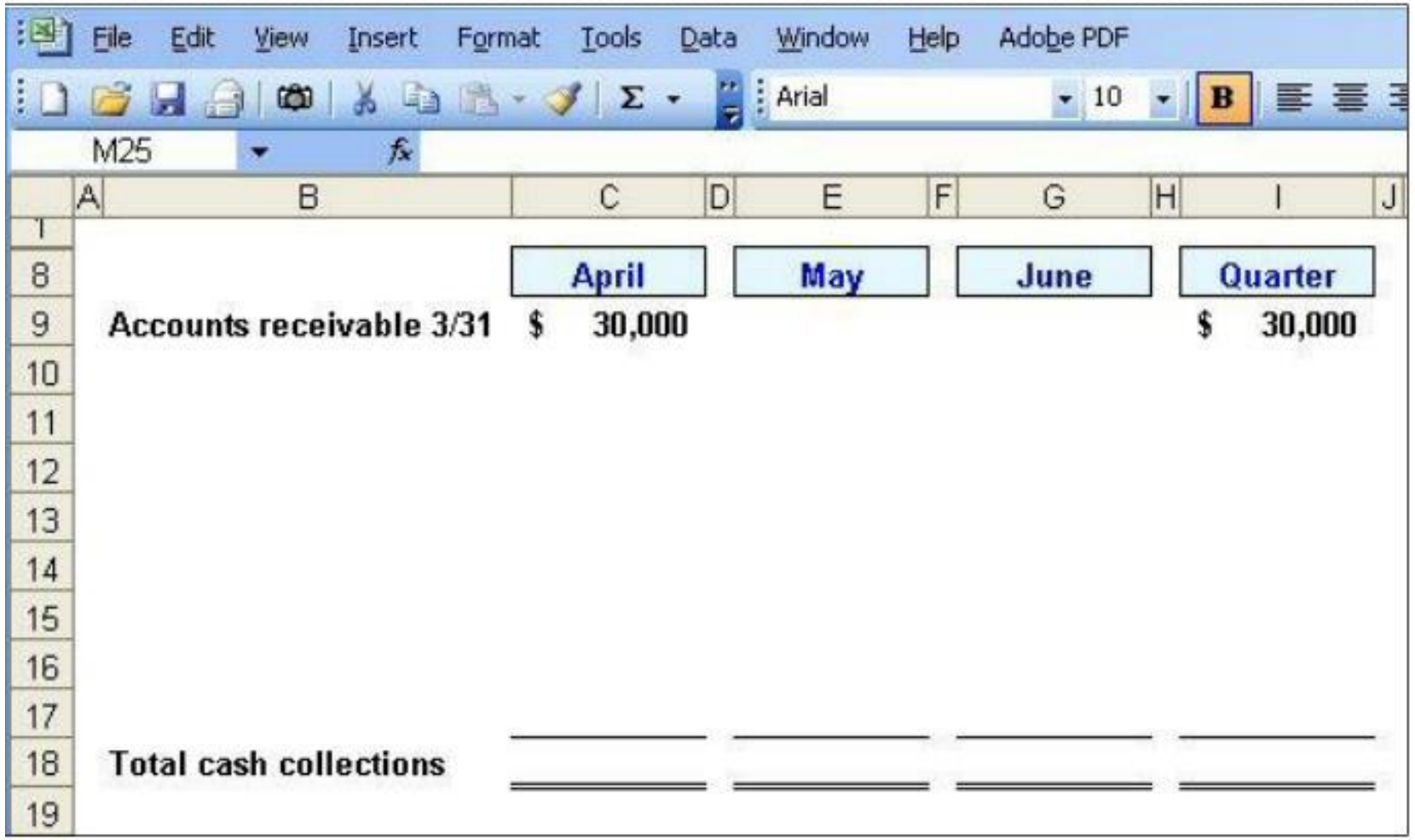
The individual months of April, May, and June are summed to obtain the total budgeted sales in units and dollars for the quarter ended June 30th.



Expected Cash Collections

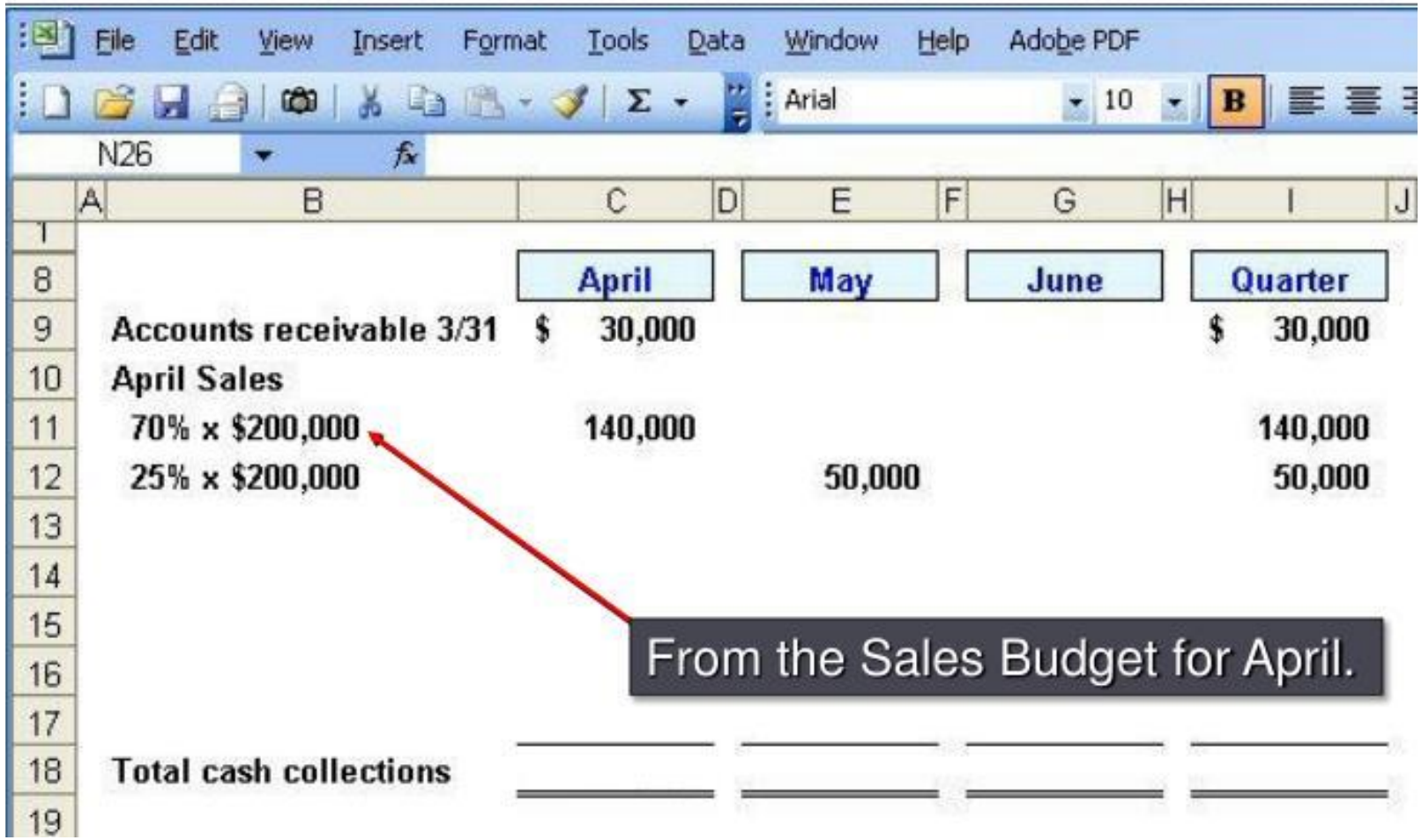
- All sales are on account (on credit)
- Royal's collection pattern is:
  - 70% collected in the month of sale,
  - 25% collected in the month following sale,
  - 5% uncollectible.
- In April, the March 31st accounts receivable balance of $30,000 will be collected in full.

Expected Cash Collections



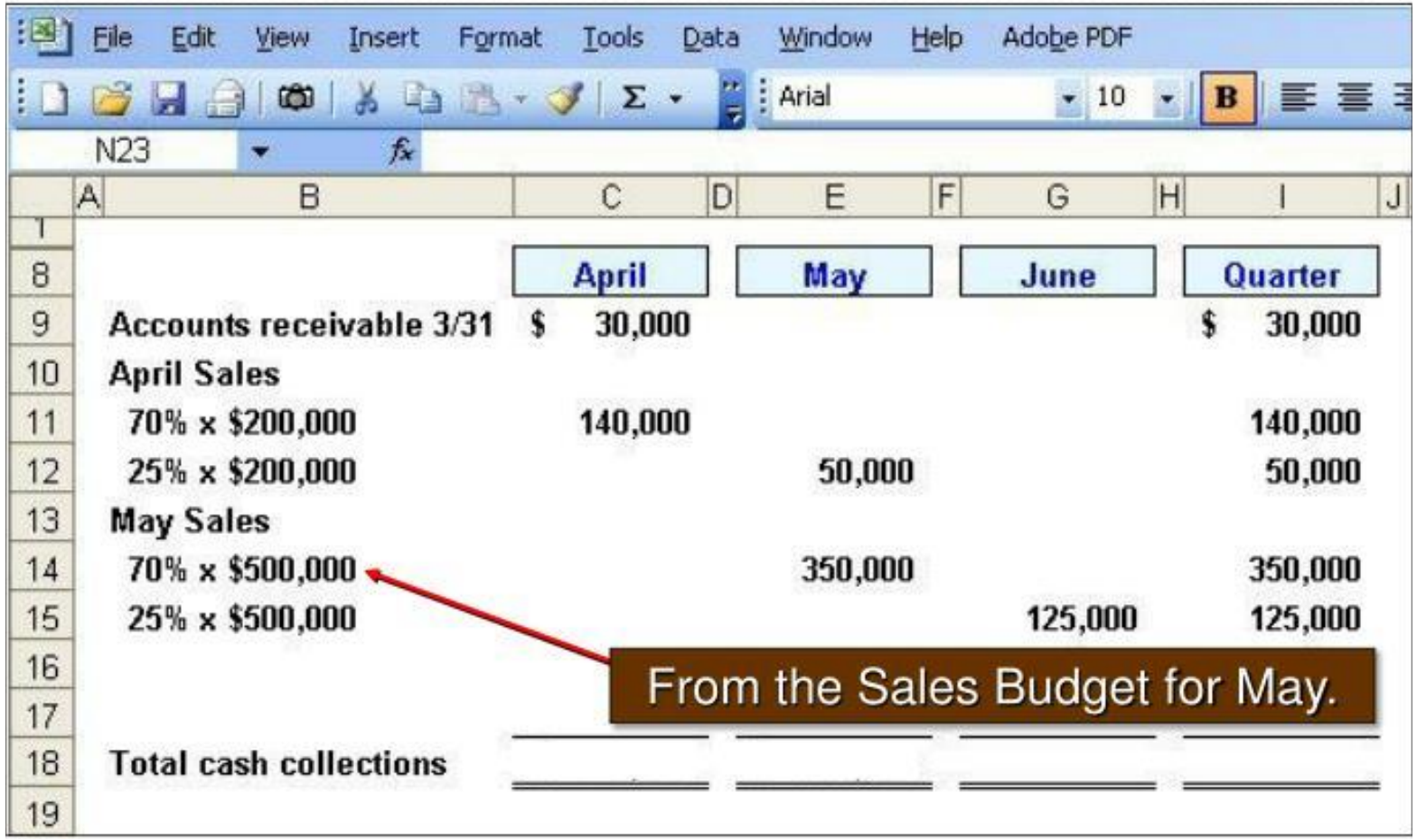
		April	May	June	Quarter
9	Accounts receivable 3/31	$ 30,000			$ 30,000
18	Total cash collections				

Expected Cash Collections



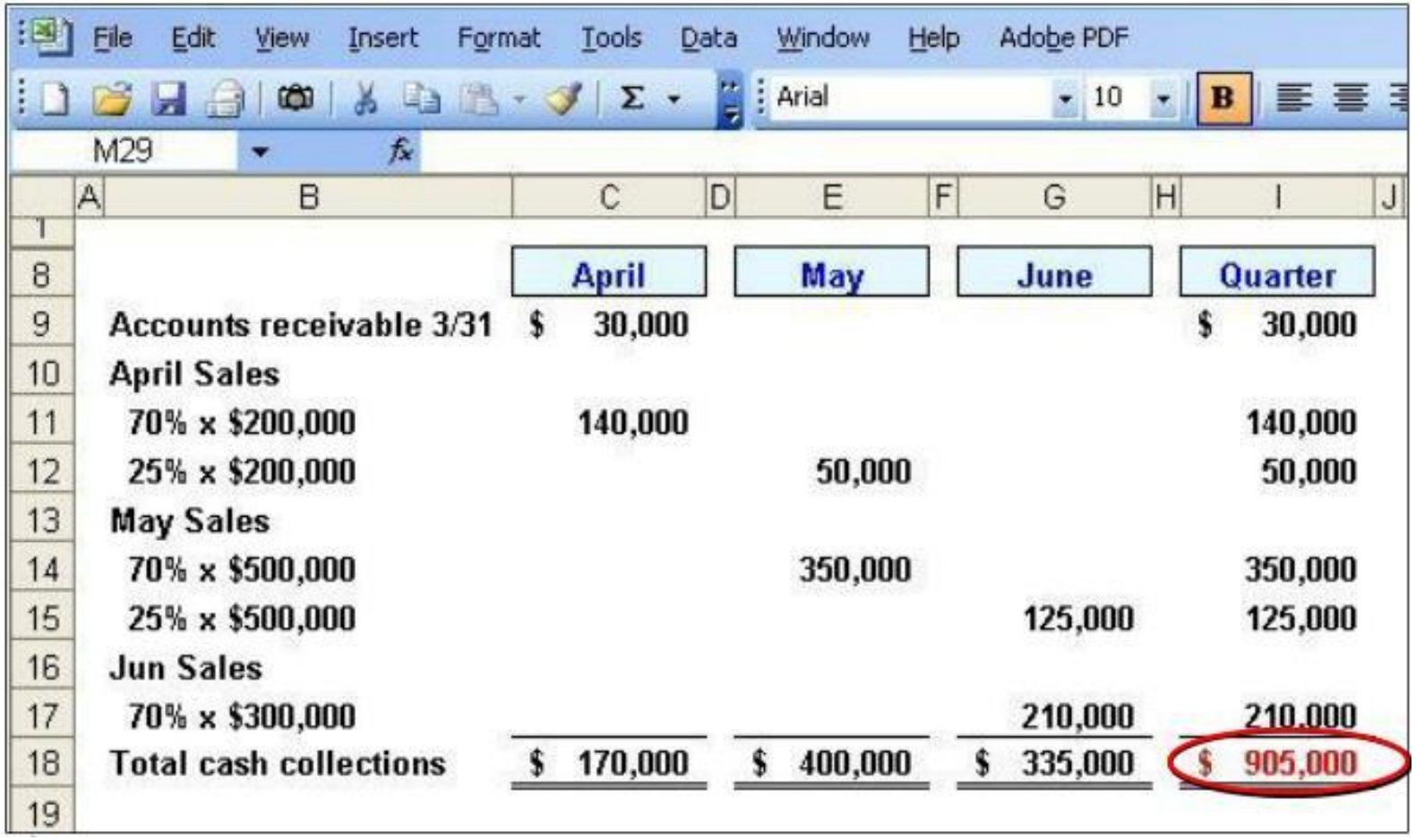
	April	May	June	Quarter
Accounts receivable 3/31	$ 30,000			$ 30,000
April Sales				
70% x $200,000	140,000			140,000
25% x $200,000		50,000		50,000
Total cash collections				

Expected Cash Collections



	April	May	June	Quarter
Accounts receivable 3/31	$ 30,000			$ 30,000
April Sales				
70% x $200,000	140,000			140,000
25% x $200,000		50,000		50,000
May Sales				
70% x $500,000		350,000		350,000
25% x $500,000			125,000	125,000
Total cash collections				

Expected Cash Collections



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	A	B	C	D	E	F	G	H	I	J
8			April		May		June		Quarter	
9		Accounts receivable 3/31	$ 30,000						$ 30,000	
10		April Sales								
11		70% x $200,000	140,000						140,000	
12		25% x $200,000			50,000				50,000	
13		May Sales								
14		70% x $500,000			350,000				350,000	
15		25% x $500,000					125,000		125,000	
16		Jun Sales								
17		70% x $300,000					210,000		210,000	
18		Total cash collections	$ 170,000		$ 400,000		$ 335,000		$ 905,000	
19										

PRODUCTION BUDGET

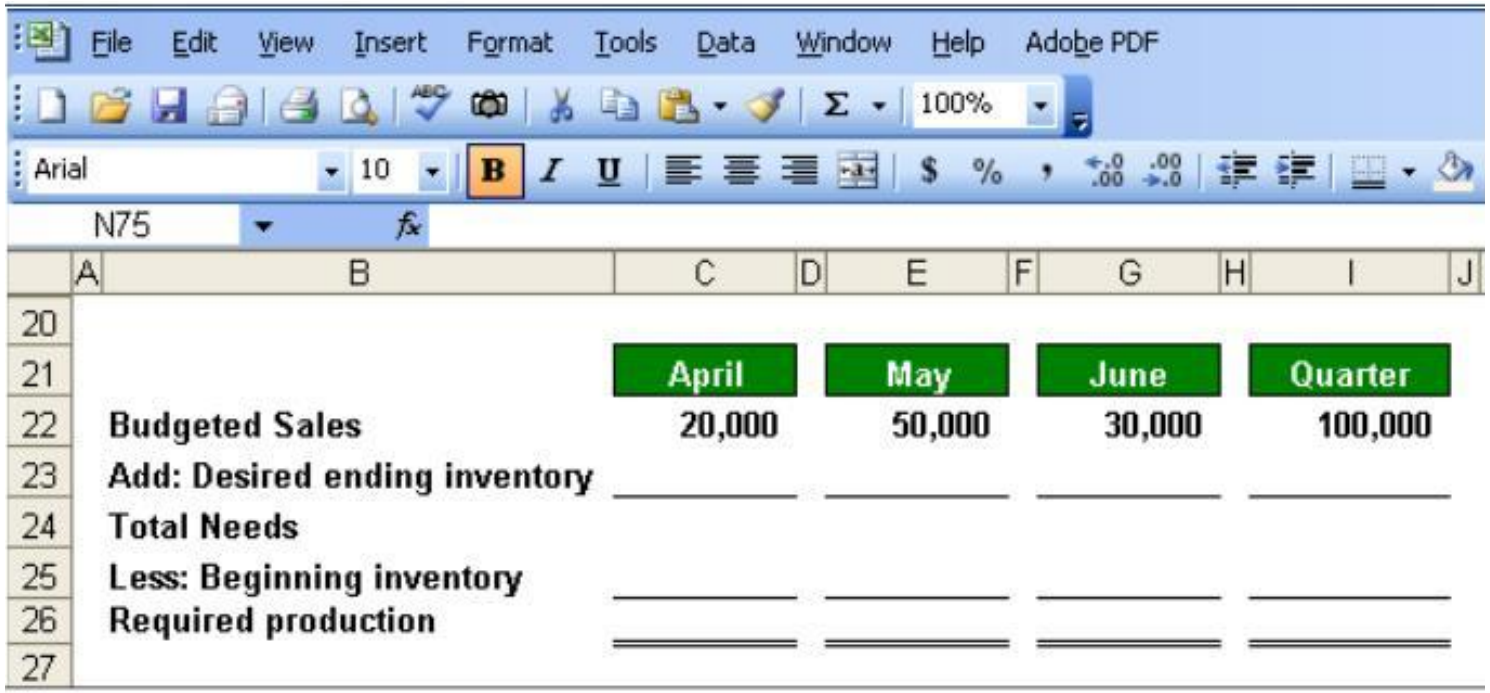
PRODUCTION BUDGET

- The production budget tells how many units must be produced to meet sales needs and to satisfy ending inventory requirements.
- Units to be produced = Expected unit sales + Units in desired ending inventory (EI) – Units in beginning inventory (BI)

