Chapter

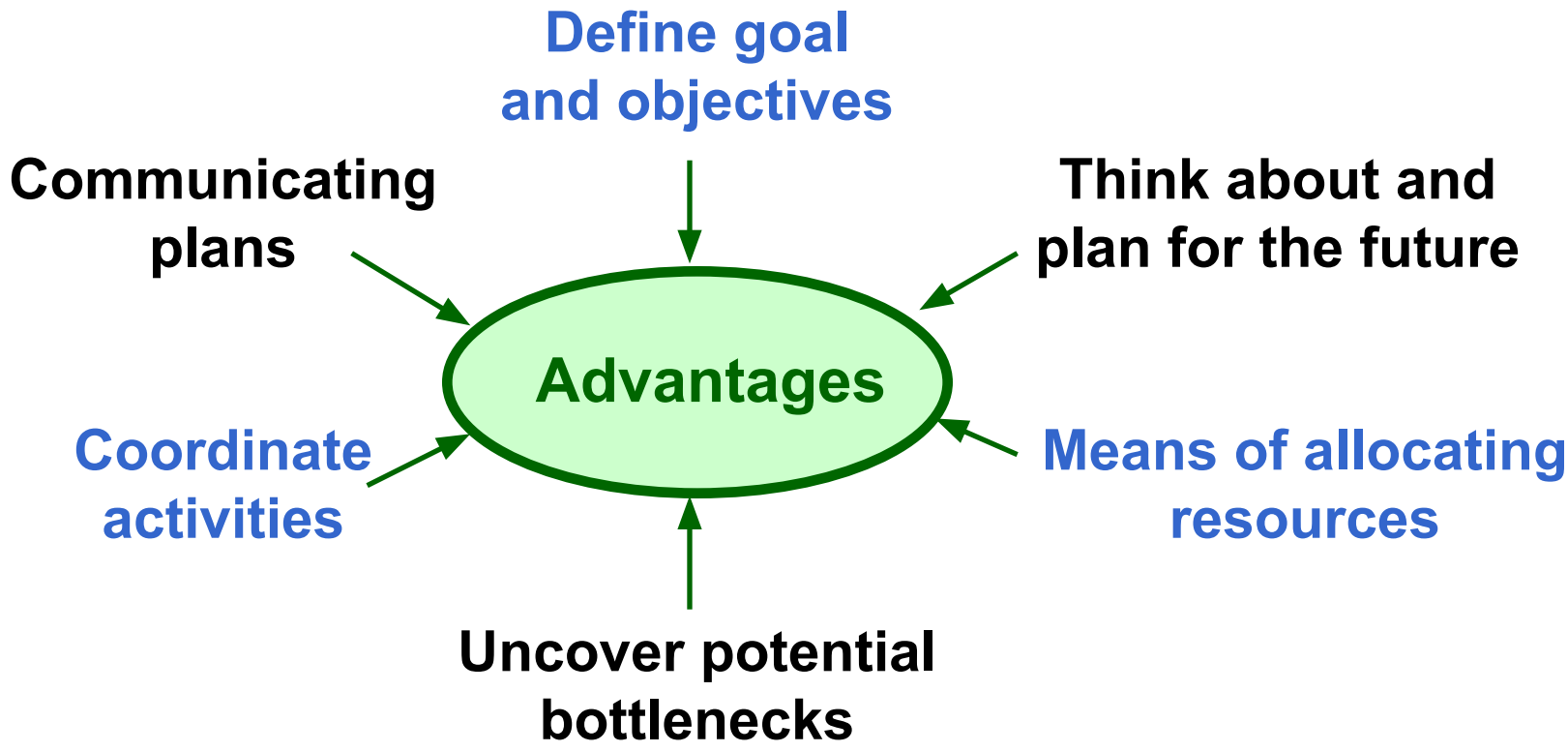
7

Profit Planning

Planning and Control

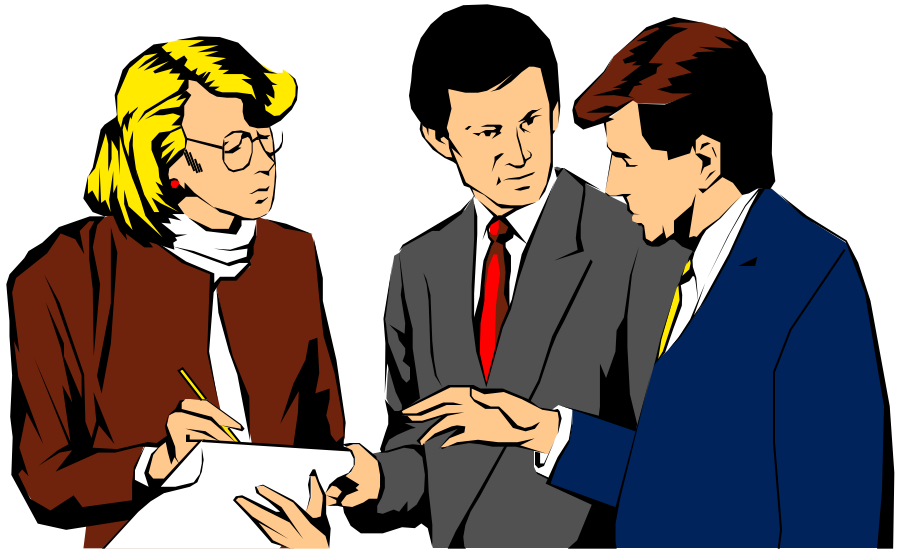
- **Planning** -- involves developing objectives and preparing various budgets to achieve these objectives.
- **Control** -- involves the steps taken by management that attempt to ensure the objectives are attained.

Advantages of Budgeting

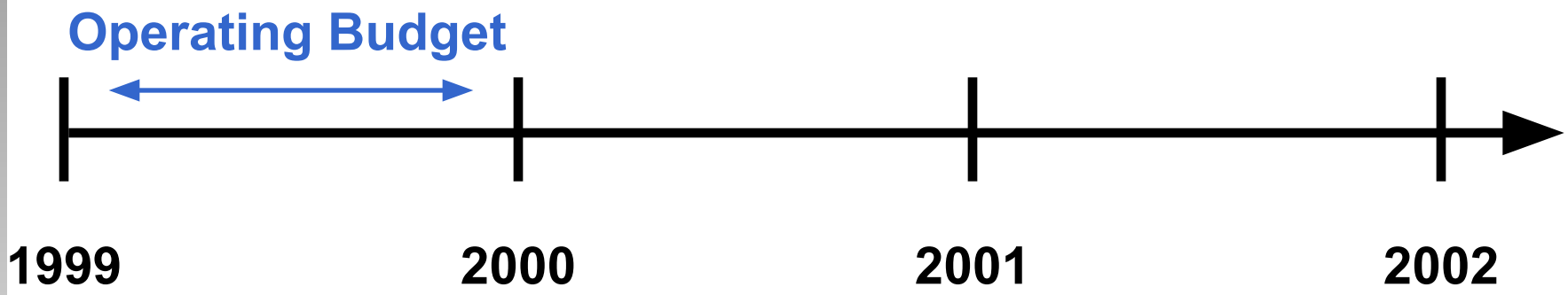


Responsibility Accounting

Managers should be held responsible for those items — and only those items — that the manager can actually control to a significant extent.

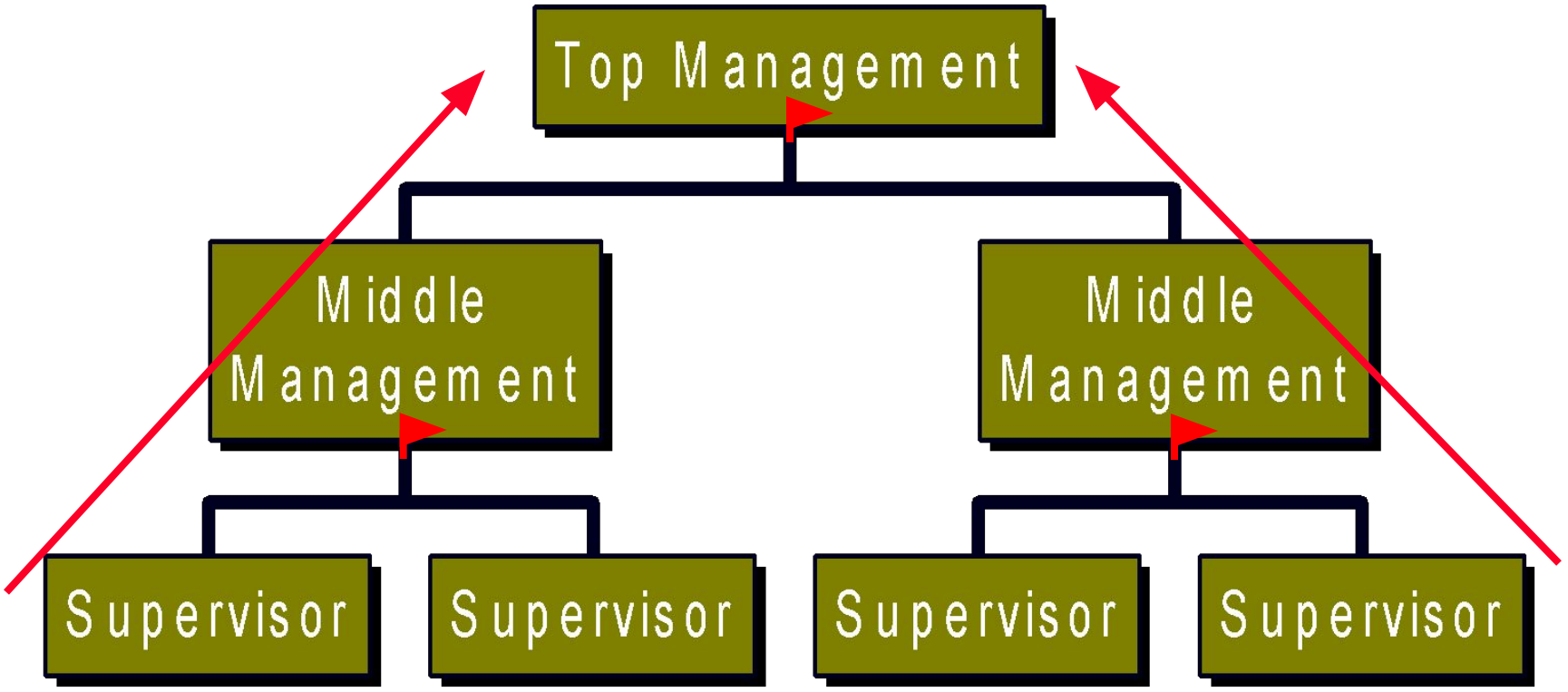


Choosing the Budget Period



The annual operating budget may be divided into quarterly or monthly budgets.