The Production Budget

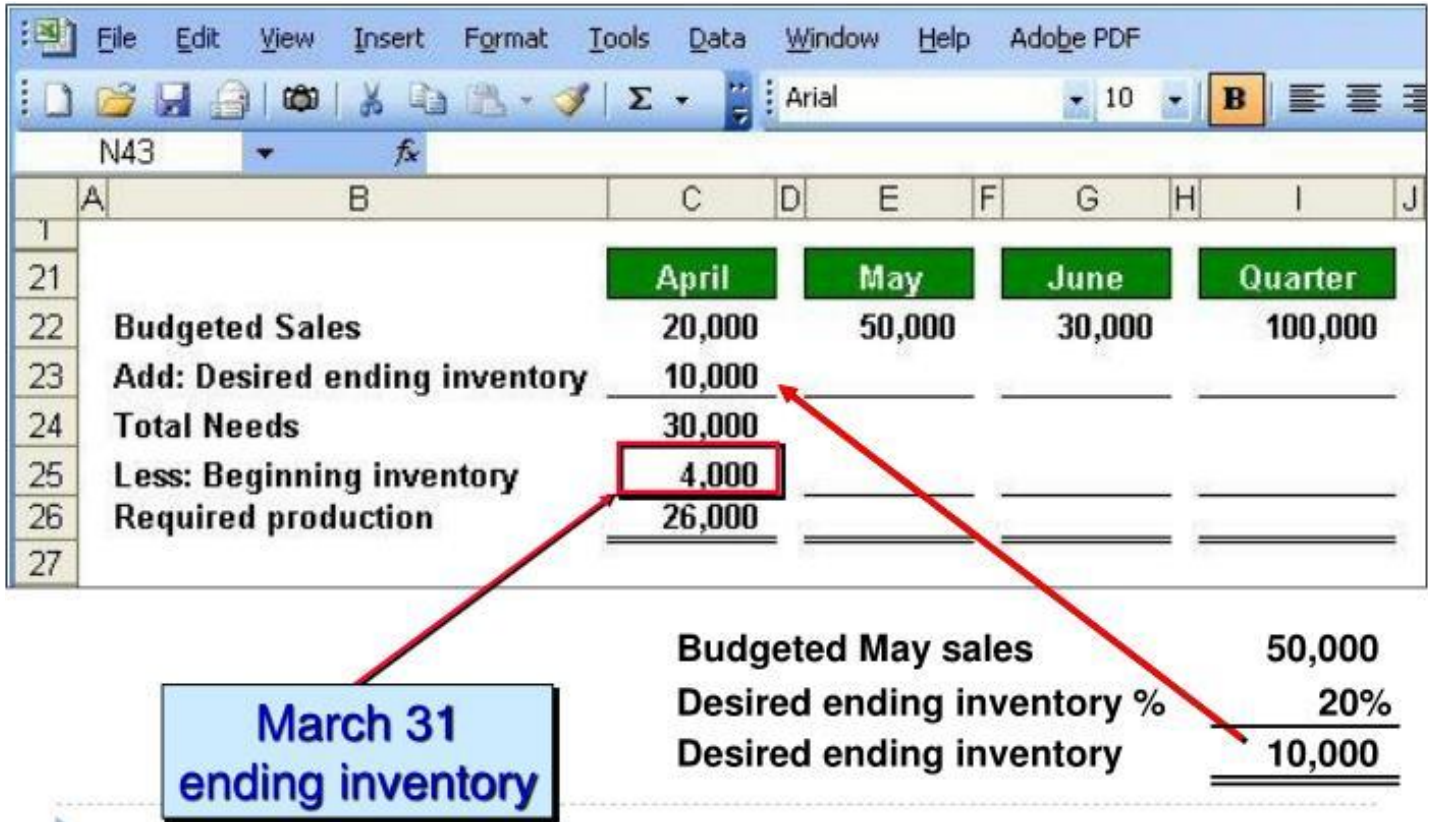
- The management at Royal Company wants ending inventory to be equal to 20% of the following month's budgeted sales in units.
- On March 31st, 4,000 units were on hand.

The Production Budget

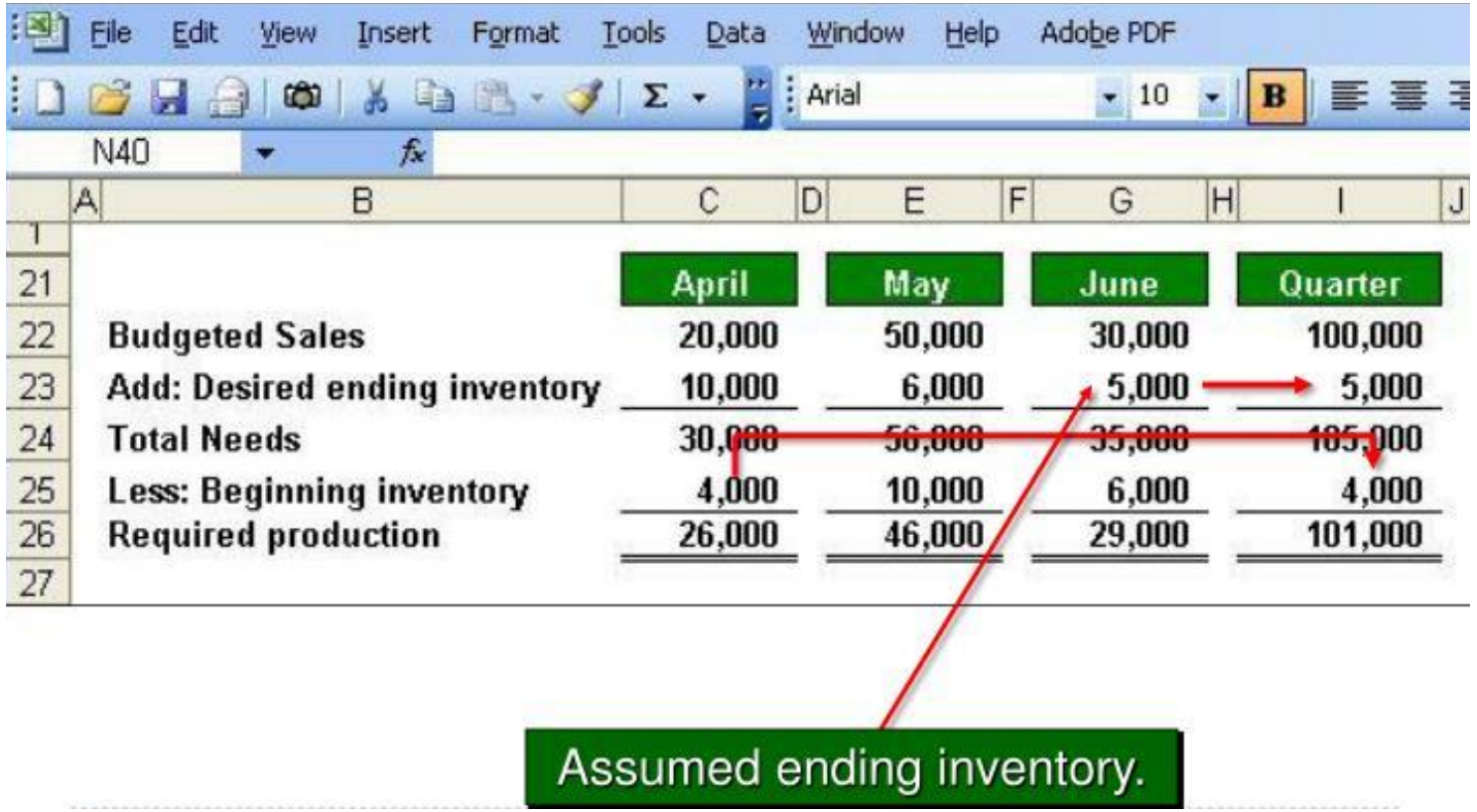


	A	B	C	D	E	F	G	H	I	J
20										
21			April		May		June		Quarter	
22		Budgeted Sales	20,000		50,000		30,000		100,000	
23		Add: Desired ending inventory								
24		Total Needs								
25		Less: Beginning inventory								
26		Required production								
27										

The Production Budget



The Production Budget



DIRECT MATERIALS BUDGET

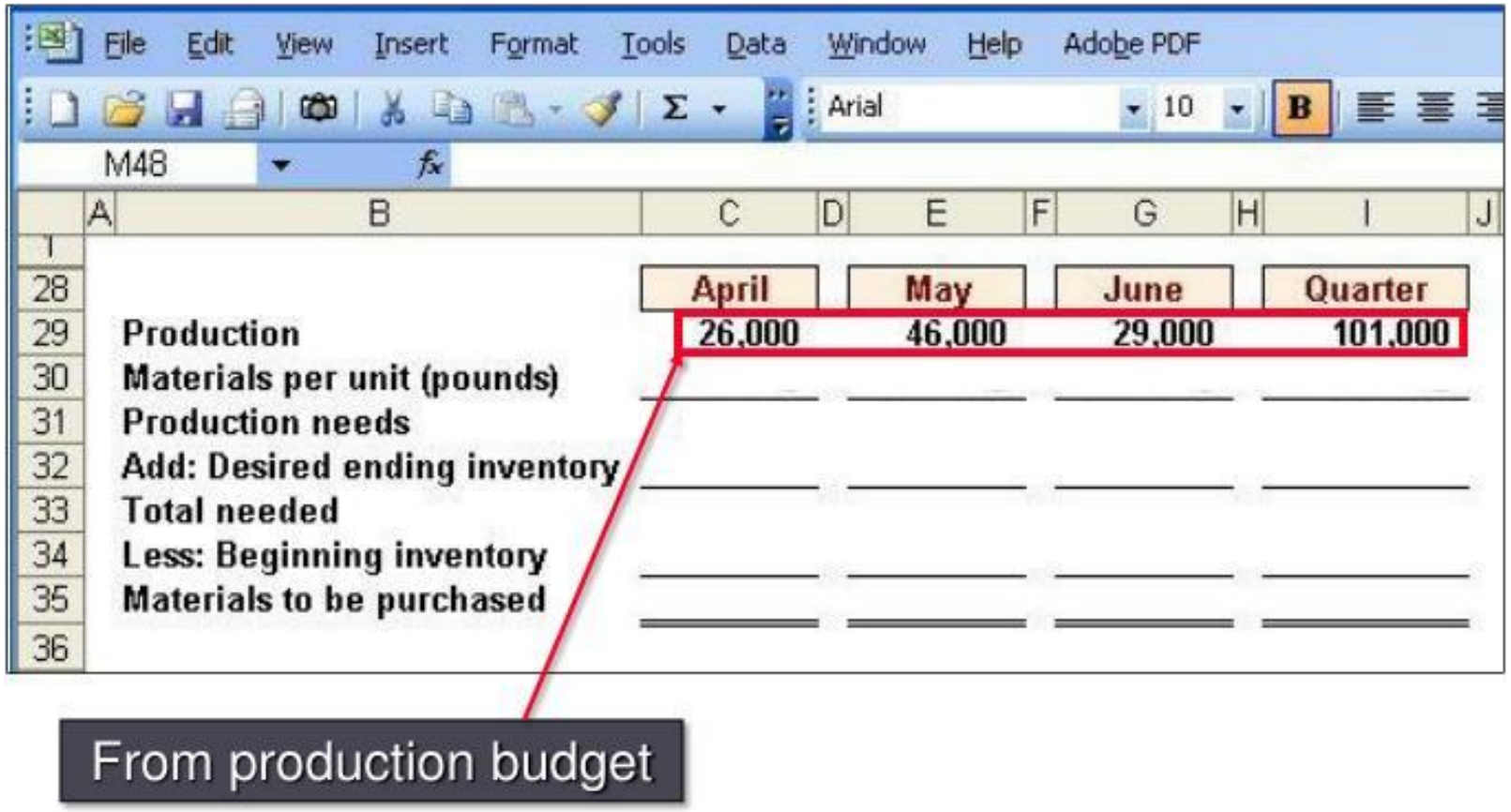
DIRECT MATERIALS BUDGET

- After the production budget is completed, the budgets for direct materials, direct labor, and overhead can be prepared.
- The direct materials budget tells the amount and cost of raw materials to be purchased in each time period.

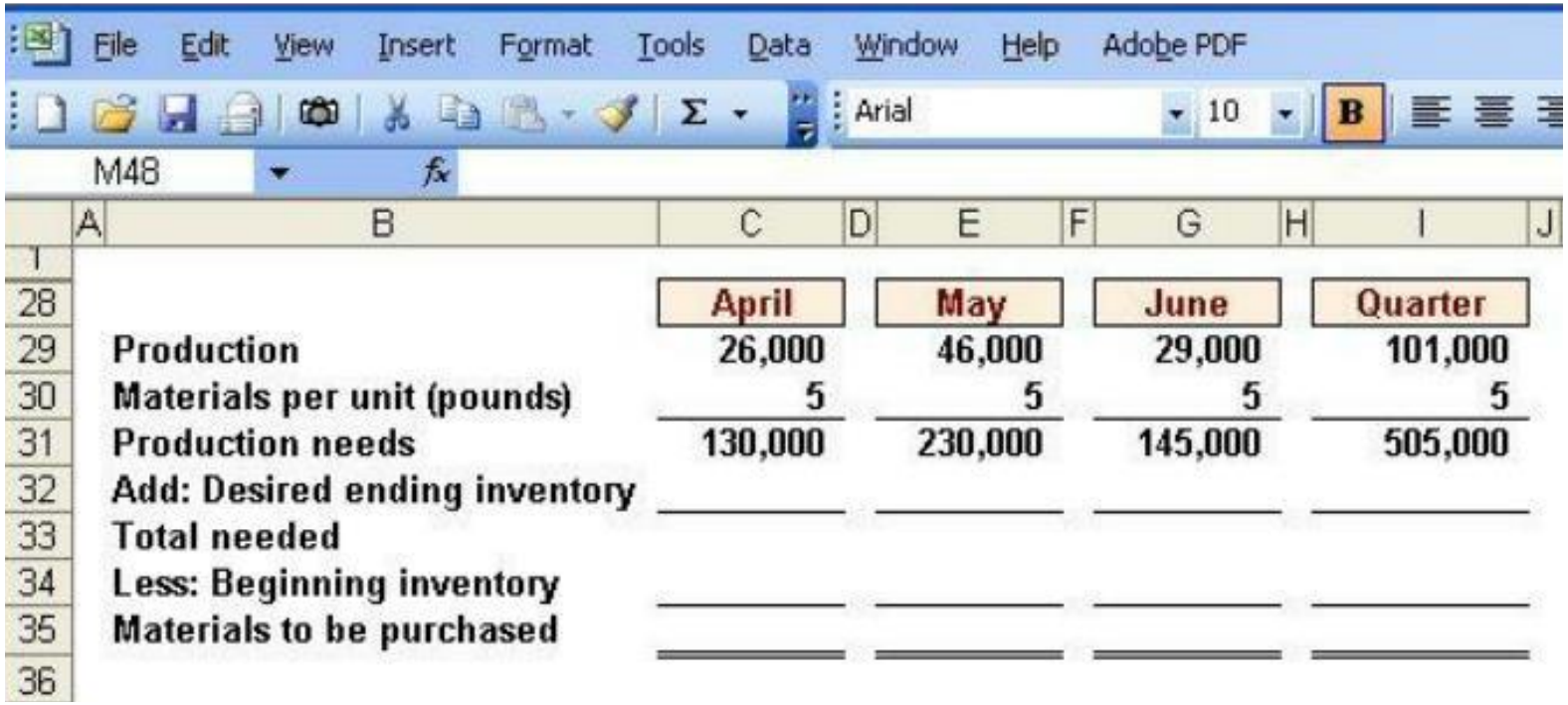
The Direct Materials Budget

- At Royal Company, five pounds of material are required per unit of product.
- Management wants materials on hand at the end of each month equal to 10% of the following month's production.
- On March 31, 13,000 pounds of material are on hand. Material cost is $0.40per pound. Let's prepare the direct materials budget.