Participative Budget System

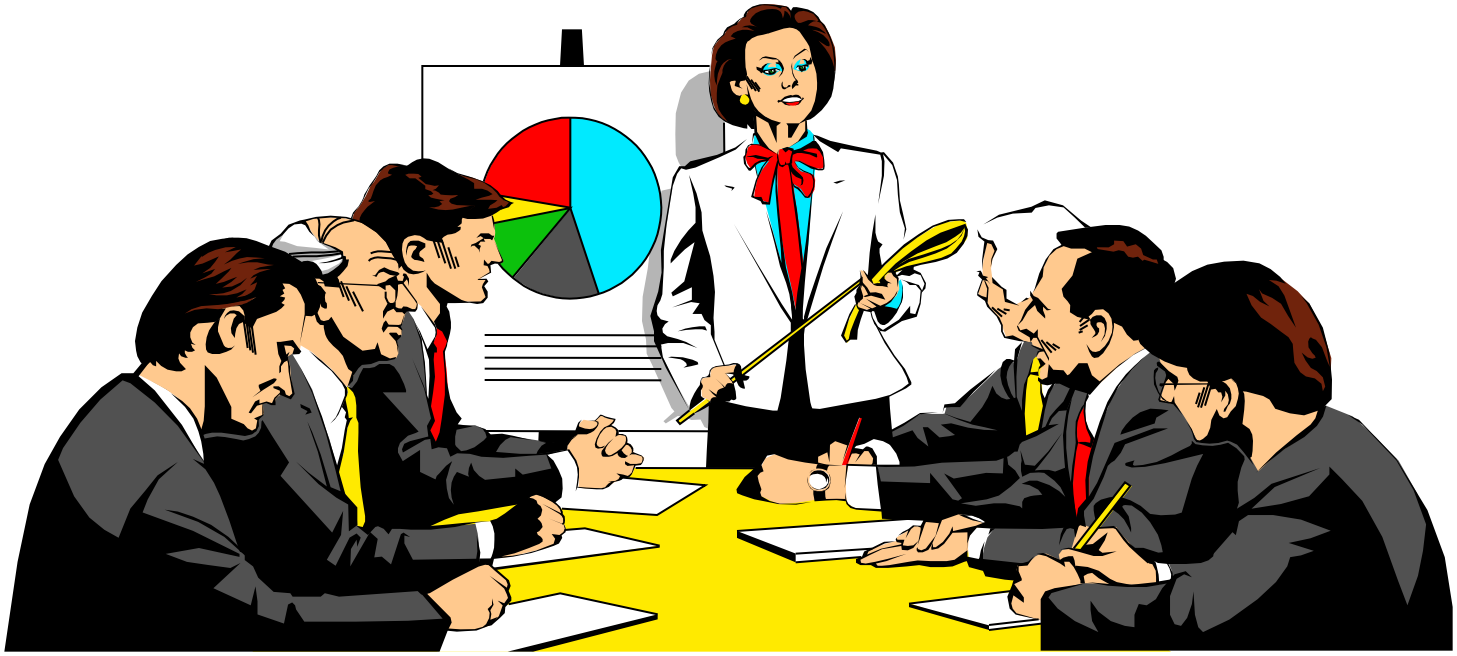


Flow of Budget Data

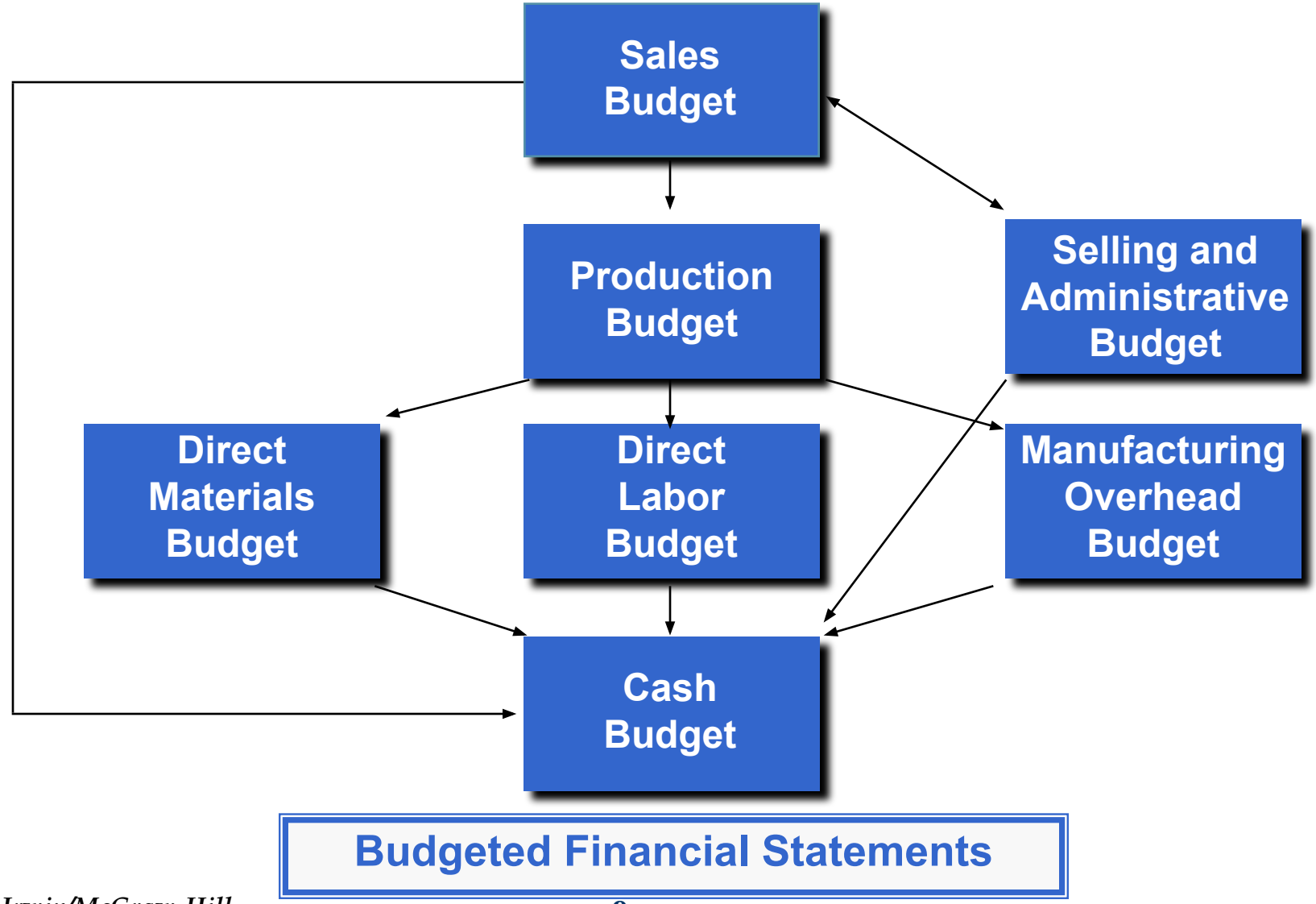
The Budget Committee

A standing committee responsible for

- overall policy matters relating to the budget
- coordinating the preparation of the budget



The Master Budget



The Sales Budget

Detailed schedule showing expected sales for the coming periods expressed in units and dollars.

Budgeting Example

1. Royal Company is preparing budgets for the quarter ending June 30.
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.

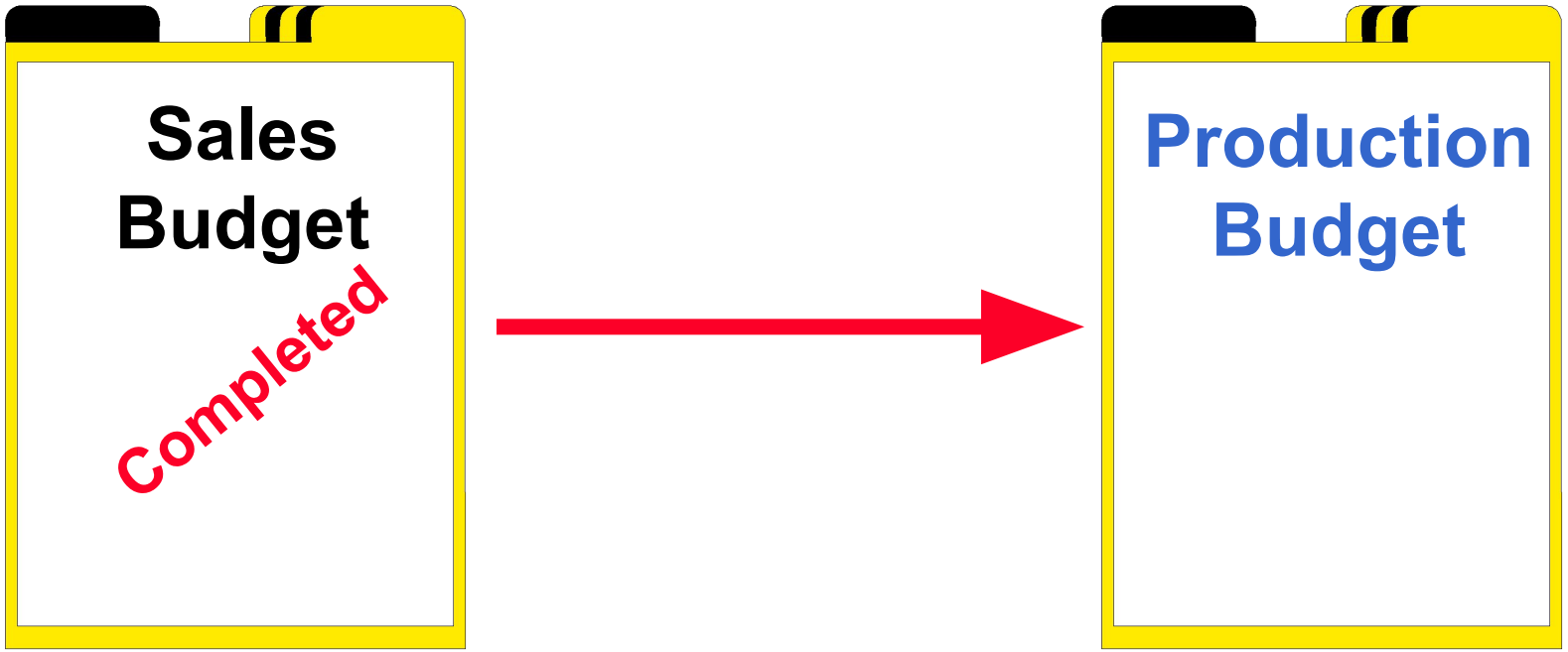
The Sales Budget

	April	May	June	Quarter
Budgeted sales (units)	20,000	50,000	30,000	100,000
Selling price per unit				
Total sales				

The Sales Budget

	April	May	June	Quarter
Budgeted sales (units)	20,000	50,000	30,000	100,000
Selling price per unit	$ 10	$ 10	$ 10	$ 10
Total sales	$200,000	$500,000	$300,000	$1,000,000

The Production Budget



Production must be adequate to meet budgeted sales and provide for sufficient ending inventory.

The Production Budget

- Royal Company wants ending inventory to be equal to 20% of the following month's budgeted sales in units.
- On March 31, 4,000 units were on hand.
- Let's prepare the production budget.

The Production Budget

	April	May	June	Quarter
Budgeted sales	20,000	50,000	30,000	100,000
Add desired ending inventory	10,000			
Total needed	30,000			
Less beginning inventory	4,000			
Required production	26,000			

Budgeted sales	50,000
Desired percent	20%
Desired inventory	10,000

The Production Budget

	April	May	June	Quarter
Budgeted sales	20,000	50,000	30,000	100,000
Add desired ending inventory	10,000			
Total needed	30,000			
Less beginning inventory	4,000			
Required production	26,000	?		