The Direct Materials Budget

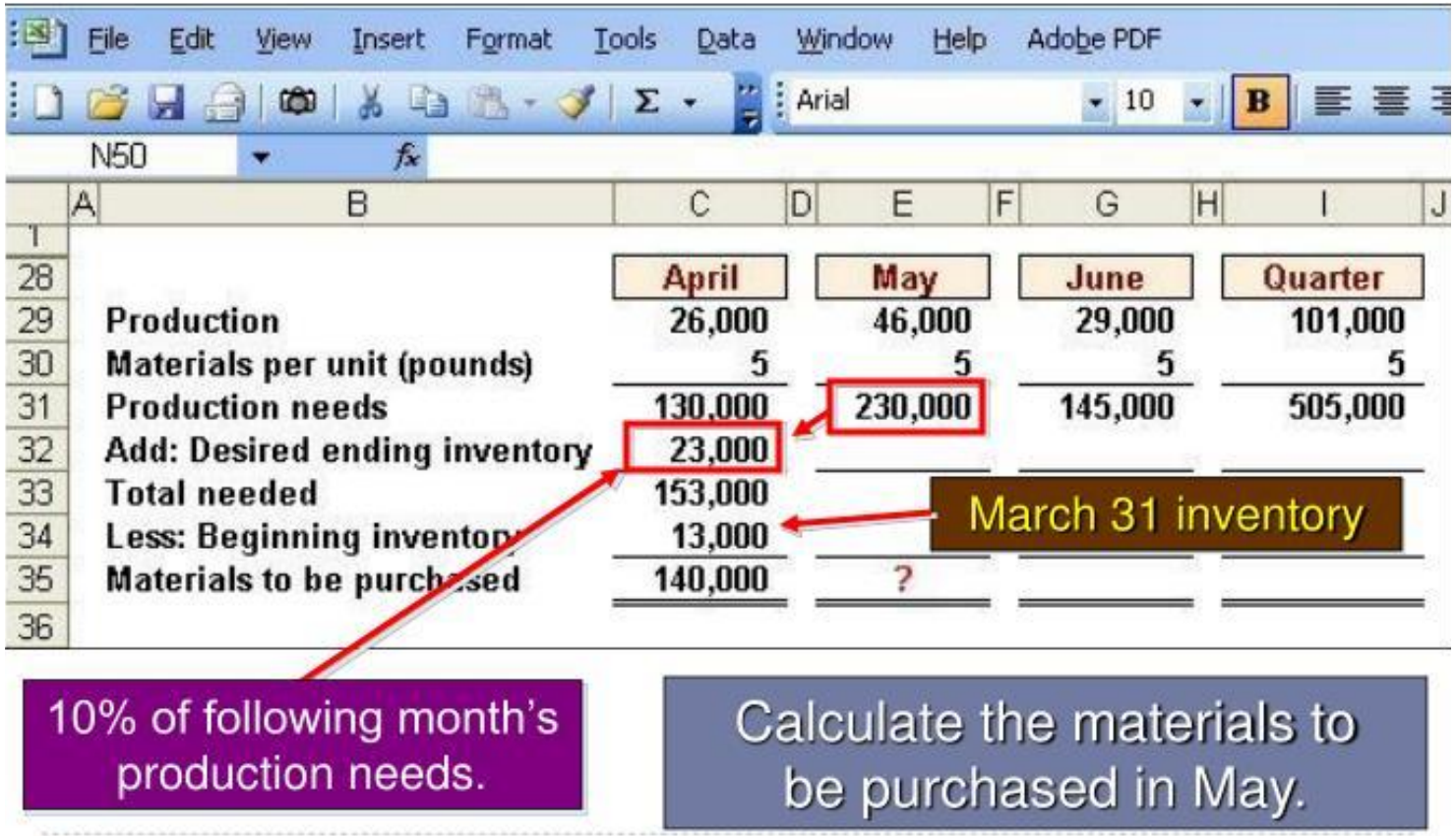


The Direct Materials Budget

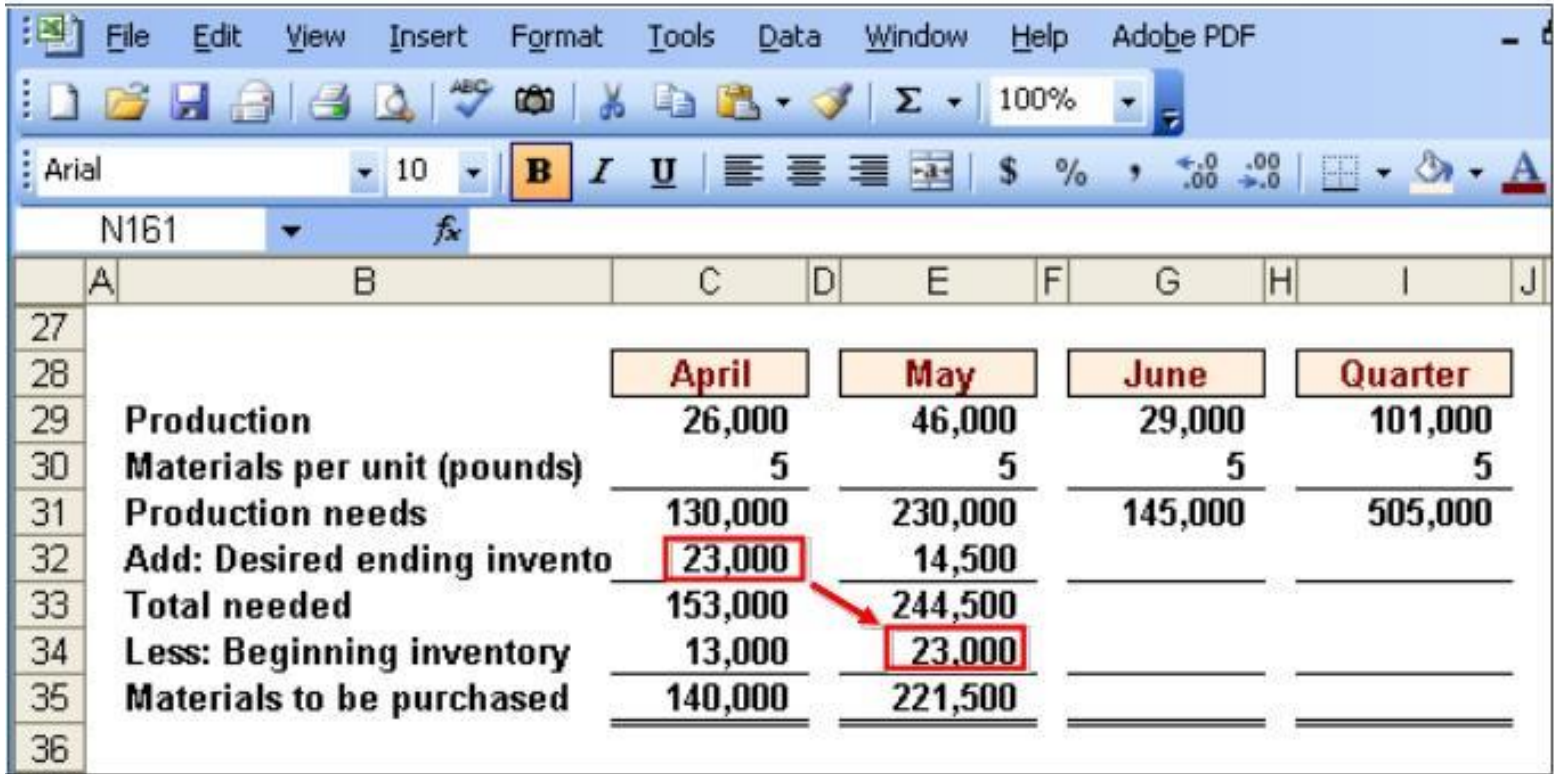


	A	B	C	D	E	F	G	H	I	J
28			April		May		June		Quarter	
29		Production	26,000		46,000		29,000		101,000	
30		Materials per unit (pounds)	5		5		5		5	
31		Production needs	130,000		230,000		145,000		505,000	
32		Add: Desired ending inventory								
33		Total needed								
34		Less: Beginning inventory								
35		Materials to be purchased								
36										

The Direct Materials Budget



The Direct Materials Budget



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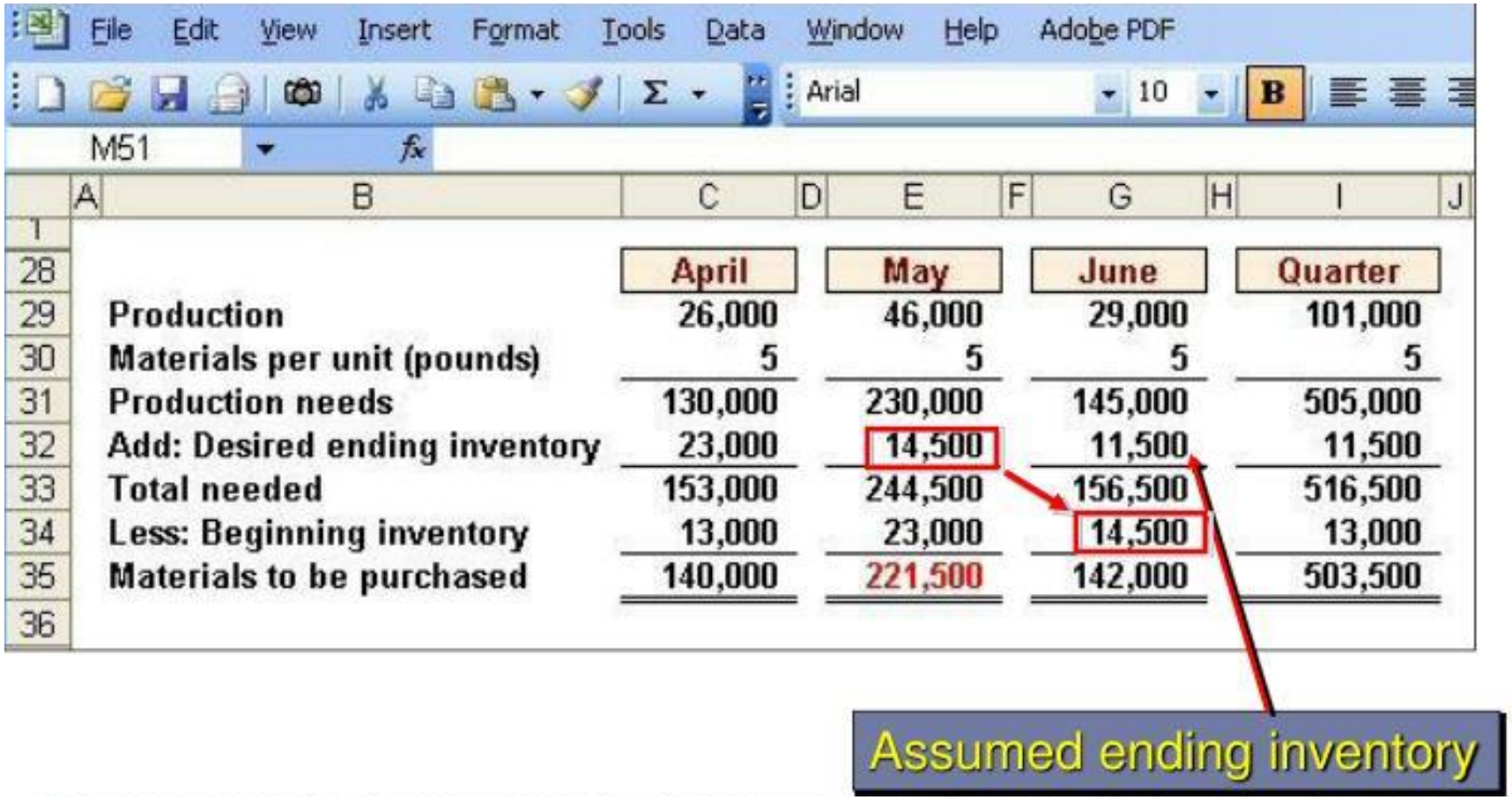
	A	B	C	D	E	F	G	H	I	J
27										
28			April		May		June		Quarter	
29		Production	26,000		46,000		29,000		101,000	
30		Materials per unit (pounds)	5		5		5		5	
31		Production needs	130,000		230,000		145,000		505,000	
32		Add: Desired ending invento	23,000		14,500					
33		Total needed	153,000		244,500					
34		Less: Beginning inventory	13,000		23,000					
35		Materials to be purchased	140,000		221,500					
36										

The Direct Materials Budget



	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Materials per unit (pounds)	5	5	5	5
Production needs	130,000	230,000	145,000	505,000
Add: Desired ending inventory	23,000	14,500	11,500	11,500
Total needed	153,000	244,500	156,500	516,500
Less: Beginning inventory	13,000	23,000	14,500	13,000
Materials to be purchased	140,000	221,500	142,000	503,500

DIRECT LABOR BUDGET

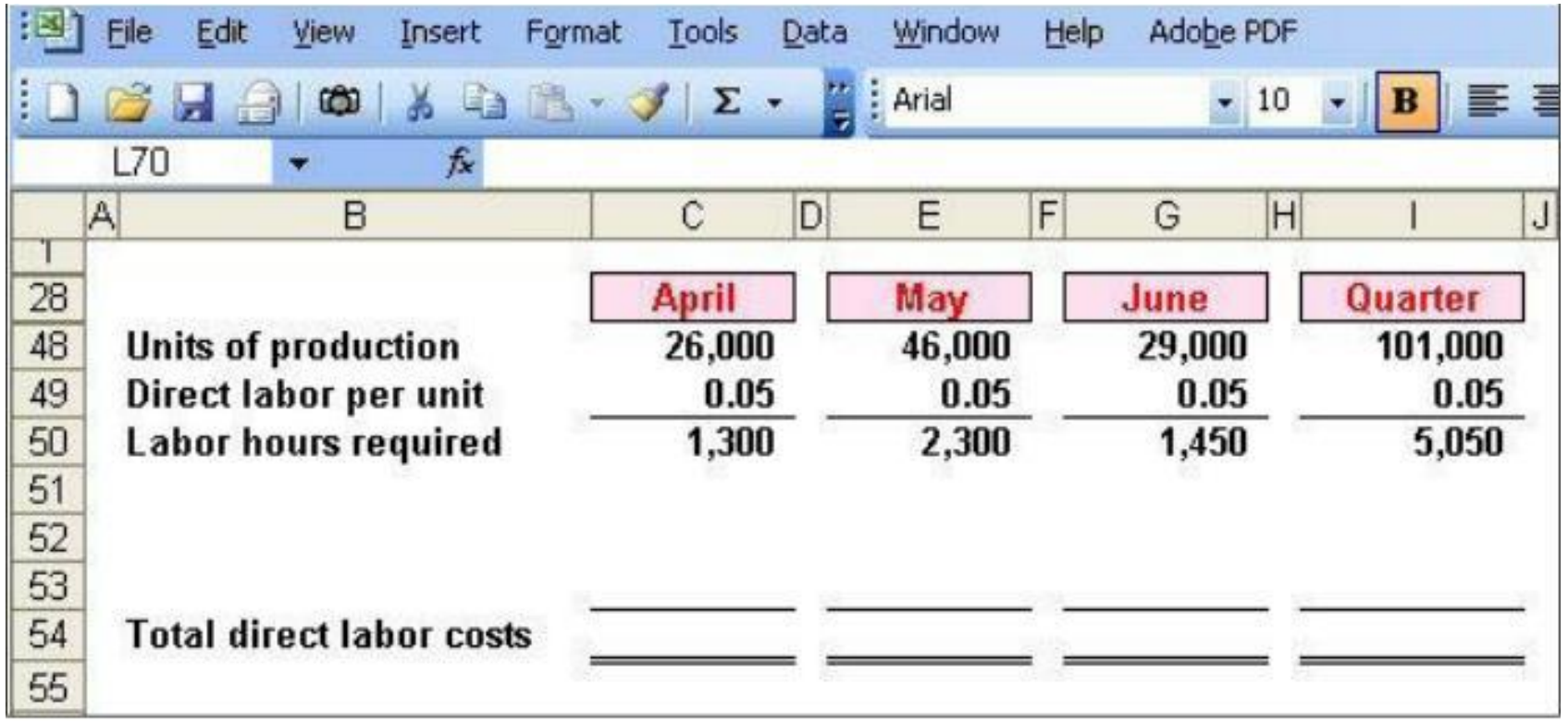
DIRECT LABOR BUDGET

- The direct labor budget shows the total direct labor hours and the direct labor cost needed for the number of units in the production budget.
- As with direct materials, the budgeted hours of direct labor are determined by the relationship between labor and output.

Direct Labor Budget

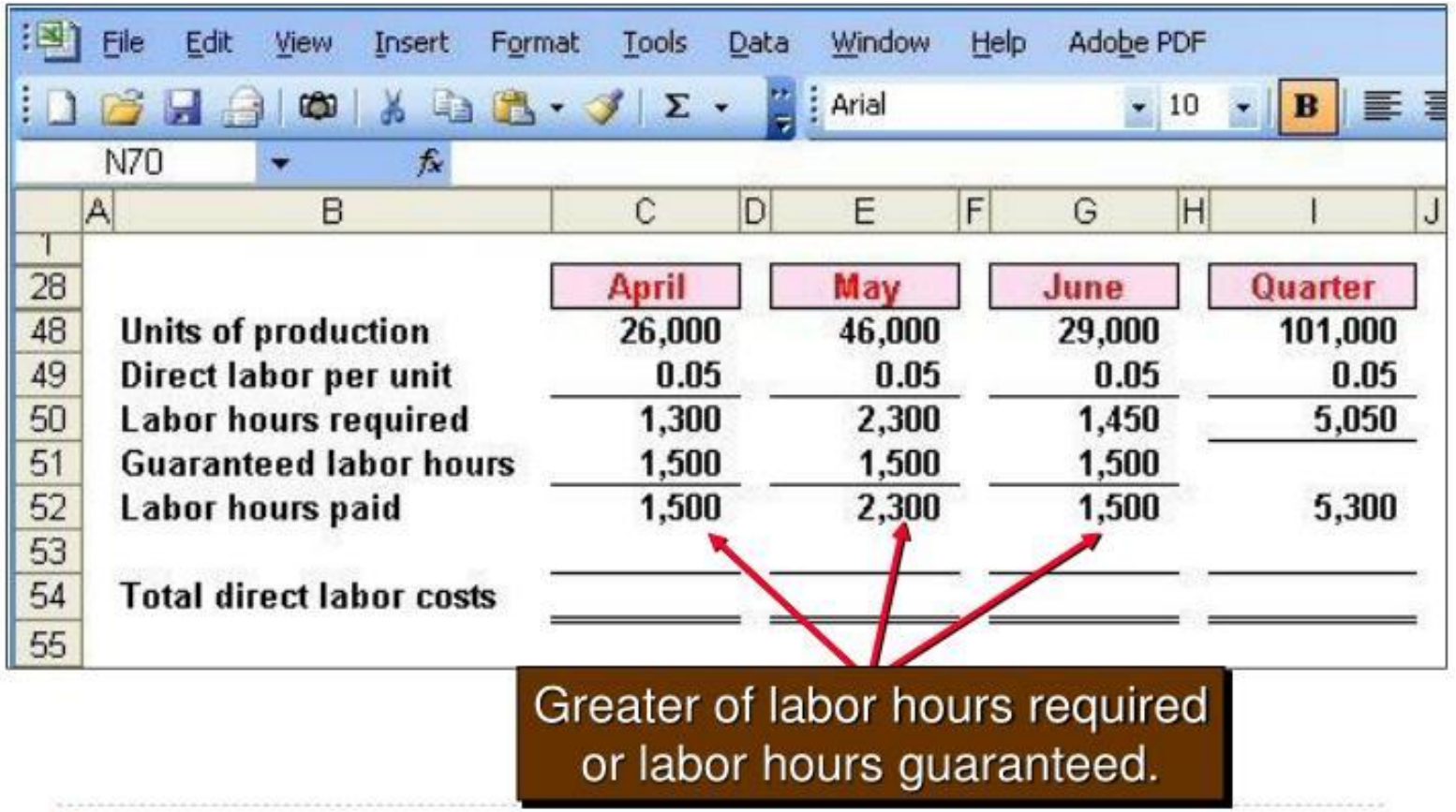
- At Royal, each unit of product requires 0.05 hours (3 minutes) of direct labor.
- The Company has a “no layoff” policy so all employees will be paid for 40 hours of work each week.
- For purposes of our illustration assume that Royal has a “no layoff” policy, workers are pay at the rate of $10 per hour regardless of the hours worked.
- For the next three months, the direct labor workforce will be paid for a minimum of 1,500 hours per month.

Direct Labor Budget



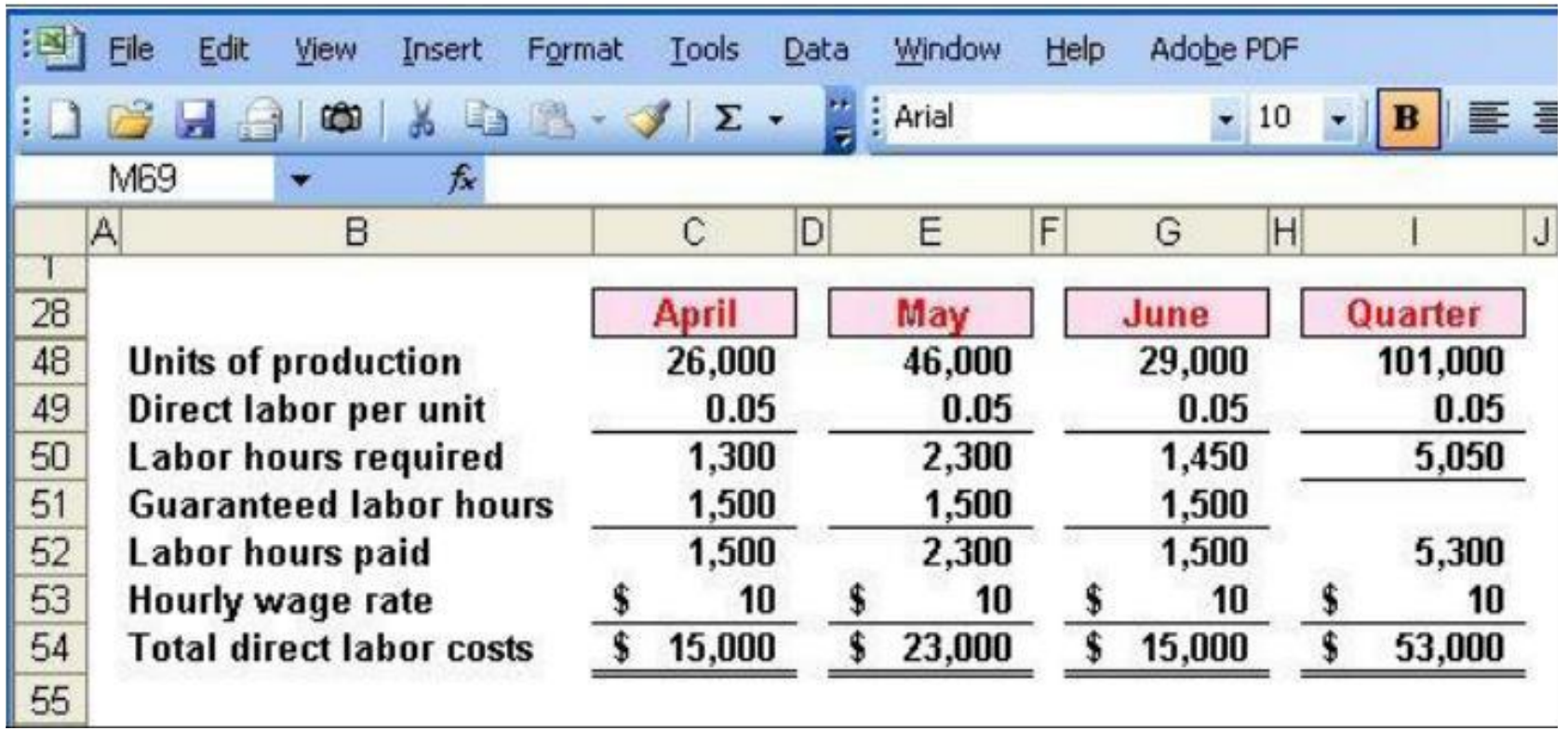
		April	May	June	Quarter
48	Units of production	26,000	46,000	29,000	101,000
49	Direct labor per unit	0.05	0.05	0.05	0.05
50	Labor hours required	1,300	2,300	1,450	5,050
54	Total direct labor costs				