March 31 ending inventory

Quick Check ✔

What is the required production for May?

a. 56,000 units

b. 46,000 units

c. 62,000 units

d. 52,000 units

Quick Check ✔

What is the required production for May?

a. 56,000 units

b. 46,000 units

c. 62,000 units

d. 52,000 units

The Production Budget

	April	May	June	Quarter
Budgeted sales	20,000	50,000	30,000	100,000
Add desired ending inventory	10,000	6,000		
Total needed	30,000	56,000		
Less beginning inventory	4,000			
Required production	26,000			

The Production Budget

	April	May	June	Quarter
Budgeted sales	20,000	50,000	30,000	100,000
Add desired ending inventory	10,000	6,000		
Total needed	30,000	56,000		
Less beginning inventory	4,000	10,000		
Required production	26,000	46,000		

The Production Budget

	April	May	June	Quarter
Budgeted sales	20,000	50,000	30,000	100,000
Add desired ending inventory	10,000	6,000	5,000	5,000
Total needed	30,000	56,000	35,000	105,000
Less beginning inventory	4,000	10,000	6,000	4,000
Required production	26,000	46,000	29,000	101,000

Expected Cash Collections

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

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 3/31	$ 30,000			$ 30,000
Total cash collections				

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 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	$ 170,000			?

Quick Check ✔

What will be the total cash collections for the quarter?

a. $700,000

b. $220,000

c. $190,000

d. $905,000

Quick Check ✔

What will be the total cash collections for the quarter?

a. $700,000

b. $220,000

c. $190,000

d. $905,000

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 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	$ 170,000	$ 400,000		

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 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
June sales				
70% x $300,000			210,000	210,000
Total cash collections	$ 170,000	$ 400,000	$ 335,000	$ 905,000

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 $0.40 per pound.

Let's prepare the direct materials budget.

The Direct Materials Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Materials per unit				
Production needs				
Add desired ending inventory				
Total needed				
Less beginning inventory				
Materials to be purchased				

From production budget

The Direct Materials Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Materials per unit	5	5	5	5
Production needs	130,000	230,000	145,000	505,000
Add desired ending inventory				
Total needed				
Less beginning inventory				
Materials to be purchased				

The Direct Materials Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Materials per unit	5	5	5	5
Production needs	130,000	230,000	145,000	505,000
Add desired ending inventory	23,000			
Total needed	153,000			
Less beginning inventory				
Materials to be purchased				

10% of the following month's production

The Direct Materials Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Materials per unit	5	5	5	5
Production needs	130,000	230,000	145,000	505,000
Add desired ending inventory	23,000			
Total needed	153,000			
Less beginning inventory	13,000			
Materials to be purchased	140,000	?		

March 31 inventory

Quick Check ✔

How much materials should be purchased in May?

a. 221,500 pounds

b. 240,000 pounds

c. 230,000 pounds

d. 211,500 pounds

Quick Check ✔

How much materials should be purchased in May?

a. 221,500 pounds

b. 240,000 pounds

c. 230,000 pounds

d. 211,500 pounds

The Direct Materials Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Materials per unit	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

Assumed

Expected Cash Disbursement for Materials

- Royal pays $0.40 per pound for its materials.
- One-half of a month's purchases are paid for in the month of purchase; the other half is paid in the following month.
- The March 31 accounts payable balance is $12,000.
  - Let's calculate expected cash disbursements.

Expected Cash Disbursement for Materials

	April	May	June	Quarter
Accounts pay. 3/31	$12,000			$ 12,000
April purchases				
May purchases				
June purchases				
Total cash disbursements				

Expected Cash Disbursement for Materials

	April	May	June	Quarter
Accounts pay. 3/31	$ 12,000			$ 12,000
April purchases				
50% x $56,000	28,000			28,000
50% x $56,000		$ 28,000		28,000
May purchases				
June purchases				
Total cash disbursements	$ 40,000			?

140,000 lbs. × $.40/lb. = $56,000

Quick Check ✔

What are the total cash disbursements for the quarter?

a. $185,000

b. $ 68,000

c. $ 56,000

d. $201,400

Quick Check ✔

What are the total cash disbursements for the quarter?

a. $185,000

b. $ 68,000

c. $ 56,000

d. $201,400

Expected Cash Disbursement for Materials

	April	May	June	Quarter
Accounts pay. 3/31	$12,000			$ 12,000
April purchases				
50% x $56,000	28,000			28,000
50% x $56,000		$28,000		28,000
May purchases				
50% x $88,600		44,300		44,300
50% x $88,600			$44,300	44,300
June purchases				
Total cash disbursements	$40,000	$72,300		

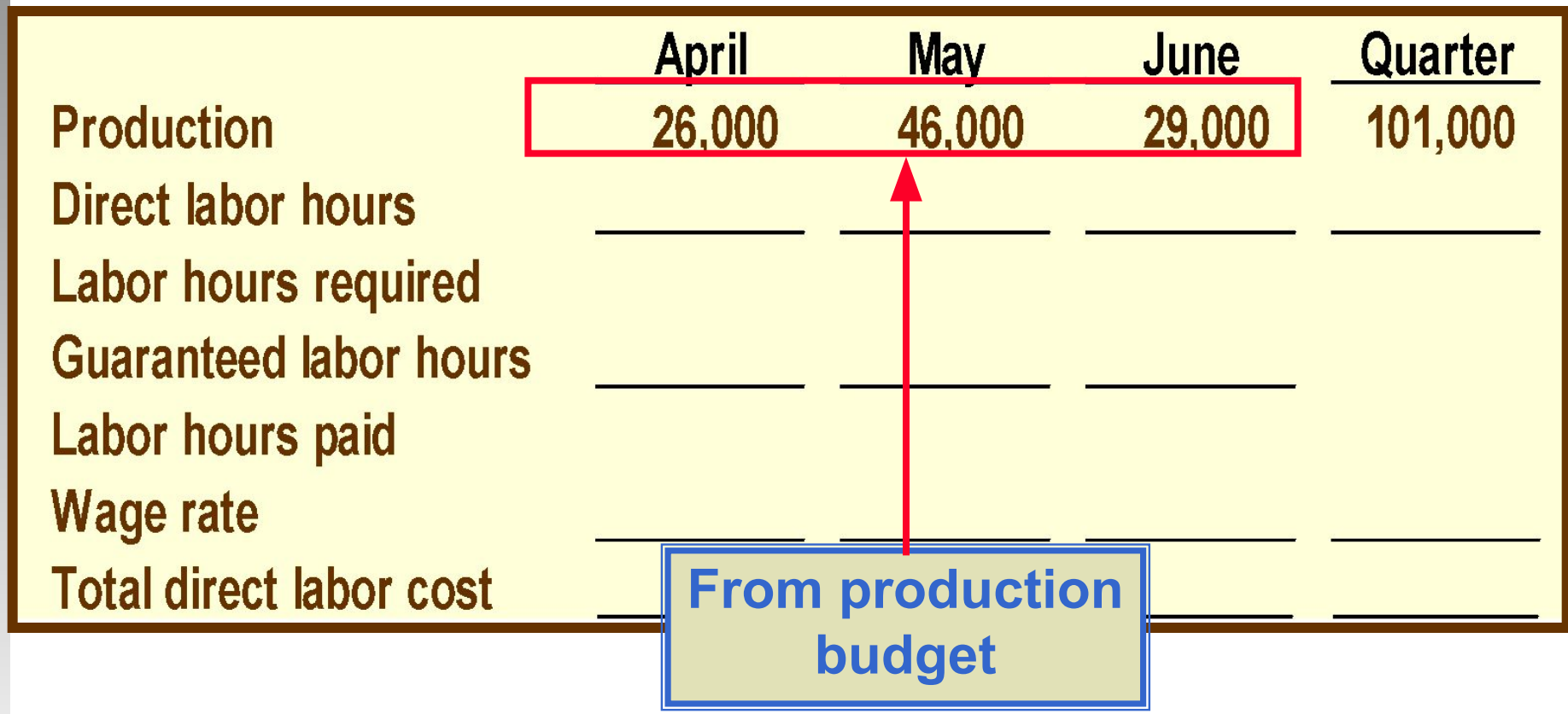
Expected Cash Disbursement for Materials

	April	May	June	Quarter
Accounts pay. 3/31	$12,000			$ 12,000
April purchases				
50% x $56,000	28,000			28,000
50% x $56,000		$28,000		28,000
May purchases				
50% x $88,600		44,300		44,300
50% x $88,600			$44,300	44,300
June purchases				
50% x $56,800			28,400	28,400
Total cash disbursements	$40,000	$72,300	$72,700	$185,000

The Direct Labor Budget

- At Royal, each unit of product requires 0.05 hours of direct labor.
- The Company has a “no layoff” policy so all employees will be paid for 40 hours of work each week.
- In exchange for the “no layoff” policy, workers agreed to a wage rate of $10 per hour regardless of the hours worked (No overtime pay).
- For the next three months, the direct labor workforce will be paid for a minimum of 1,500 hours per month.
  - **Let’s prepare the direct labor budget.**

The Direct Labor Budget

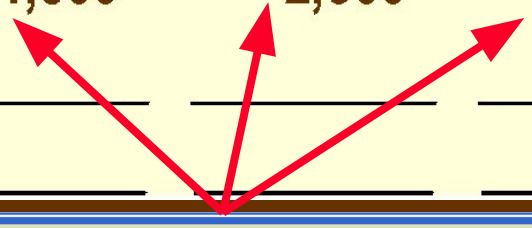


The Direct Labor Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Direct labor hours	0.05	0.05	0.05	0.05
Labor hours required	1,300	2,300	1,450	5,050
Guaranteed labor hours				
Labor hours paid				
Wage rate				
Total direct labor cost				

The Direct Labor Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Direct labor hours	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
Wage rate				
Total direct labor cost				



Higher of labor hours required or labor hours guaranteed.

The Direct Labor Budget

	April	May	June	Quarter
Production	26,000	46,000	29,000	101,000
Direct labor hours	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
Wage rate	$ 10	$ 10	$ 10	$ 10
Total direct labor cost	$ 15,000	$ 23,000	$ 15,000	$ 53,000

Quick Check ✔

What would be the total direct labor cost for the quarter if the company follows its no lay-off policy, but pays $15 (time-and-a-half) for every hour worked in excess of 1,500 hours in a month?

a. $79,500

b. $64,500

c. $61,000

d. $57,000

Quick Check ✔

What would be the total direct labor cost for the quarter if the company follows its no lay-off policy, but pays $15 (time-and-a-half) for every hour worked in excess of 1,500 hours in a month?

a. $79,500

b. $64,500

c. $61,000

d. $57,000

	April	*May*	*June*	*Quarter*
Labor hours required	1,300	2,300	1,450	
Regular hours paid	1,500	1,500	1,500	4,500
Overtime hours paid	-	800	-	800
Total regular hours	4,500	$10	$45,000	
Total overtime hours	800	$15	$12,000	
Total pay			$57,000	

Manufacturing Overhead Budget

- Royal Company uses a variable manufacturing overhead rate of $1 per unit **produced**.
- Fixed manufacturing overhead is $50,000 per month and includes $20,000 of noncash costs (primarily depreciation of plant assets).