Direct Labor Budget



	April	May	June	Quarter
Units of production	26,000	46,000	29,000	101,000
Direct labor per unit	0.05	0.05	0.05	0.05
Labor hours required	1,300	2,300	1,450	5,050
Guaranteed labor hours	1,500	1,500	1,500	
Labor hours paid	1,500	2,300	1,500	5,300
Total direct labor costs				

Direct Labor Budget



		April	May	June	Quarter
48	Units of production	26,000	46,000	29,000	101,000
49	Direct labor per unit	0.05	0.05	0.05	0.05
50	Labor hours required	1,300	2,300	1,450	5,050
51	Guaranteed labor hours	1,500	1,500	1,500	
52	Labor hours paid	1,500	2,300	1,500	5,300
53	Hourly wage rate	$ 10	$ 10	$ 10	$ 10
54	Total direct labor costs	$ 15,000	$ 23,000	$ 15,000	$ 53,000

MANUFACTURING OVERHEAD BUDGET

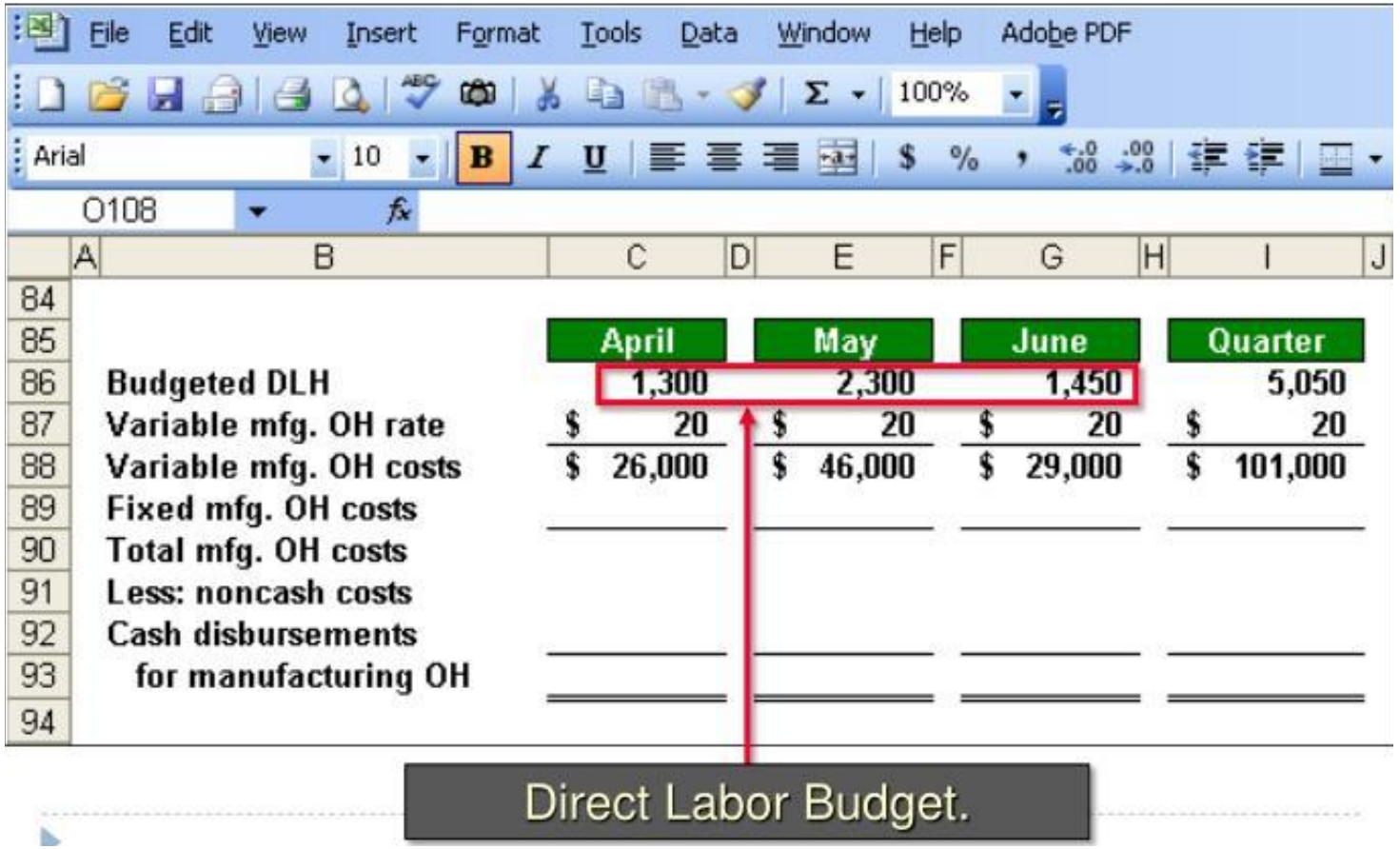
MANUFACTURING OVERHEAD BUDGET

- The overhead budget shows the expected cost of all production costs other than direct materials and direct labor.
- Many companies use direct labor hours as the driver for overhead.
- Then costs that vary with direct labor hours are pooled and called variable overhead.
- The remaining overhead items are pooled into fixed overhead.

Manufacturing Overhead Budget

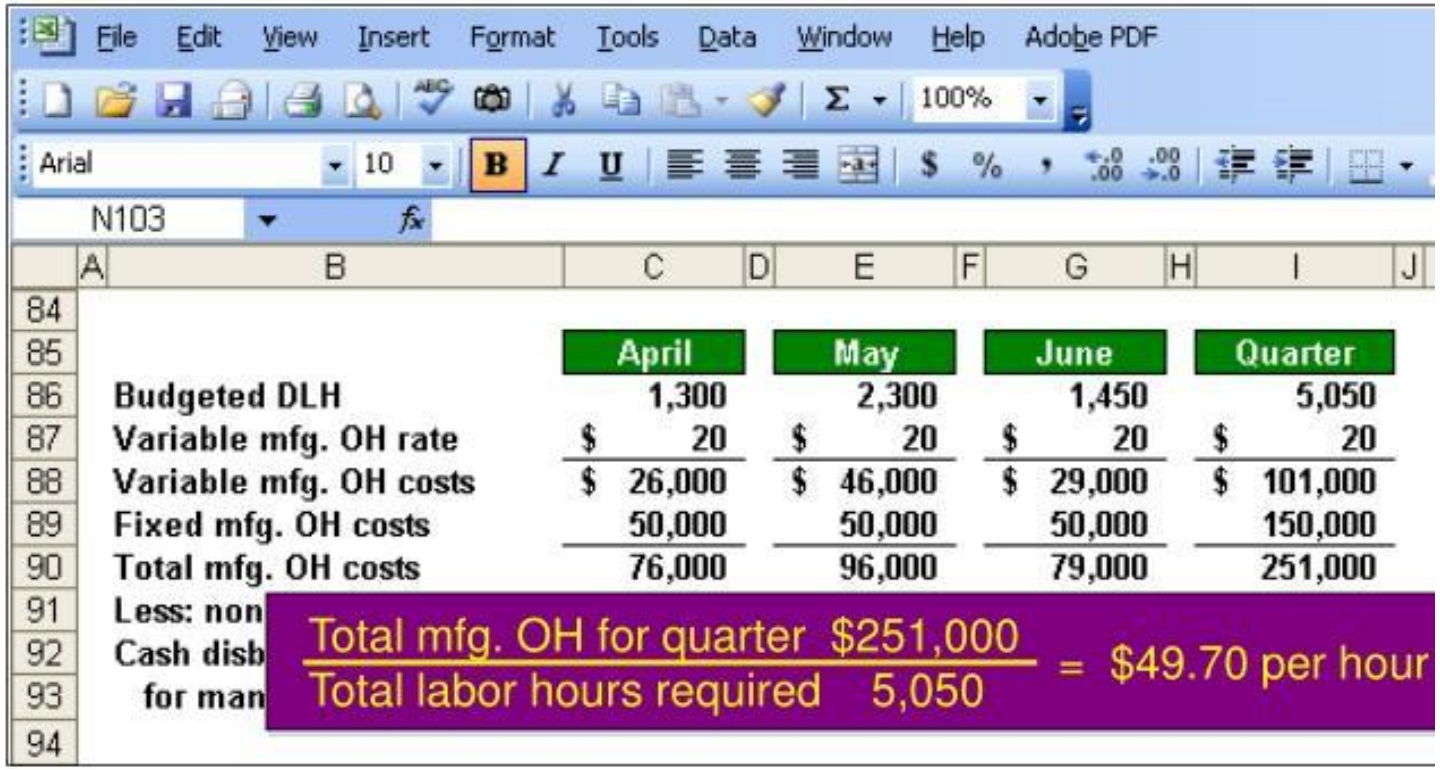
- At Royal, manufacturing overhead is applied to units of product on the basis of direct labor hours.
- The variable manufacturing overhead rate is $20 per direct labor hour.
- Fixed manufacturing overhead is $50,000 per month, which includes $20,000 of noncash costs (primarily depreciation of plant assets).

Manufacturing Overhead Budget

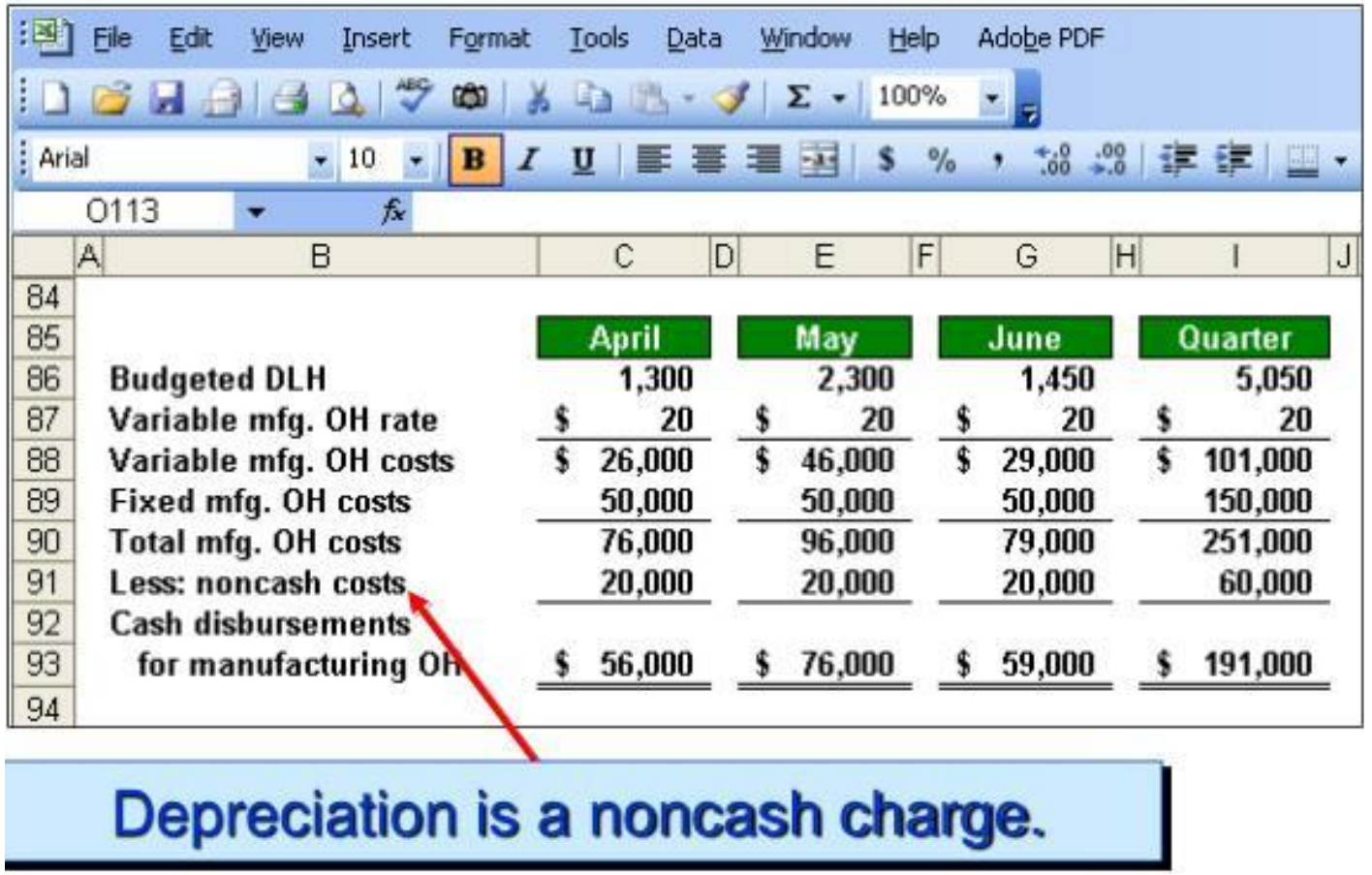


	April	May	June	Quarter
Budgeted DLH	1,300	2,300	1,450	5,050
Variable mfg. OH rate	$ 20	$ 20	$ 20	$ 20
Variable mfg. OH costs	$ 26,000	$ 46,000	$ 29,000	$ 101,000
Fixed mfg. OH costs				
Total mfg. OH costs				
Less: noncash costs				
Cash disbursements for manufacturing OH				

Manufacturing Overhead Budget



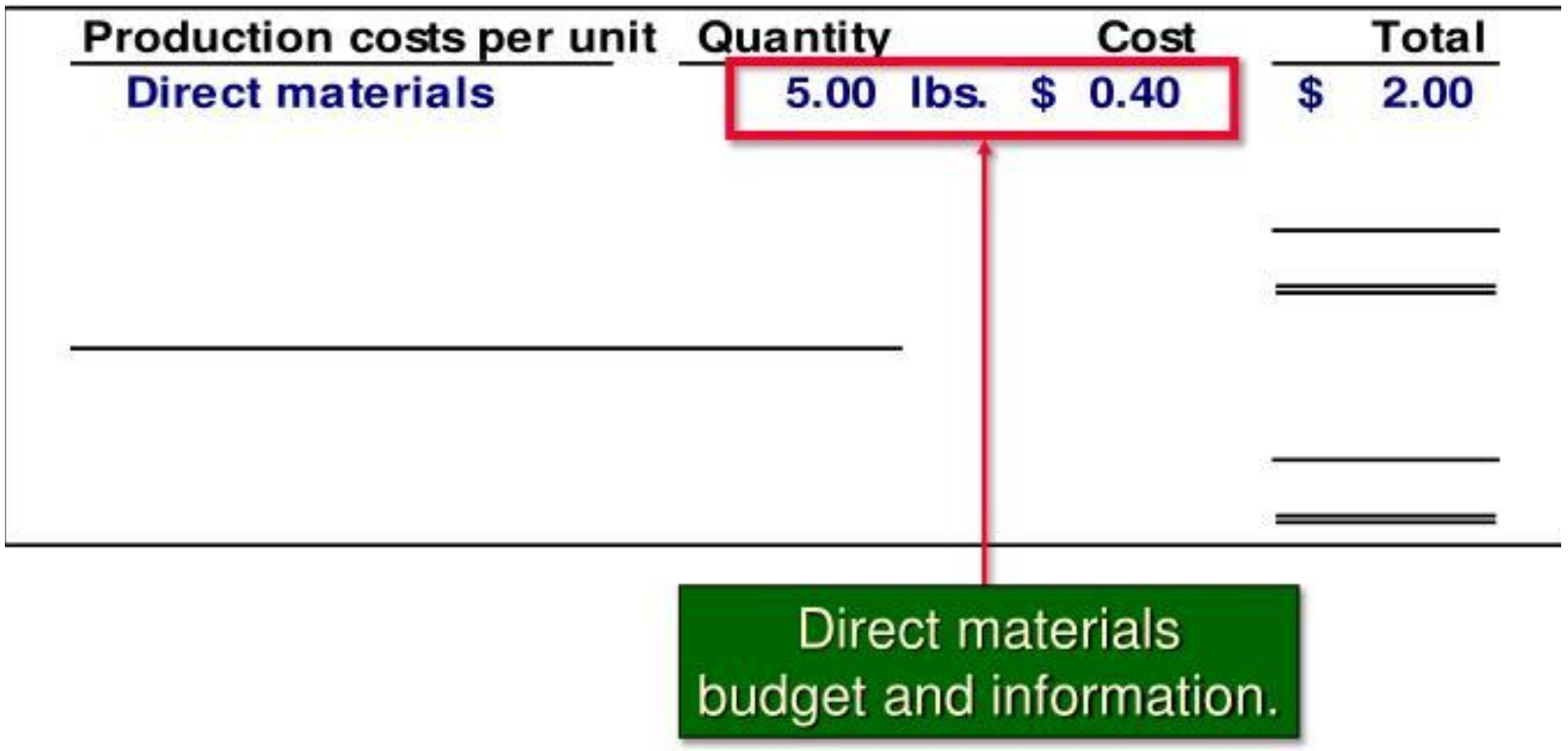
Manufacturing Overhead Budget



	April	May	June	Quarter
Budgeted DLH	1,300	2,300	1,450	5,050
Variable mfg. OH rate	$ 20	$ 20	$ 20	$ 20
Variable mfg. OH costs	$ 26,000	$ 46,000	$ 29,000	$ 101,000
Fixed mfg. OH costs	50,000	50,000	50,000	150,000
Total mfg. OH costs	76,000	96,000	79,000	251,000
Less: noncash costs	20,000	20,000	20,000	60,000
Cash disbursements for manufacturing OH	$ 56,000	$ 76,000	$ 59,000	$ 191,000

Depreciation is a noncash charge.

Ending Finished Goods Inventory Budget



Ending Finished Goods Inventory Budget

Ending Finished Goods Inventory Budget

Production costs per unit	Quantity		Cost	Total
Direct materials	5.00	lbs.	$ 0.40	$ 2.00
Direct labor	0.05	hrs.	$10.00	0.50
Manufacturing overheac	0.05	hrs.	$49.70	2.49
				$ 4.99
Budgeted finished goods inventory				
Ending inventory in units				
Unit product cost				$ 4.99
Ending finished goods inventory				?

$$\frac{\text{Total mfg. OH for quarter } \$251{,}000}{\text{Total labor hours required } 5{,}050} = \$49.70 \text{ per hour } *$$

Ending Finished Goods Inventory Budget

Production costs per unit	Quantity		Cost	Total
Direct materials	5.00	lbs.	$ 0.40	$ 2.00
Direct labor	0.05	hrs.	$ 10.00	0.50
Manufacturing overheac	0.05	hrs.	$ 49.70	2.49
				$ 4.99
Budgeted finished goods inventory				
Ending inventory in units				5,000
Unit product cost				$ 4.99
Ending finished goods inventory				$ 24,950

Production Budget.

SELLING AND ADMINISTRATIVE BUDGET

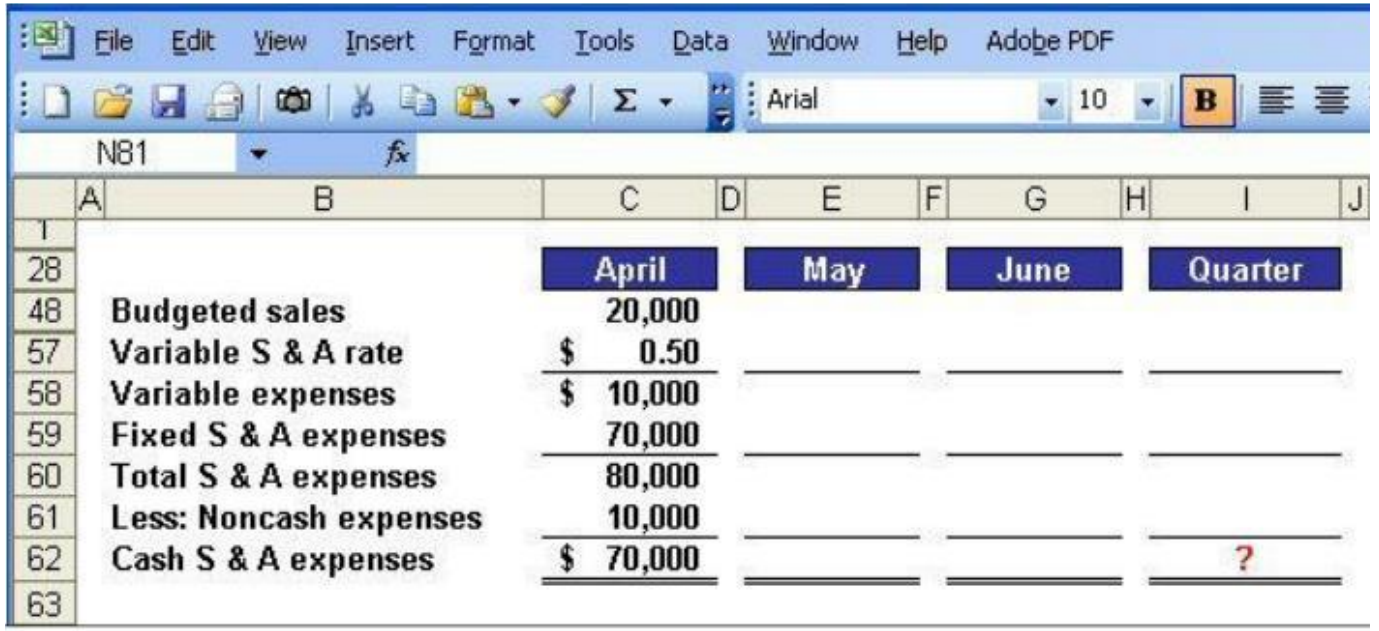
SELLING AND ADMINISTRATIVE BUDGET

- The selling and administrative expenses budget outlines planned expenditures for nonmanufacturing activities.
- As with overhead, selling and administrative expenses can be broken down into fixed and variable components.
- Such items as sales commissions, freight, and supplies vary with sales activity.

Selling and Administrative Budget

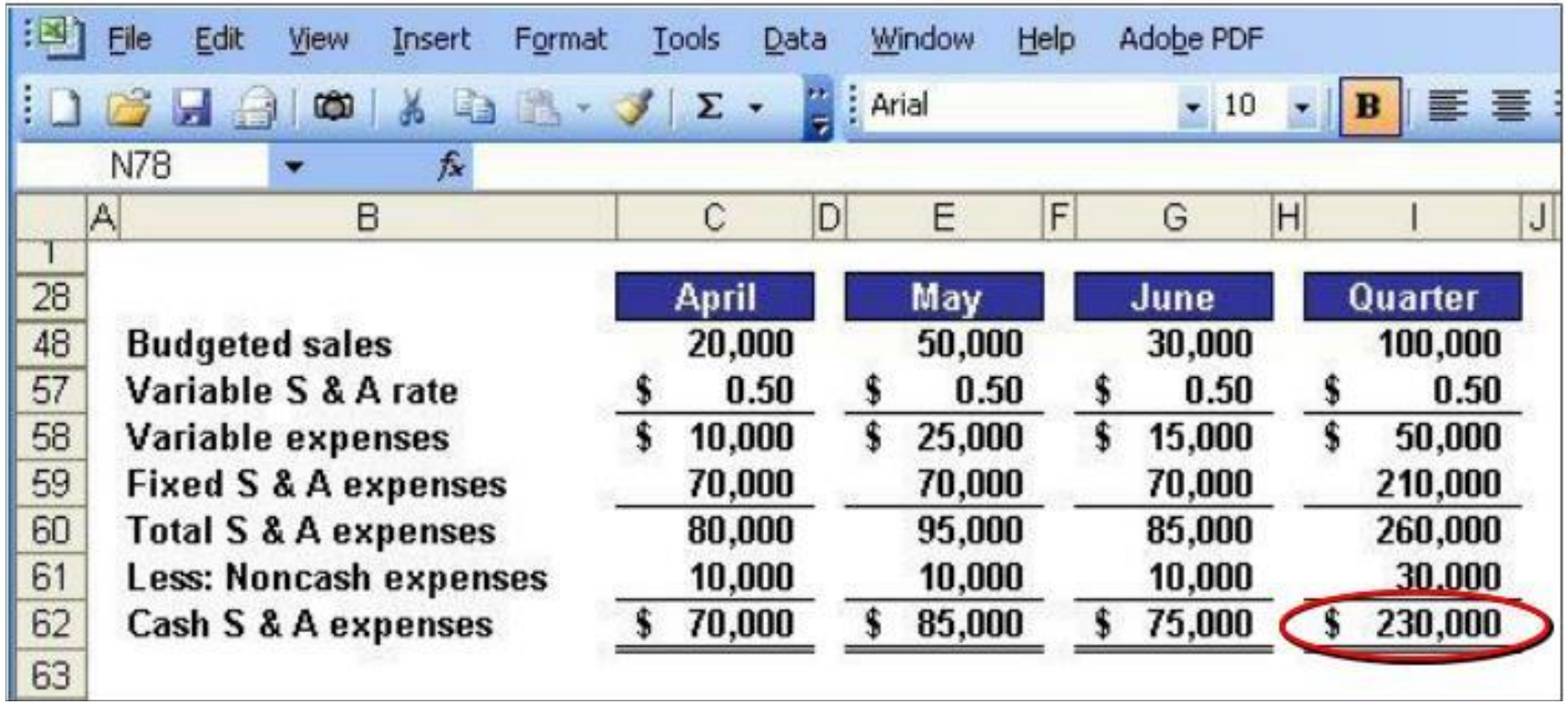
- At Royal, the selling and administrative expense budget is divided into variable and fixed components.
- The variable selling and administrative expenses are $0.50 per unit sold.
- Fixed selling and administrative expenses are $70,000 per month.
- The fixed selling and administrative expenses include $10,000 in costs – primarily depreciation – that are not cash outflows of the current month.

Selling and Administrative Budget



Calculate the selling and administrative cash expenses for the quarter.

Selling and Administrative Budget



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	A	B	C	D	E	F	G	H	I	J
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28			April		May		June		Quarter	
48		Budgeted sales	20,000		50,000		30,000		100,000	
57		Variable S & A rate	$ 0.50		$ 0.50		$ 0.50		$ 0.50	
58		Variable expenses	$ 10,000		$ 25,000		$ 15,000		$ 50,000	
59		Fixed S & A expenses	70,000		70,000		70,000		210,000	
60		Total S & A expenses	80,000		95,000		85,000		260,000	
61		Less: Noncash expenses	10,000		10,000		10,000		30,000	
62		Cash S & A expenses	$ 70,000		$ 85,000		$ 75,000		$ 230,000	
63										

CASH BUDGET


feb
mar
apr
may
jun
jul
aug
sep
oct
nov
dec
125,058
125,487
124,000
154,568
56,845
110,000
150,000
95,054
97,511
99,011
99,216
101,090
101,684
124,500
125,000
154,000
95,000
154,200
110,000
89,000
50,000

CASH BUDGET

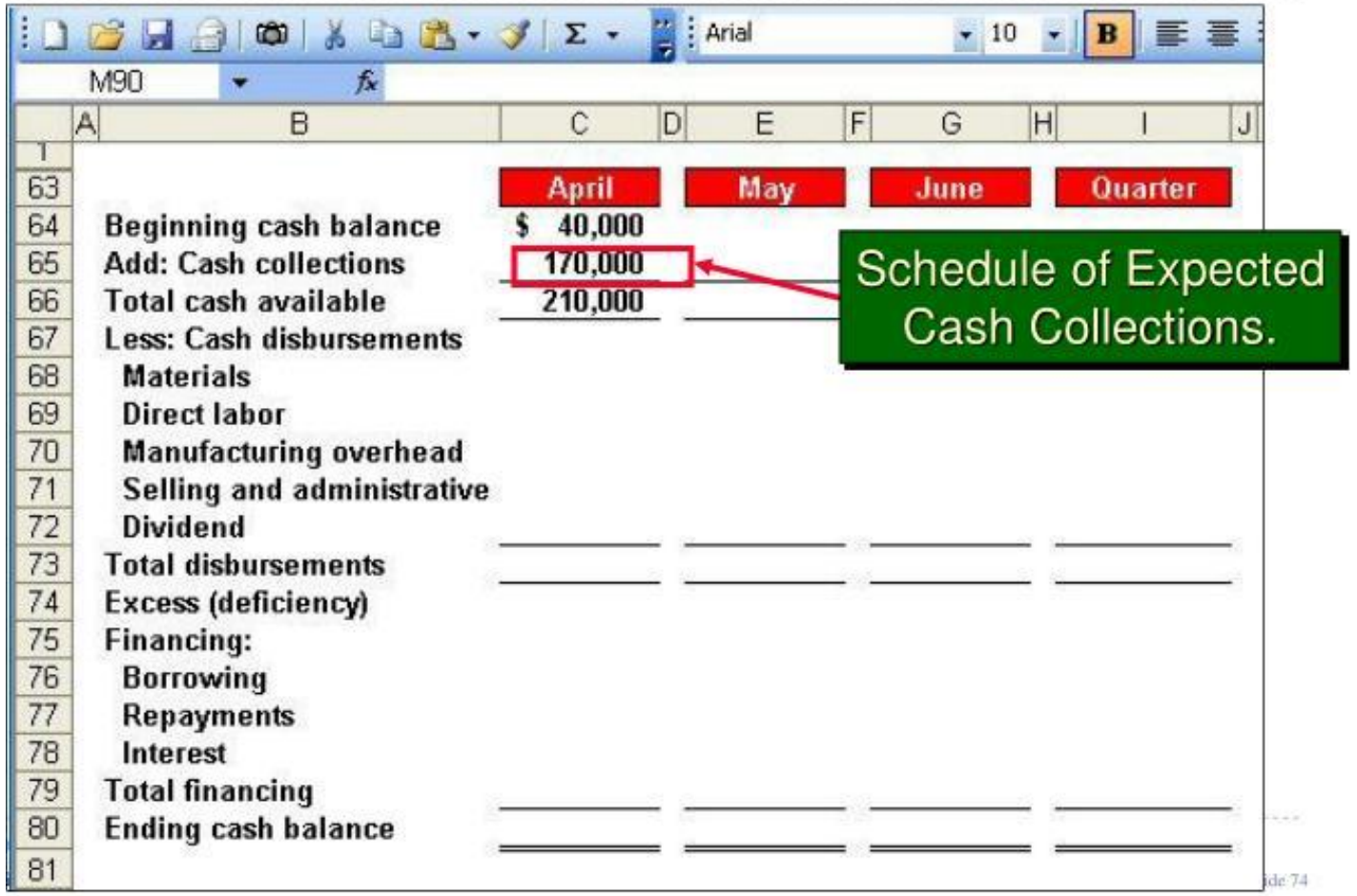
- Cash available consists of the beginning cash balance and the expected cash receipts. Expected cash receipts include all sources of cash for the period being considered.
- The principal source of cash is from sales.
- Since a large proportion of sales is usually on account, a major task of an organization is to determine the pattern of collection for its accounts receivable.
- If a company has been in business for a while, it can use past experience to determine what percentage of credit sales are paid in the month of and months following sales.
- This is used to create a schedule of cash

Cash Budget

Assume the following information for Royal:

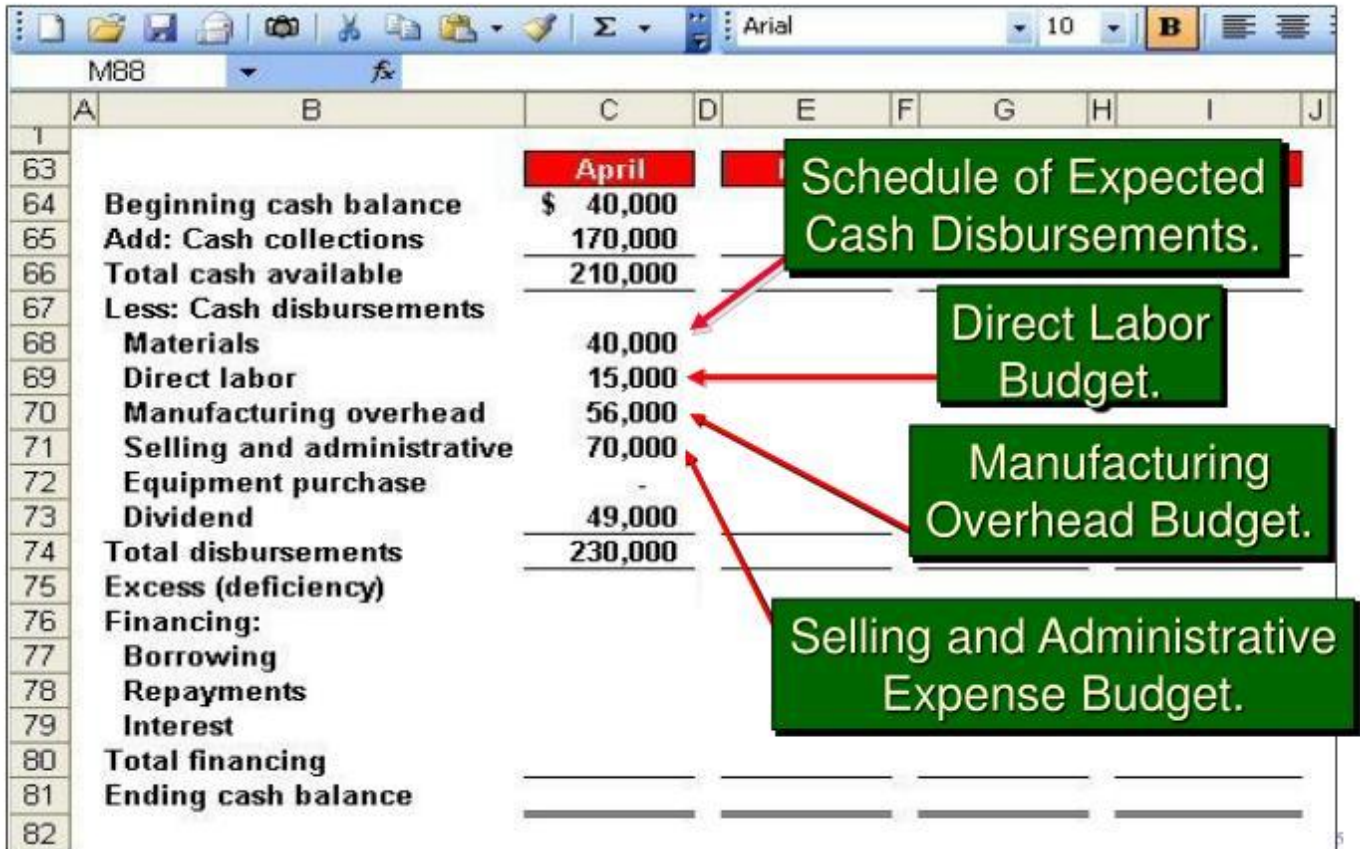
- Maintains a 16% open line of credit for $75,000
- Maintains a minimum cash balance of $30,000
- Borrows on the first day of the month and repays loans on the last day of the month
- Pays a cash dividend of $49,000 in April
- Purchases $143,700 of equipment in May and $48,300 in June (both purchases paid in cash)
- Has an April 1 cash balance of $40,000

Cash Budget

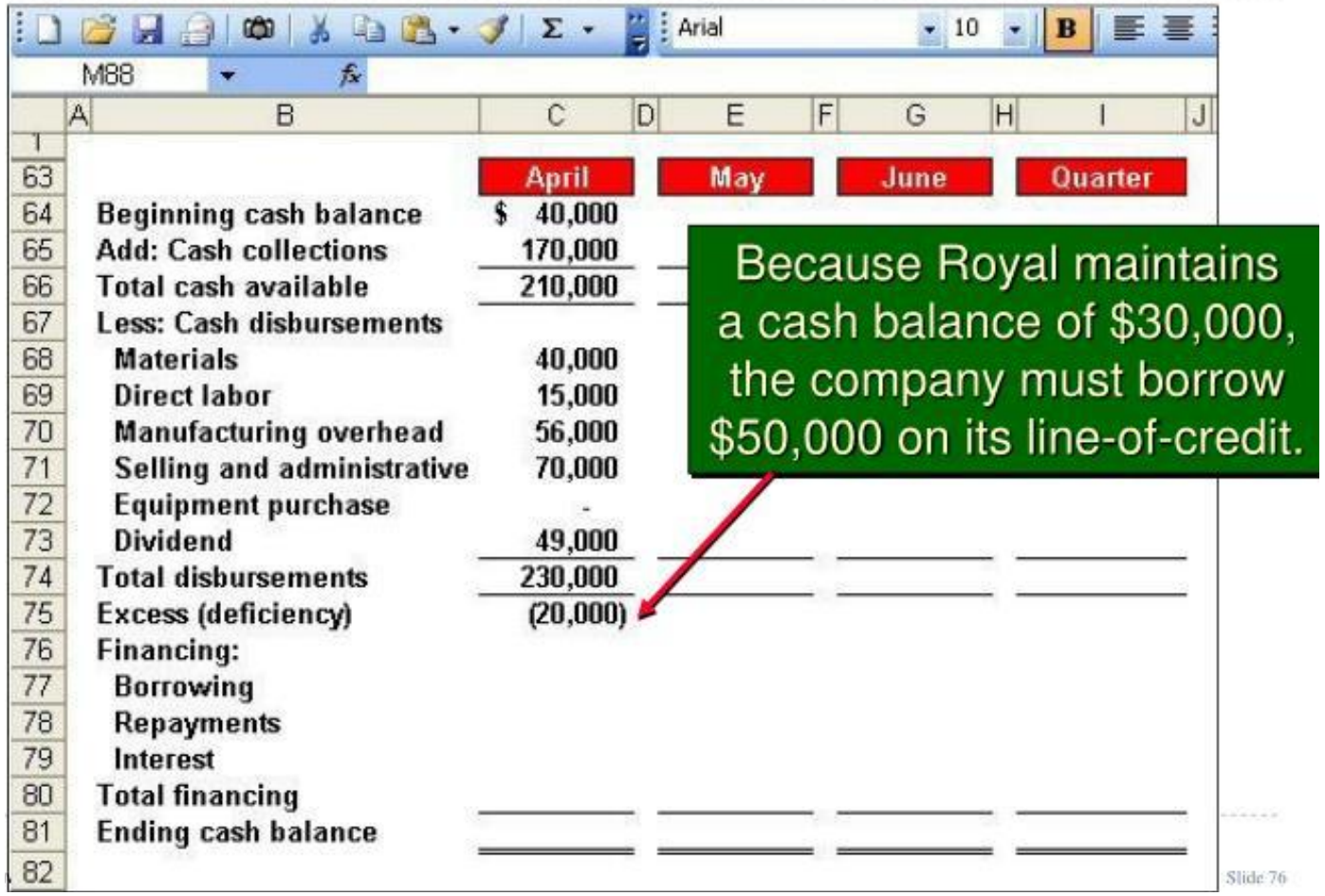


	A	B	C	D	E	F	G	H	I	J
1										
63			April		May		June		Quarter	
64		Beginning cash balance	$ 40,000							
65		Add: Cash collections	170,000							
66		Total cash available	210,000							
67		Less: Cash disbursements								
68		Materials								
69		Direct labor								
70		Manufacturing overhead								
71		Selling and administrative								
72		Dividend								
73		Total disbursements								
74		Excess (deficiency)								
75		Financing:								
76		Borrowing								
77		Repayments								
78		Interest								
79		Total financing								
80		Ending cash balance								
81										