- **Let's prepare the manufacturing overhead budget.**

Manufacturing Overhead Budget

	April	May	June	Quarter
Production in units	26,000	46,000	29,000	101,000
Variable mfg. OH rate	$ 1	$ 1	$ 1	$ 1
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				

From production budget

Manufacturing Overhead Budget

	April	May	June	Quarter
Production in units	26,000	46,000	29,000	101,000
Variable mfg. OH rate	$ 1	$ 1	$ 1	$ 1
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				
Cash disbursements for manufacturing OH				

Manufacturing Overhead Budget

	April	May	June	Quarter
Production in units	26,000	46,000	29,000	101,000
Variable mfg. OH rate	$ 1	$ 1	$ 1	$ 1
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

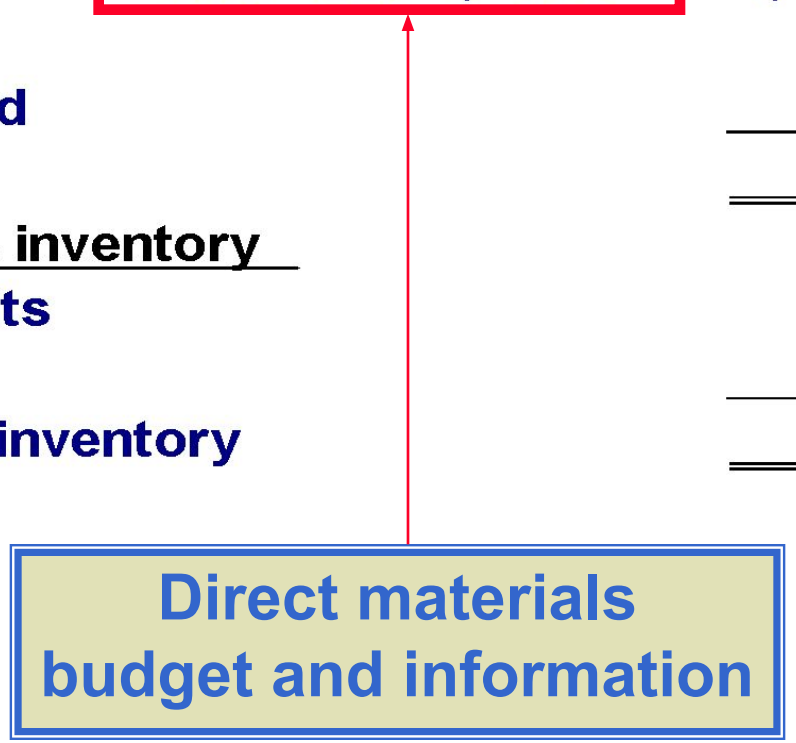
Depreciation is a noncash charge.

Ending Finished Goods Inventory Budget

- Now, Royal can complete the ending finished goods inventory budget.
- At Royal, manufacturing overhead is applied to units of product on the basis of direct labor hours.
- **Let's calculate ending finished goods inventory.**

Ending Finished Goods Inventory Budget

Production costs per unit	Quantity	Cost	Total
Direct materials	5.00 lbs.	$ 0.40	$ 2.00
Direct labor			
Manufacturing overhead			
Budgeted finished goods inventory			
Ending inventory in units			
Unit product cost			
Ending finished goods inventory			



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 overhead			
Budgeted finished goods inventory			
Ending inventory in units			
Unit product cost			
Ending finished goods inventory			

Direct labor 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 overhead	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				?

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

*rounded

Quick Check ✔

What is the value of the ending finished goods inventory?

a. $ 9,980

b. $24,950

c. $57,385

d. $49,900

Quick Check ✔

What is the value of the ending finished goods inventory?

a. $ 9,980

b. $24,950

c. $57,385

d. $49,900

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 overhead	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 Expense Budget

- At Royal, 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.

Let's prepare the company's selling and administrative expense budget.

Selling and Administrative Expense Budget

	April	May	June	Quarter
Budgeted sales	20,000			
Variable selling and admin. rate	$ 0.50			
Variable expense	$10,000			
Fixed selling and admin. expense	70,000			
Total expense	80,000			
Less noncash expenses	10,000			
Cash disbursements for selling & admin.	$70,000			?

Quick Check ✔

What are the total cash disbursements for selling and administrative expenses for the quarter?

a. $180,000

b. $230,000

c. $110,000

d. $ 70,000

Quick Check ✔

What are the total cash disbursements for selling and administrative expenses for the quarter?

a. $180,000

b. $230,000

c. $110,000

d. $ 70,000

Selling and Administrative Expense Budget

	April	May	June	Quarter
Budgeted sales	20,000	50,000	30,000	100,000
Variable selling and admin. rate	$ 0.50	$ 0.50	$ 0.50	$ 0.50
Variable expense	$10,000	$25,000	$15,000	$ 50,000
Fixed selling and admin. expense	70,000	70,000	70,000	210,000
Total expense	80,000	95,000	85,000	260,000
Less noncash expenses	10,000	10,000	10,000	30,000
Cash disburse-ments for selling & admin.	$70,000	$85,000	$75,000	$230,000

The Cash Budget

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 paid in cash.
- Has an April 1 cash balance of $40,000.