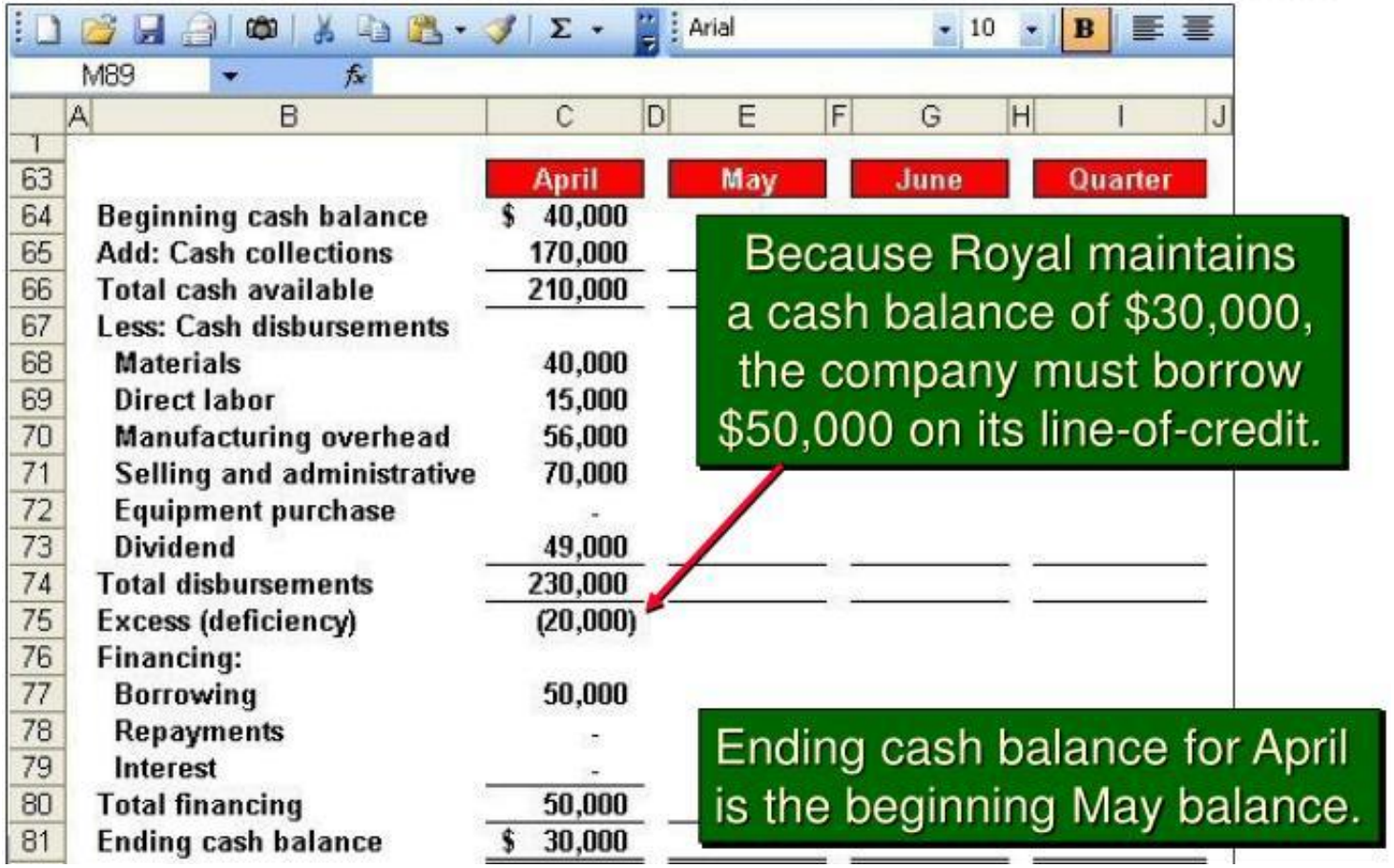
Cash Budget


Arial
10
M88
April
Beginning cash balance $ 40,000
Add: Cash collections 170,000
Total cash available 210,000
Less: Cash disbursements
Materials 40,000
Direct labor 15,000
Manufacturing overhead 56,000
Selling and administrative 70,000
Equipment purchase -
Dividend 49,000
Total disbursements 230,000
Excess (deficiency)
Financing:
Borrowing
Repayments
Interest
Total financing
Ending cash balance
Schedule of Expected Cash Disbursements.
Direct Labor Budget.
Manufacturing Overhead Budget.
Selling and Administrative Expense Budget.

Cash Budget


Arial
10
M88
A B C D E F G H I J
63 April May June Quarter
64 Beginning cash balance $ 40,000
65 Add: Cash collections 170,000
66 Total cash available 210,000
67 Less: Cash disbursements
68 Materials 40,000
69 Direct labor 15,000
70 Manufacturing overhead 56,000
71 Selling and administrative 70,000
72 Equipment purchase -
73 Dividend 49,000
74 Total disbursements 230,000
75 Excess (deficiency) (20,000)
76 Financing:
77 Borrowing
78 Repayments
79 Interest
80 Total financing
81 Ending cash balance
82
Because Royal maintains a cash balance of $30,000, the company must borrow $50,000 on its line-of-credit.
Slide 76

Cash Budget

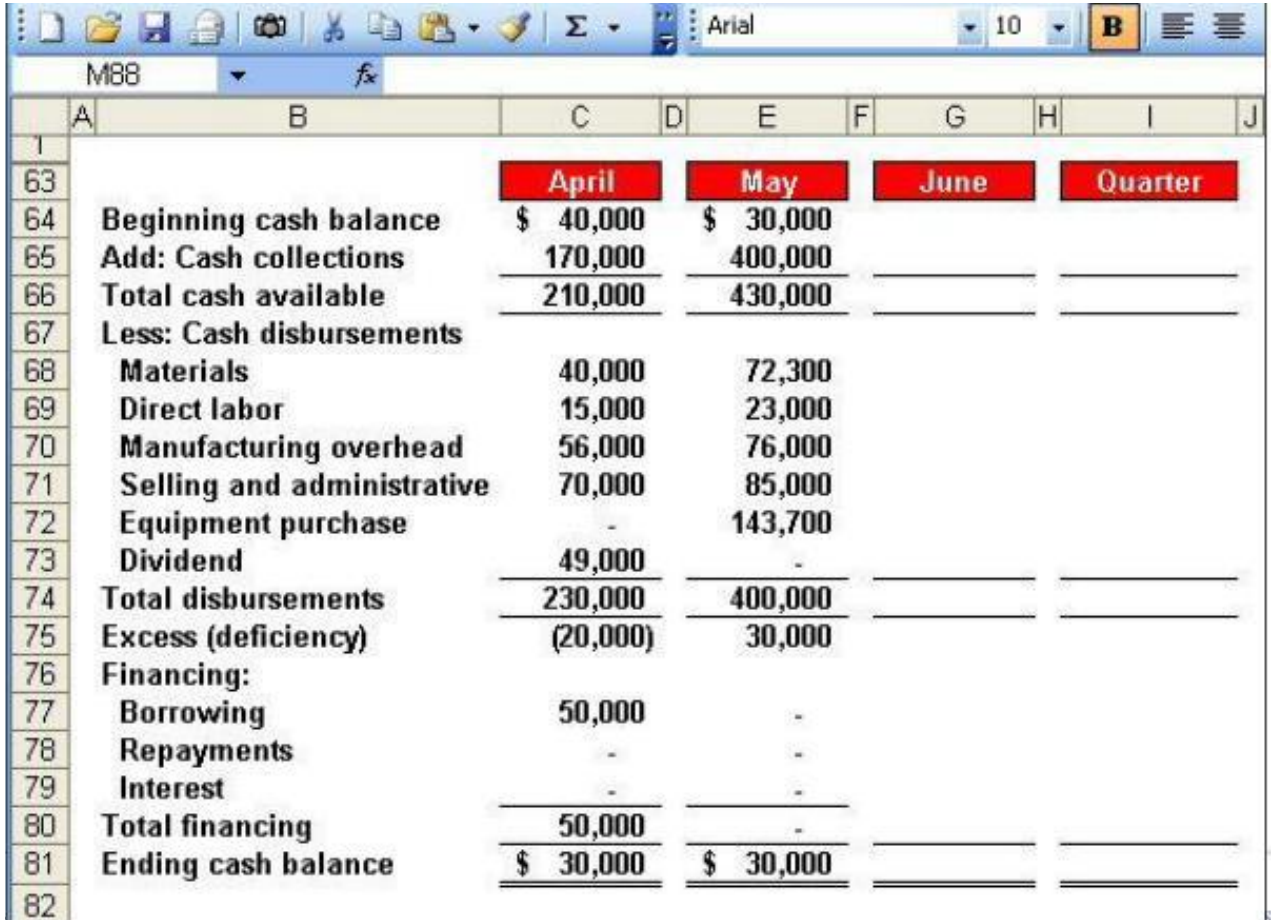


	A	B	C	D	E	F	G	H	I	J
63			April		May		June		Quarter	
64		Beginning cash balance	$ 40,000							
65		Add: Cash collections	170,000							
66		Total cash available	210,000							
67		Less: Cash disbursements								
68		Materials	40,000							
69		Direct labor	15,000							
70		Manufacturing overhead	56,000							
71		Selling and administrative	70,000							
72		Equipment purchase	-							
73		Dividend	49,000							
74		Total disbursements	230,000							
75		Excess (deficiency)	(20,000)							
76		Financing:								
77		Borrowing	50,000							
78		Repayments	-							
79		Interest	-							
80		Total financing	50,000							
81		Ending cash balance	$ 30,000							

Because Royal maintains a cash balance of $30,000, the company must borrow $50,000 on its line-of-credit.

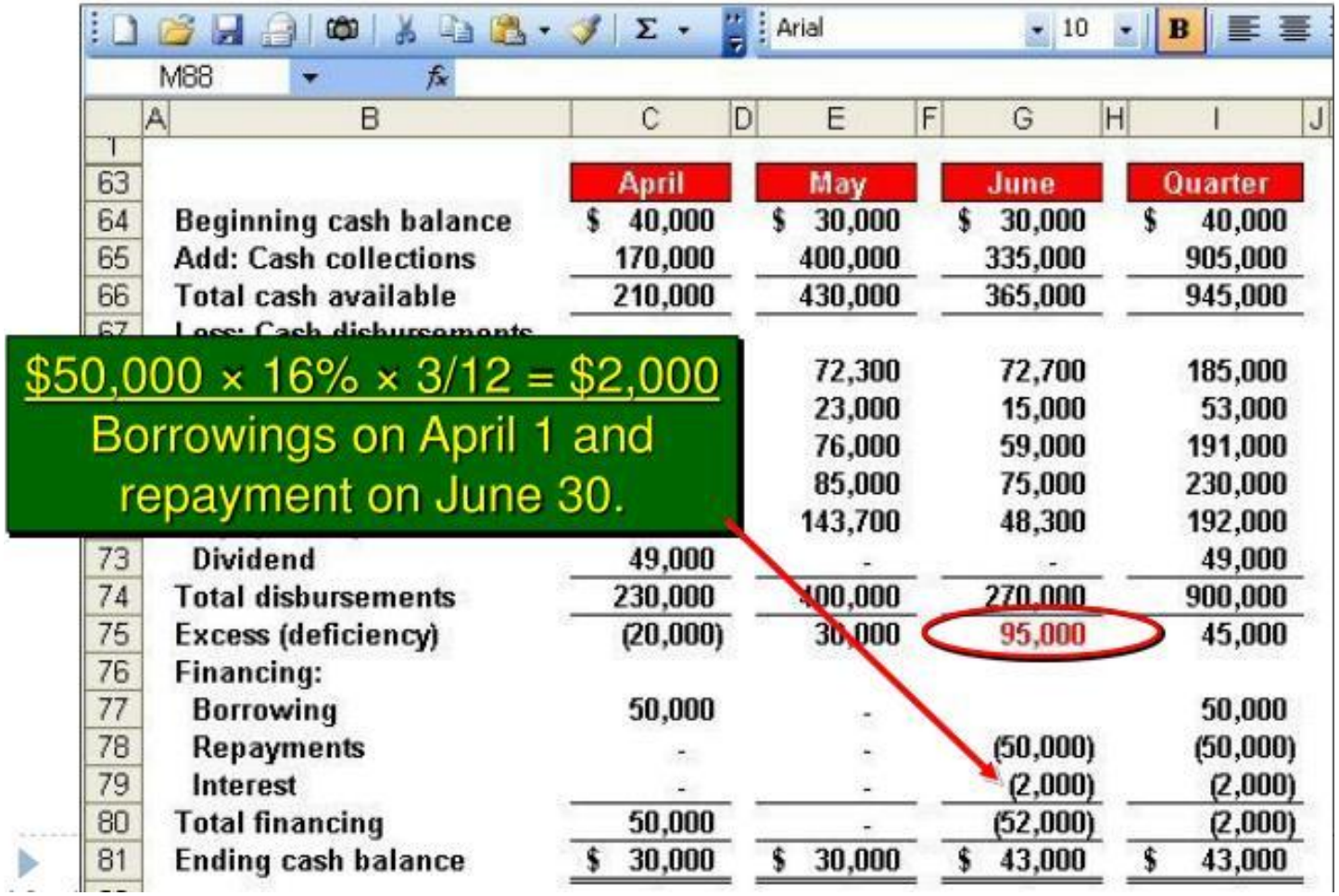
Ending cash balance for April is the beginning May balance.

Cash Budget



		April	May	June	Quarter
64	Beginning cash balance	$ 40,000	$ 30,000		
65	Add: Cash collections	170,000	400,000		
66	Total cash available	210,000	430,000		
67	Less: Cash disbursements				
68	Materials	40,000	72,300		
69	Direct labor	15,000	23,000		
70	Manufacturing overhead	56,000	76,000		
71	Selling and administrative	70,000	85,000		
72	Equipment purchase	-	143,700		
73	Dividend	49,000	-		
74	Total disbursements	230,000	400,000		
75	Excess (deficiency)	(20,000)	30,000		
76	Financing:				
77	Borrowing	50,000	-		
78	Repayments	-	-		
79	Interest	-	-		
80	Total financing	50,000	-		
81	Ending cash balance	$ 30,000	$ 30,000		

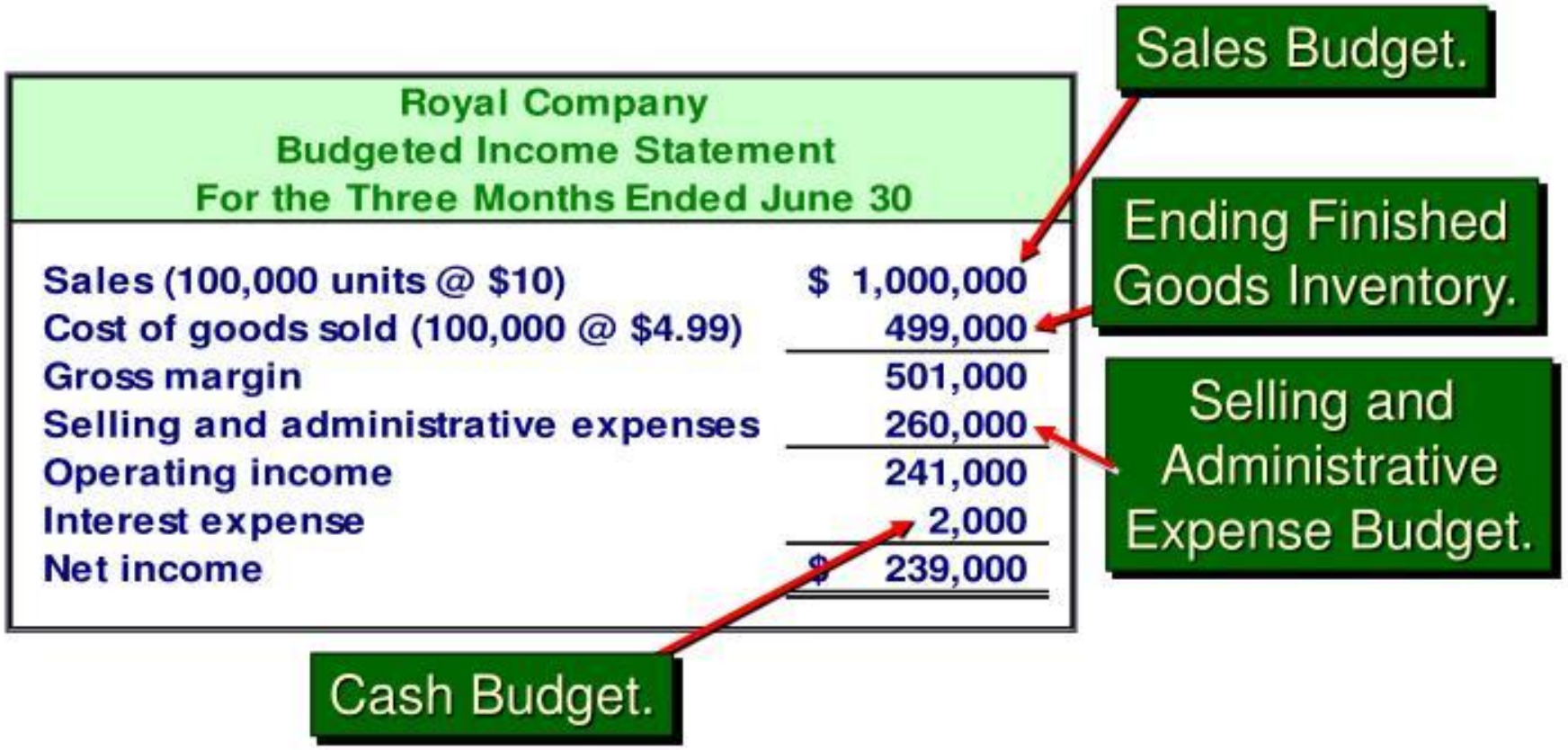
Cash Budget



		April	May	June	Quarter
64	Beginning cash balance	$ 40,000	$ 30,000	$ 30,000	$ 40,000
65	Add: Cash collections	170,000	400,000	335,000	905,000
66	Total cash available	210,000	430,000	365,000	945,000
	Less: Cash disbursements				
			72,300	72,700	185,000
			23,000	15,000	53,000
			76,000	59,000	191,000
			85,000	75,000	230,000	
			143,700	48,300	192,000
73	Dividend	49,000	-	-	49,000
74	Total disbursements	230,000	400,000	270,000	900,000
75	Excess (deficiency)	(20,000)	30,000	95,000	45,000
76	Financing:				
77	Borrowing	50,000	-		50,000
78	Repayments	-	-	(50,000)	(50,000)
79	Interest	-	-	(2,000)	(2,000)
80	Total financing	50,000	-	(52,000)	(2,000)
81	Ending cash balance	$ 30,000	$ 30,000	$ 43,000	$ 43,000

BUDGETED FINANCIAL STATEMENTS

Budgeted Income Statements

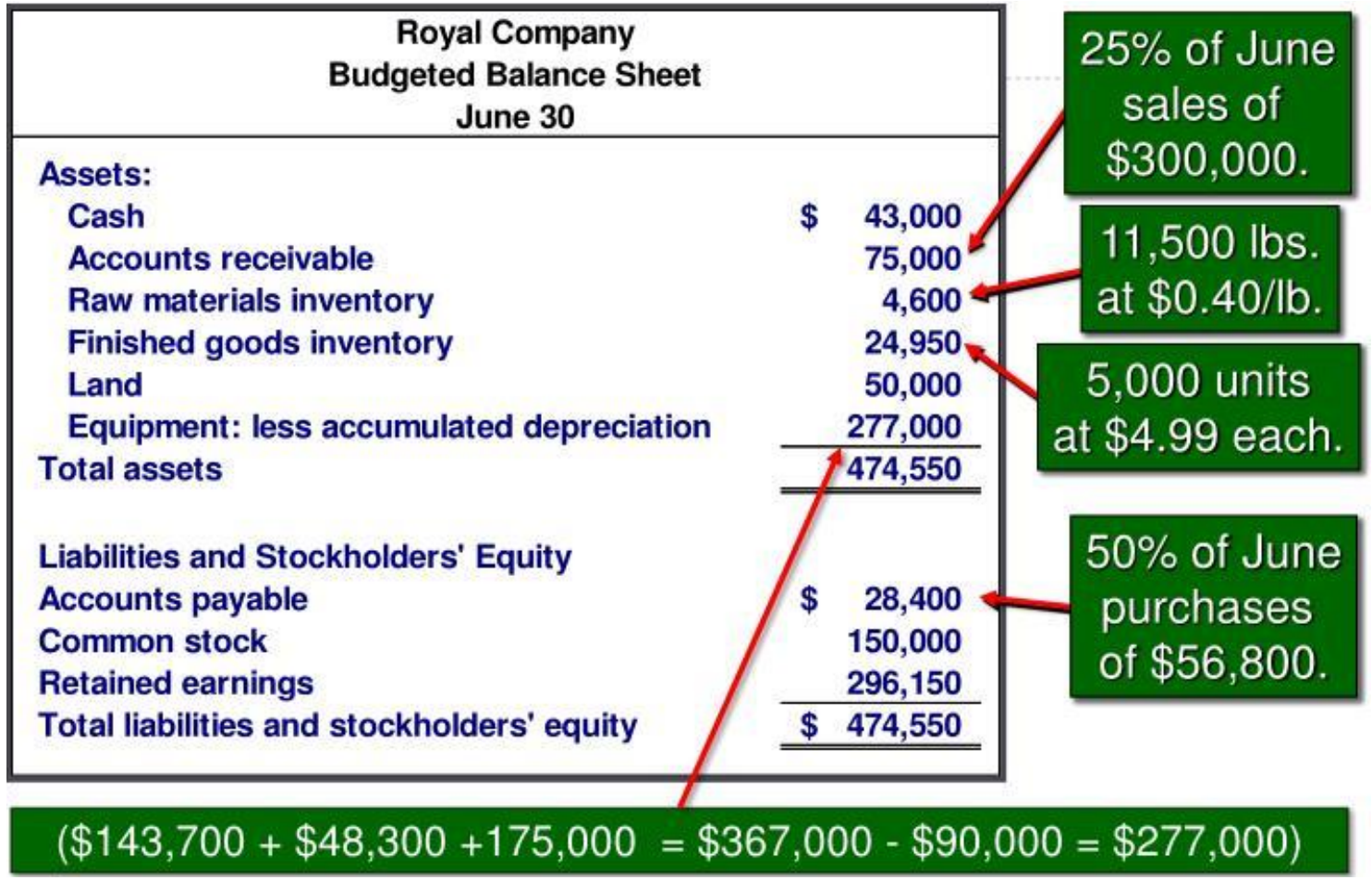


Budgeted Balance Sheet

- Royal reported the following account balances prior to preparing its budgeted financial statements:

  - Land - $50,000
  - Common stock - $150,000
  - Retained earnings - $106,150 (April 1)
  - Equipment - $175,000

Budgeted Balance Sheet



Budgeted Balance Sheet

Royal Company
Budgeted Balance Sheet
June 30

Assets:	
Cash	
Accounts receivable	75,000
Raw materials inventory	4,600
Finished goods inventory	24,950
Land	50,000
Equipment: less accumulated depreciation	277,000
Total assets	474,550
Liabilities and Stockholders' Equity	
Accounts payable	$ 28,400
Common stock	150,000
Retained earnings	296,150
Total liabilities and stockholders' equity	$ 474,550

Beginning balance	$106,150
Add: net income	239,000
Deduct: dividends	(49,000)
Ending balance	$296,150

FLEXIBLE BUDGETING

FLEXIBLE BUDGETING

- Top Management requires periodic reports on the progress of managers toward their planned objectives.
- Management analyzes any differences between actual and planned results.

Flexible Budgeting

•Flexible budget shows how cost vary with different rate of output or sales volumes and sales revenue based on these different outputs level.

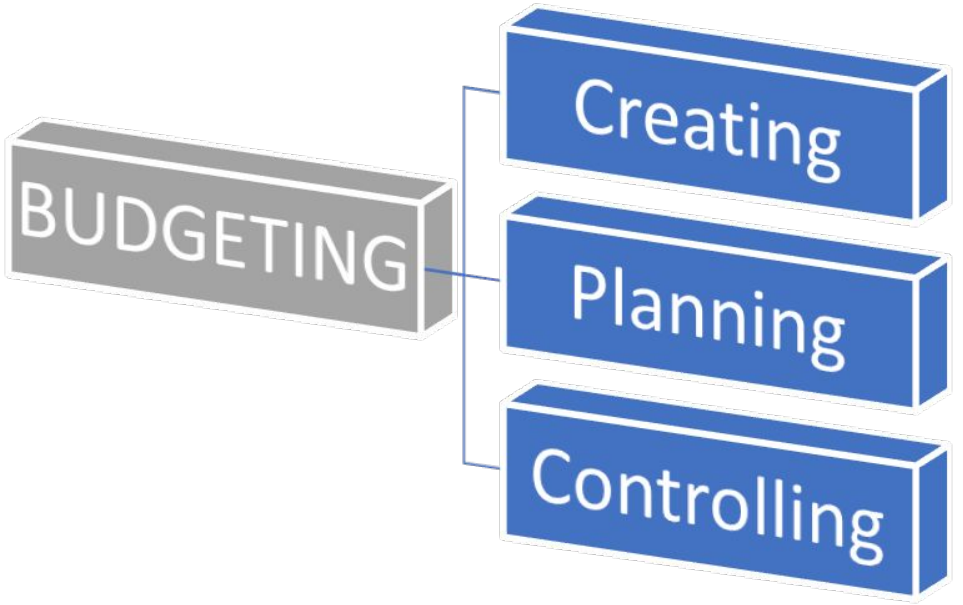
CHARACTERISTICS:

- Easy to change according to variation of production and sale volumes
- It helps in controlling cost
- Flexible budget helps in measuring the performance and evolution

Preparing flexible budget reports

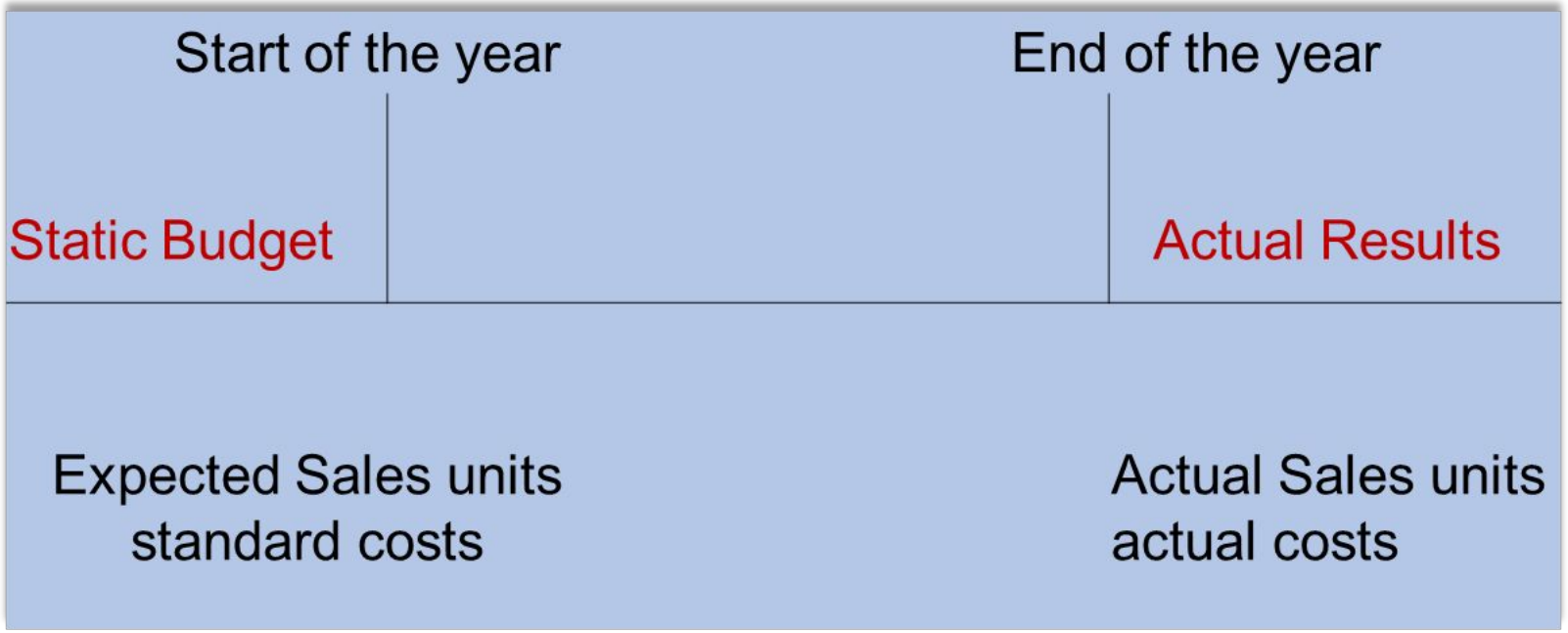
- Flexible budget is essentially a series of static budgets at different activity levels.
- Budgetary process is more useful if it is adaptable to changes in operating conditions.
- Can be prepared for each type of budget included in the master budget.

- The master budget formalizes management's planned objectives for the coming year.
- These budget are considered to be STATIC or FIXED.
- Budgets are very useful tool for both PLANNING and CONTROLLING.



Difference between Static Budget and Actual Results

Illustration:



STATIC BUDGET

A static budget is based on a single level of activity. These budgets do not consider data for different levels of activity.

FLEXIBLE BUDGET

A flexible budget is an estimate of what revenues and costs should have been given the actual level of activity.

Master/Static Budget

EmVP Company
Manufacturing Overhead Budget

Budgeted Production in units			10,000
Budgeted Costs			
Variable Cost			
Indirect materials	(P25)	250,000	
Indirect labor	(P26)	260,000	
Utilities	(P10)	100,000	
Maintenance	(P9)	90,000	
Total Variable Costs			700,000
Fixed Costs			
Supervisory salaries		50,000	
Depreciation		200,000	
Property Taxes		70,000	
Insurance		80,000	
Total Fixed Costs			400,000
Total Manufacturing Overhead			1,100,000

VARIABLE COST

FIXED COST

VARIABLE COSTS	FIXED COSTS
Total variable cost increase and decrease in proportion to changes in activity level.	Fixed costs remain the same in total regardless of changes in the activity level.
Variable cost per unit remains the same at every level of activity.	Fixed cost per unit vary inversely with activity, e.g., if volume increases, unit cost declines.

Analysis of the Cost Behavior

Flexible budget depend upon the careful study and the relationship of cost to volume of activity classifying cost as fixed variable and the semi-variable.

1. FIXED EXPENSES

- remain the same as the total activity increase or decrease
- Include conventional items such as the Depreciation and Property Insurance

2. VARIABLE EXPENSE

- Expected to increase proportionately with an increase in the activity and decrease proportionately with the decrease in the activity.
- Include the cost of supplies

3. SEMI VARIABLE EXPENSE

- Both fix and variable characteristics
- Example of the salaries of supervision, accountant, buyers.

Static Budget

Overhead Static Budget report assuming 12,000 units were actually produced, rather than 10,000 units.

EmVP Company

Manufacturing Overhead Static Budget Report

		Budget	Actual	Difference	
Budgeted Production in units		10,000	12,000	2,000	
Budgeted Costs					
Variable Cost					
Indirect materials	(P25)	250,000	295,000	45,000	U
Indirect labor	(P26)	260,000	312,000	52,000	U
Utilities	(P10)	100,000	125,000	25,000	U
Maintenance	(P9)	90,000	100,000	10,000	U
Total Variable Costs		700,000	832,000	132,000	U
Fixed Costs					
Supervisory salaries		50,000	50,000	0	
Depreciation		200,000	200,000	0	
Property Taxes		70,000	70,000	0	
Insurance		80,000	80,000	0	
Total Fixed Costs		400,000	400,000	0	
Total Manufacturing Overhead		1,100,000	1,232,000	132,000	U

WHY FLEXIBLE BUDGET?

- Over budget in FOUR of six overhead costs.
  - Unfavorable difference of P132,000
- Budget data for 10,000 units is not relevant.
  - It is meaningless to compare actual variable costs for P12,000 units with budgeted variable costs for 10,000 units
  - Variable cost increase with production

Budgeted variable amounts should increase proportionately with production.

Flexible Budget

EmVP Company
Manufacturing Overhead Flexible Budget Report

		Budget	Actual	Difference	
Budgeted Production in units		12,000	12,000		
Budgeted Costs					
Variable Cost					
Indirect materials	(P25)	300,000	295,000	5,000	F
Indirect labor	(P26)	312,000	312,000	0	
Utilities	(P10)	120,000	125,000	5,000	U
Maintenance	(P9)	108,000	100,000	8,000	F
Total Variable Costs		840,000	832,000	8,000	F
Fixed Costs					
Supervisory salaries		50,000	50,000	0	
Depreciation		200,000	200,000	0	
Property Taxes		70,000	70,000	0	
Insurance		80,000	80,000	0	
Total Fixed Costs		400,000	400,000	0	
Total Manufacturing Overhead		1,240,000	1,232,000	8,000	F

Flexible Budget Reports

- Widely used in production and service departments
- A type of internal report
- Consists of two sections:
  - Production data for selected activity index, such as direct labor hour
  - Cost data for variable and fixed costs
- Widely used in production and service departments to evaluate a manager's performance

STANDARD COSTING

- **Standard** - It is used to refer to the predetermined rate e.g. $10 per unit.

- **Standard Cost** - are predetermined cost which may be used as a yardstick to measure the efficiency with which actual costs has been incurred under given circumstances.

- **Standard Costing** - This is technique which uses standards for cost and revenues for the purpose of control through variance analysis.

Standard Costs

- The standard cost is a predetermined cost which is calculated from management standard of efficient operation and relevant necessary expenditure.

  - C.I.M.A. London

- The standard cost is a predetermined cost which determines what each product or service should cost under given circumstances.

  - Brown and Howard

Standard Costing

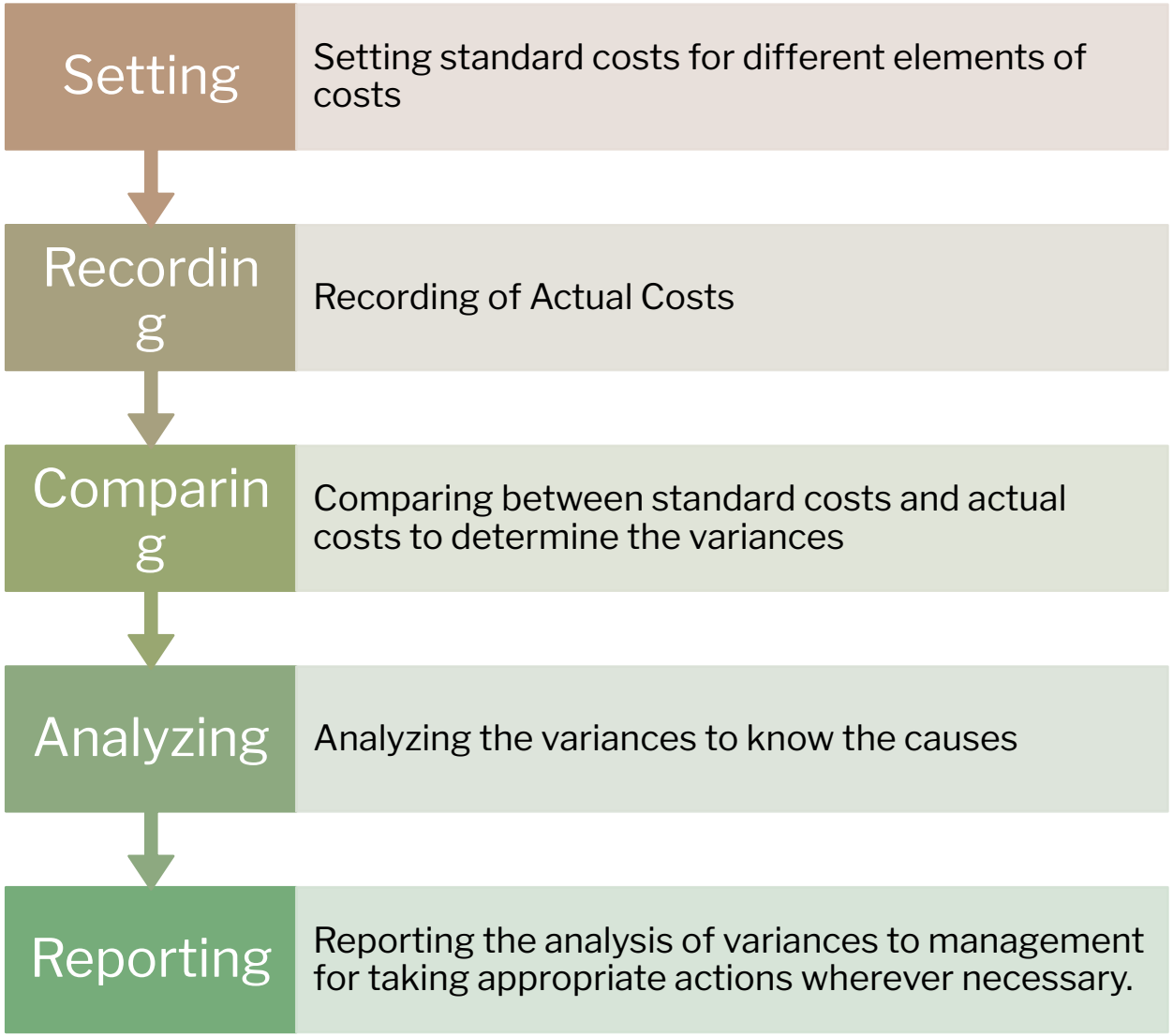
- A method of cost accounting in which standard costs are used in recording certain transaction and the actual costs are compared with the standard cost to learn the amount and reason for variations from the standard.

  - W.B. Lawrence

- Involves the preparation of cost based on predetermined standards and continuous comparison of actual with them for the purpose of guidance and control.

  - D. Joseph

Standard costing involves the ff steps:



SIMPLE WORDS

Standard Costing involves in determining:

1) Standard Cost
2) Actual Cost
3) Estimated Cost

Distinguish:
Standard cost v/s. Historical cost:

No.	Historical Cost	Standard Cost
1	Historical costs are the actual cost	Standard costs are the pre- determined cost
2	It only informs the total cost of a Product or service	Its function is to evaluate managerial performance and deficiency
3	Historical costs are ascertained after they have been incurred, and therefore are experienced costs of decisions previously made	Standard costs are anticipated costs which tend to state what the cost of production should be
4	It is related It to past	It is related to future
5	It cannot do the role of Planning and Budgeting	Budgets are prepared on the basis of Standard costs

Distinguish:
Standard Cost v/s. Estimated cost:

No.	Standard Cost	Estimated Cost
1	Standard cost aims at what the cost should be	Estimated cost is an assessment of will be
2	Standard costs are planned cost which is determined on a scientific basis after taking into account certain level efficiency	It is based on the average of past figures, taking into consideration anticipated charges in future
3	It lays emphasis on cost control, on setting the target against which actual performance is measured and if need be, corrective measures are sought	Estimated costs are used by the undertakings for fixing the selling price of the product

For Example:

- The system of standard costing can be used effectively to those industries which are producing standardized products and are repetitive in nature.

- Examples are cement industry, steel industry, sugar industry etc.

We may note that standard cost are:

- **Predetermined cost:** Standard cost is always determined in advance and ahead of actual point of time of incurring costs.
- **Based on technical estimated:** Standard cost is determined only on the basis of a technical estimate and on a rational basis.
- **For the purpose of comparison:** The very purpose of standard cost is to aid the comparison with actual costs.
- **Based for price fixing:** The prices are fixed in advance and hence the only variation basis is the standard cost.

VARIANCE

The difference between actual cost and standard cost is known as variance.

OBJECTIVES OF STANDARD COSTING:

1. Cost Control
2. Management by Exception
3. Develops Cost Conscious Attitude
4. Fixation of Prices
5. Fixing Prices and Formulating Policies
6. Management Planning

ESTABLISHMENT OF STANDARDS

The following four points are usually considered for setting up a standard cost system in a business:

1. Setting up cost center
2. Classification of Accounts
3. Types of Standards
4. Setting the Standards.

1. Setting up Cost Center:

Introducing Standard Cost System first of all requires to establish cost centers with their well-designed scope of work. In the process there should be no ambiguity about the responsibility of each cost center so that their responsibility may be identified.

2. Classification of Accounts:

Accounts are classified in order to assist collection and analysis. To use the system of standard costing effectively, all accounts have to be classified on the basis of their functions, items of revenue nature, assets and liabilities, etc.

For example,

Direct Material	01-19
Direct Labour	20-29
Direct Expense	30-39
Indirect Expense	40-49
Indirect Labour	50-59
Indirect Expense	60-69

3. Types of Standards

Current Standard:

- This standard is used over a short period of time and is related to current conditions. Current standard are of three types like:
  - a. Ideal standards,
  - b. Expected standards,
  - c. Normal standards.

Basic Standard:

- This standard is set on a long-term basis and seldom revised.
- It is an underlying standard from which current standard can be developed.

4. Setting the Standard:

- The process of setting standard is a valuable activity in itself. The success of standard costing system depends on the reliability, accuracy and acceptance of the standards. The following points should be taken into consideration: duration of use of standard, reasonable standard of performance, level of activity. For the given units standard sets for the following items are (i) direct material cost, (ii) direct wage cost,(iii) direct expense,(iv) factory variable overhead cost,(v) selling and distribution variable cost,(vi) selling price and sales margin.

Standard should be set for each element of cost

- **Direct Material** - It includes:

  1. Determination of standard quantity of materials.

  2. Determination of standard price per unit of material.

- **Direct labor cost** - will involve in determination of:

  1. Standard time

  2. Standard rate

- **Direct Expenses** - Standard for these may be based on past performance records subject to anticipatory changes therein.

- **Standards for Overheads -** Overheads are classified into Fixed Overheads and Variable Overheads. Standard overhead rate is determined for these on the basis of past records and future trend of prices. It will be calculated per unit or per hour.

- **Standard hour -** Standard hour means a hypothetical hour, which represents the amount of work that should be performed in one hour under standard conditions.

Standard cost card / Standard Cost Sheet:

- The standards established for each element of cost (such as material, labor and overhead) for a product are recorded in a statement form known as "Standard cost card or sheet". It shows the time and rate of each category of labor, the overhead rate and the cost per unit.

Sample of Standard Cost Card / Sheet Format

Standard cost card/Sheet

No..... Date of setting standard.....

Product.....

Elements of Cost	Quantity	Amount Rs.	Standard Cost
1)Direct material:			
Material X	10 units	5.00	50.00
Material Y	20 units	10.00	200.00
	30 units		250.00
Less: Normal wastage @10%	5 units	Scrap unit	50.00
Normal Output	**25 units**		**200.00**
2) Direct Labour	10 hours	2.00	20.00
3) Overheads			
- Variable	10 hours	1.00	10.00
- Fixed	10 hours	2.00	20.00
Total Cost			**250.00**
Add: Profit 10% on cost			**25.00**
Sales price			**275.00**

VARIANCE ANALYSIS

Variance Analysis

1. **Definition**
2. **Variance Analysis Formula**
3. **Importance of Variance Analysis**
4. **Limitations of Variance Analysis**
5. **Types of Variance Analysis**

Variance Analysis

- deals with an analysis of deviations in the budgeted and actual financial performance of a company
- a process of identifying causes of variation in the income and expenses of the current year from the budgeted values.

Variance Analysis

A variance in management accounting may be:

- ✔ favorable (costs lower than expected or revenues higher than expected)
- ✔ adverse (costs higher than anticipated or revenues lower than expected)

Need and Importance of Variance Analysis

- aids efficient budgeting activity
- acts as a control mechanism
- facilitates assigning responsibility and engages control mechanisms on
- departments where it is required

Limitations of Variance Analysis

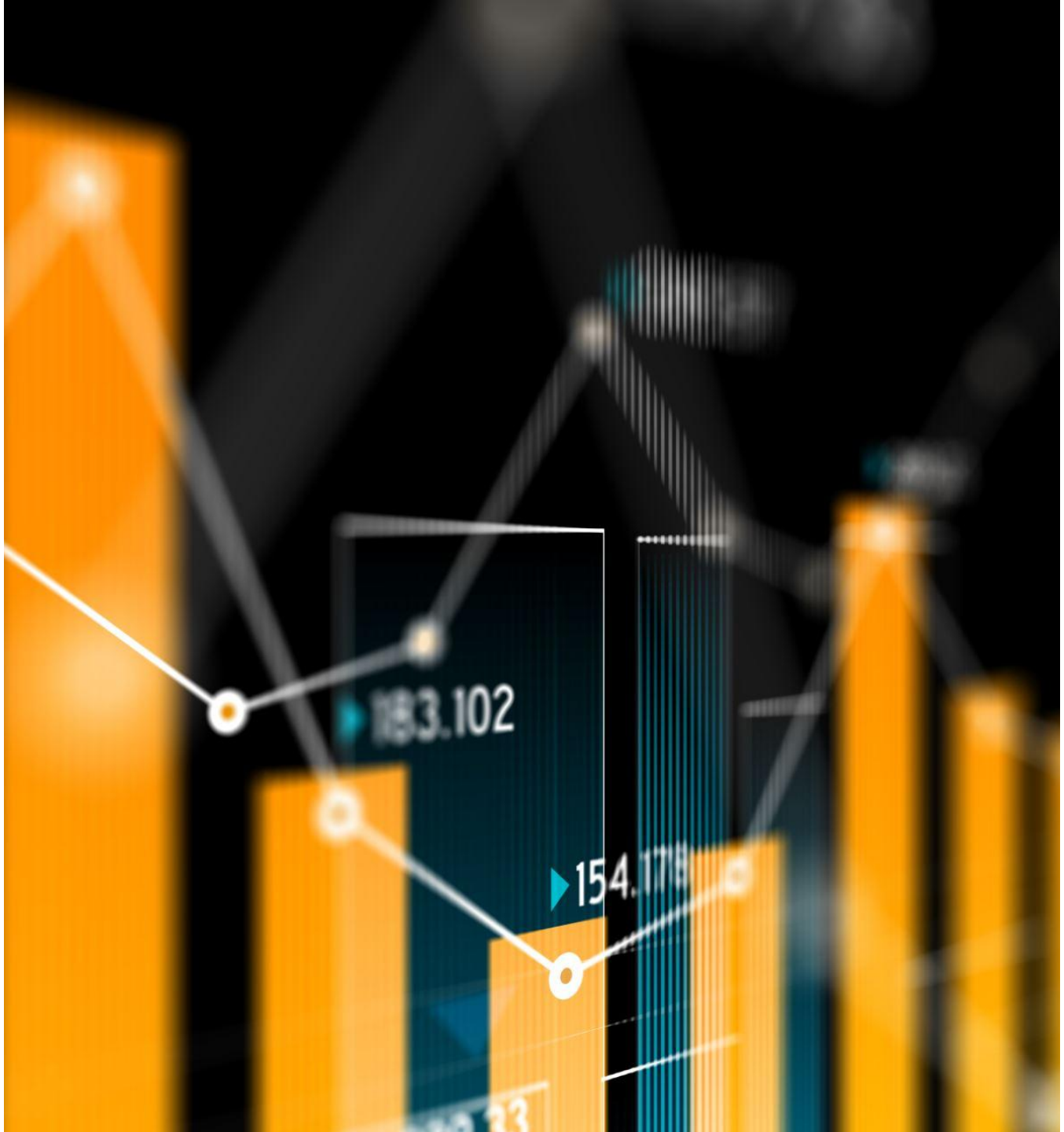
Variance analysis as an activity is based on financial results, which are released much later after quarterly closing; there may be a time gap which may affect the remedial action taking the ability to a certain extent. Also, not all sources of variance may be available in accounting data, which makes acting upon variances difficult.

Limitations of Variance Analysis

If the budgeting is not made, taking into consideration the detailed analysis of each factor, the budgeting exercise may be loosely done, which is bound to deviate from the actual numbers. After that analyzing variances may not be a useful activity.

Variance Analysis

Importance	Limitations
• Helps managers in making efficient, detailed and forward-looking budgetary decisions • Acts as a control mechanism • Facilitates assigning responsibility and engages control mechanism on departments	• Based on financial results which are released much later • Budgeting exercise may be loosely done which is bound to deviate from the actual numbers



Types of Variances

Variances could occur due to change in one or many items of the budgeted list, and hence we can have various types of variance to be analyzed.

Types of Variances

Types of Variance	Variance in	Special Note/ Formula
1. Sales Quantity Variance	The quantum of sales.	(Actual Quantity Sold – Budgeted Quantity) X Standard Profit Or SQV = (AQ x SP) – (BQ x SP)

Sample Calculation

L.A. Bada, Inc. produces two different products in different quantities and sells them for different prices. With the given information as follow:

Product	No. of Units	Unit Price
Actual Data:		
Product P1	7,500	$ 6.00
Product P2	2,500	$ 10.00
Budgeted Data:		
Product P1	7,000	$ 6.50
Product P2	2,000	$ 9.00

Required: Calculate the sales quantity variance of the products above.

SOLUTION:

Step 1: Calculate Standard Mix Ratio & Whole Products

SMR for P1 = (7000 / 9000) * 100 = 77%

SMR for P2 = (2000 / 9000) * 100 = 23%

Total Budget unit sales = 7000 + 2000 = 9,000, Total Actual unit sales = 7500 + 2500 = 10,000

Step 2: Calculate the Sales Quantities in proportion to the Standard Mix

Unit Sales at Standard Mix:

Sales of P1 in standard mix @ 77% of 10,000 = 7,700 units

Sales of P2 in standard mix @ 23% of 10,000 = 2,300 units

SOLUTION:

Step 3: Calculate the difference between actual sales quantities and the sales quantities in standard mix

	P1	P2
Budgeted sales quantities (as per question)	7,000	2,000
Unit sales at standard mix (Step 2)	(7,700)	(2,300)
Difference	700 Favorable	300 Favorable

Step 4: Calculate the Sales Quality Variance

P1 SQV = 700 x 6.50 = $ 4,550 Favorable

P2 SQV = 300 x 9.00 = $ 2,700 Favorable

Step 5: Add the individual variances

Total SQV = $ 4,550 + $ 2,700 = $ 7,250

Types of Variances

Types of Variance	Variance in	Special Note/ Formula
2. Sales Mix Variance	The proportion of various products sold i.e., the Sales mix.	SMV = (Actual Unit Sold – Unit Sales at Standard Mix) x Standard Contribution Per Unit This may happen due to shifts in the demand curve.

Sample Calculation:

L.A. Bada, Inc. produces two different products in different quantities and sells them for different prices. With the given information as follow:

Product	No. of Units	Unit Price
Actual Data:		
Product P1	7,500	$ 6.00
Product P2	2,500	$ 8.00
Budgeted Data:		
Product P1	7,000	$ 6.50
Product P2	2,000	$ 9.00

Required: Calculate the sales mix variance of the products above.

SOLUTION:

Step 1: Calculate Standard Mix Ratio & Whole Products

SMR for P1 = (7000 / 9000) * 100 = 77%

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Step 3: **Calculate the difference between actual sales quantities and the sales quantities in standard mix**

Description	P1 Units	P2 Units
Actual sales quantities (as per question)	7,500	2,500
Unit sales at standard mix (Step 2)	(7,700)	(2,300)
Difference	(200) Adverse	200 Favorable

Step 4: **Calculate the standard contribution per unit**

Description	P1 $	P2 $
Revenue	6.50	9.00
Variable Cost	(6.00)	(8.00)
Standard Contribution per unit	.50	1.00

Step 5: **Calculate the variance for each product**

Description	P1 $	P2 $
Standard Contribution per unit (step 4)	.50	1.00
Actual Quantity – Standard Mix (step 3)	X (200 Units)	X 200 units
Standard Contribution per unit	$ 100.00 Adverse	$ 200.00 Favorable

Step 6: **Add the individual variances**

SMV = ($ -100.00 + $ 200.00)

SMV = $ 100.00 Favorable

Types of Variances

Types of Variance	Variance in	Special Note/ Formula
3. Sales Price Variance	The selling price of the products. This may happen due to higher competition/ achievement of higher market share.	(Actual Selling Price – Standard Selling Price) x Quantity Sold

Sample Calculation:

T. ABANG Corp. is a fertilizer producer which specializes in the manufacture of NHK-II (*a chemical fertilizer*) and ORG-I (a types of organic fertilizer).

Following information relates to the sale of fertilizers by ABC PLC during the period:

Material	Quantity	Actual Price	Standard Price
NHK-II	200 tons	$380/ton	$400/ton
ORG-I	300 tons	$660/ton	$600/ton

Sales Price Variance shall be calculated as follows:

	Actual Price (a)	Standard Price (b)	a-b = c	Unit Sold (tons) (d)	C x d
NHK-11	380	400	20	200	4,000 Adverse
ORG-1	660	600	60	300	18,000 Favorable
TOTAL					14,000 Favorable

Types of Variances

Types of Variance	Variance in	Special Note/ Formula
4. Raw Material Price Variance	The direct cost of raw materials used.	(Standard quantity Of Raw Material x Standard Cost per unit) – (Actual Quantity of Raw Material x Actual Cost per unit) This may happen due to changes in external factors e.g., cheaper imports due to changes in taxation, etc.

Sample Calculation:

Calculate the direct material price variance if the standard price and actual unit price per unit of direct material are $4.00 and $4.10 respectively; and actual units of direct material used during the period are 1,200.
Determine whether the variance is favorable or unfavorable.

Standard Price	**$ 4.00**
- Actual Price	4.10
Difference Per Unit	-0.10
X Actual Quantity	1,200
Direct Material Price Variance	- $ 120

Since the price paid by the company for the purchase of direct material exceeds the standard price by $120, the direct material price variance is unfavorable.

Types of Variances

Types of Variance	Variance in	Special Note/ Formula
5. Raw Material Usage Variance	The quantity of raw materials used up.	(Actual Quantity-Standard Quantity) x Standard Price Many reasons could cause this deviation, including sales volume.

Cement PLC manufactured 10,000 bags of cement during the month of January. Consumption of raw materials during the period was as follows:

Material	Quantity Used	Standard Usage per Bag	Actual Price	Standard Price
Limestone	100 tons	11 KG	$ 75 / ton	$ 70 / ton
Clay	150 tons	14 KG	$ 21 / ton	$ 20 / ton
Sand	250 tons	26 KG	$ 11 / ton	$ 10 / ton

Step 1: **Calculate Standard Quantity**

Limestone	10,000 units	x	11 / 1000	=	110 tons
Clay	10,000 units	x	14 / 1000	=	140 tons
Sand	10,000 units	x	16 / 1000	=	160 tons

Step 2: **Calculate the variance**

Material Usage Variance = [Actual Quantity - Standard Quantity] x Standard Price						
Limestone	(100 - 110)	x	$ 70	=	($700)	Favorable
Clay	(150 - 140)	x	$ 20	=	$200	Adverse
Sand	(250 - 260)	x	$ 10	=	($100)	Favorable
Total Usage Variance					($600)	Favorable

Direct Materials Mix Variance

- Direct Material Mix Variance is the measure of difference between the cost of standard proportion of materials and the actual proportion of materials consumed in the production process during a period.

Formula

- The direct material mix variance formula can be calculated like the following:

DM Mix variance = standard unit cost x (Standard mix-actual mix)

- For each input, variance can be calculated and then all variances are added together to determine the total variance of the direct materials mix. If the standard quantity is equal to the quantity actually used, then the variance will be zero.
- However, if the variance is not zero, then the organization can use this information to look into their direct materials mix and determine whether or not improvements can be made to minimize this variance. For example, if the mix needed to be altered due to an issue with a supplier, the organization may consider switching suppliers.

Example:

A company manufactures a product that uses inputs X and Y. The standard quantity of input X in the materials mix is calculated as 15 units. The actual quantity of material X is 20 units. Material X costs $5 per unit. What is the variance of material X?

Using the above formula, we can plug in the given values:

Mix variance =$5 x (15 – 20)

The variance is -$25. This means that the actual amount of material X used exceeded the budgeted amount in the mix. This led to an adverse cost variance of $25 for this material.

Labor Rate Variance :

- The labor rate variance measures the difference between the actual and expected cost of labor. It is calculated as the difference between the actual labor rate paid and the standard rate, multiplied by the number of actual hours worked.
- The formula is:

(Actual rate - Standard rate) x Actual hours worked = Labor rate variance

Example:

The human resources manager of Hodgson Industrial Design estimates that the average labor rate for the coming year for Hodgson's production staff will be **$25/hour**. This estimate is based on a standard mix of personnel at different pay rates, as well as a reasonable proportion of overtime hours worked.

During the first month of the new year, Hodgson has difficulty hiring a sufficient number of new employees, and so must have its higher-paid existing staff work overtime to complete a number of jobs. The result is an actual labor rate of **$30/hour**. Hodgson's production staff worked **10,000 hours** during the month. Its direct labor rate variance for the month is:

($30/hr Actual rate - $25/hour Standard rate) x 10,000 hours = **$50,000** Direct labor rate variance

Labor Efficiency Variance:

- The labor efficiency variance measures the ability to utilize labor in accordance with expectations. The variance is useful for spotlighting those areas in the production process that are using more labor hours than anticipated. If the variance outcome is unfavorable, there will likely to be a review by industrial engineers to see if the underlying process can be improved to reduce the number of production hours required, using such means as:
  - A simplified product design to reduce assembly time
  - A reduction in the amount of scrap produced by the process
  - Increasing the amount of automation

Example :

During the development of its annual budget, the industrial engineers of Hodgson Industrial Design decide that the standard amount of time required to produce a green widget should be 30 minutes, which is based on certain assumptions about the efficiency of Hodgson's production staff, the availability of materials, capacity availability, and so forth. During the month, widget materials were in short supply, so Hodgson had to pay production staff even when there was no material to work on, resulting in an average production time per unit of 45 minutes. The company produced 1,000 widgets during the month. The standard cost per labor hour is $20, so the calculation of its labor efficiency variance is:

(750 Actual hours - 500 Standard hours) x $20 Standard rate

= $5,000 Labor efficiency variance

Fixed Overhead Expenditure Variance:

Fixed Overhead Expenditure Variance, also known as fixed overhead spending variance, is the difference between budgeted and actual fixed production overheads during a period.

Formula :

= Actual Fixed Overheads – Budgeted Fixed Overheads

Example :

The production manager of Hodgson Industrial Design estimates that the fixed overhead should be $700,000 during the upcoming year. However, since a production manager left the company and was not replaced for several months, actual expenses were lower than expected, at $672,000. This created the following favorable fixed overhead spending variance:

($672,000 Actual fixed overhead - $700,000 Budgeted fixed overhead)

= **$(28,000)** Fixed overhead spending variance

Variable Overhead Spending Variance

- The variable overhead spending variable is the difference between the actual and budgeted rates of spending on variable overhead. The variance is used to focus attention on those overhead costs that vary from expectations.

The formula is :

Actual hours worked x (Actual overhead rate - Standard overhead rate)
= Variable overhead spending variance

A favorable variance means that the actual variable overhead expenses incurred per labor hour were less than expected.

Example :

The cost accounting staff of Hodgson Industrial Design calculates, based on historical and projected cost patterns, that the company should experience a variable overhead rate of $20 per labor hour worked, and builds this figure into the budget. In April, the actual variable overhead rate turns out to be $22 per labor hour. During that month, production employees work 18,000 hours. The variable overhead spending variance is:

18,000 Actual hours worked x ($22 Actual variable overhead rate - $20 Standard overhead rate) = **$36,000** Variable overhead spending variance

Importance of Variance Analysis :

Planning: Helps managers to budget smarter and more accurately.

Control: Assists in more significant control management of departments and budgeting.

Responsibility: Helps with the assignment of trust within an organization.

Monitoring: Helps to monitor success and failure.

Sets Expectations: Encourages forward-thinking and helps to set benchmarks.

Variance analysis

becomes an integral part of an organization's information system. Not only does it help to regulate control across departments, but it also provides a running tab of what can be realistically expected versus what occurs.

THANK YOU!