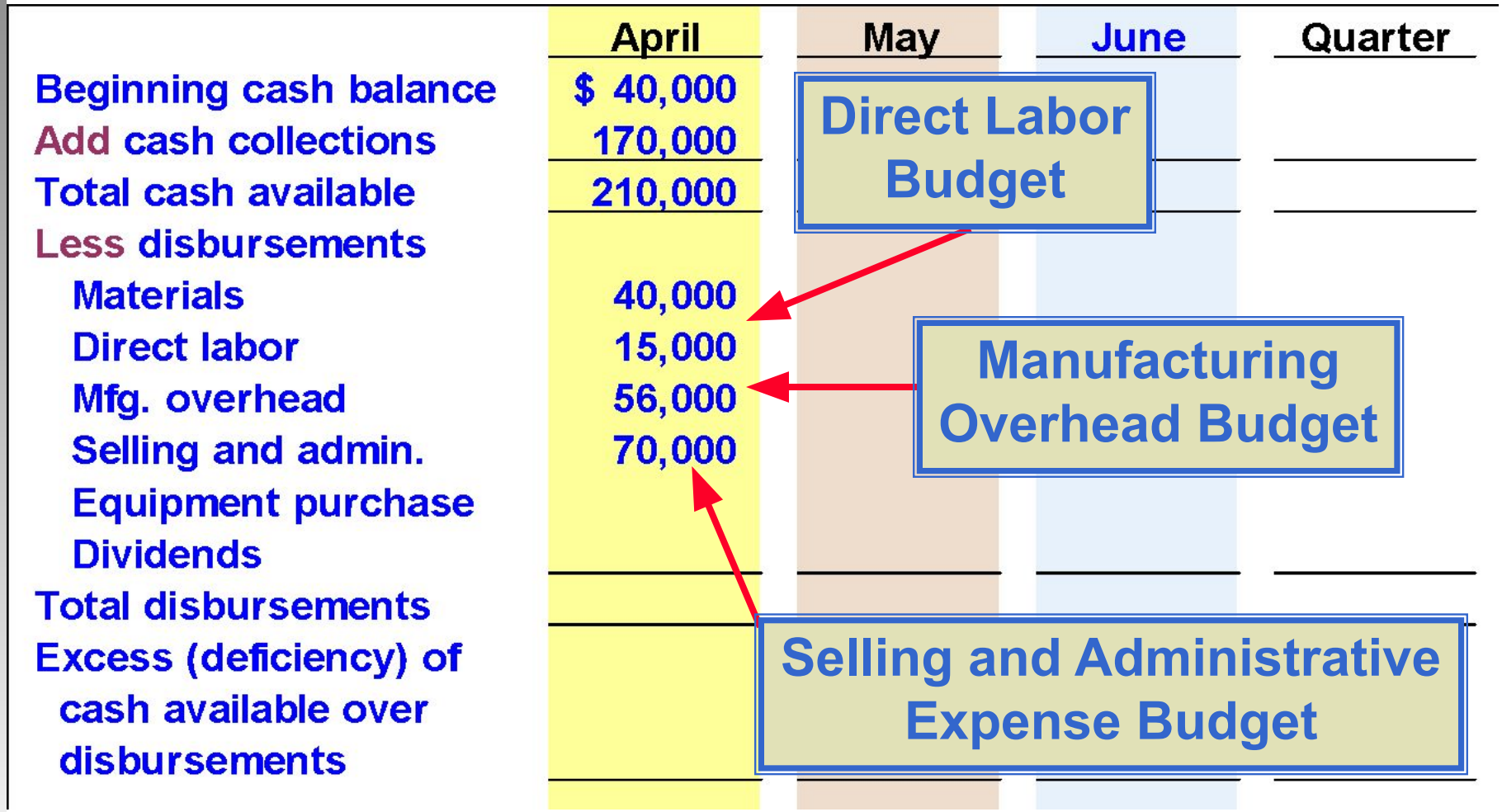
The Cash Budget

	April	May	June	Quarter
Beginning cash balance	$ 40,000			
Add cash collections	170,000			
Total cash available	210,000			
Less disbursements				
Materials	40,000			
Direct labor				
Mfg. overhead				
Selling and admin.				
Equipment purchase				
Dividends				
Total disbursements				
Excess (deficiency) of cash available over disbursements				

Schedule of Expected Cash Disbursements

Schedule of Expected Cash Collections

The Cash Budget



The Cash Budget

	April	May	June	Quarter
Beginning cash balance	$ 40,000			
Add cash collections	170,000			
Total cash available	210,000			
Less disbursements				
Materials	40,000			
Direct labor	15,000			
Mfg. overhead	56,000			
Selling and admin.	70,000			
Equipment purchase	-			
Dividends	49,000			
Total disbursements	230,000			
Excess (deficiency) of cash available over disbursements	$(20,000)			

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

Financing and Repayment

	April	May	June	Quarter
Excess (deficiency) of Cash available over disbursements	$(20,000)			
Financing:				
Borrowing	50,000			
Repayments	-			
Interest	-			
Total financing	50,000			
Ending cash balance	$ 30,000	$30,000	$ -	$ -

The Cash Budget

	April	May	June	Quarter
Beginning cash balance	$ 40,000	$ 30,000		
Add cash collections	170,000	400,000		
Total cash available	210,000	430,000		
Less disbursements				
Materials	40,000	72,300		
Direct labor	15,000	23,000		
Mfg. overhead	56,000	76,000		
Selling and admin.	70,000	85,000		
Equipment purchase	-	143,700		
Dividends	49,000	-		
Total disbursements	230,000	400,000		
Excess (deficiency) of cash available over disbursements	$(20,000)	$ 30,000		

Financing and Repayment

	April	May	June	Quarter
Excess (deficiency) of Cash available over disbursements	$(20,000)	$30,000		
Financing:				
Borrowing	50,000	-		
Repayments	-	-		
Interest	-	-		
Total financing	50,000	-		
Ending cash balance	$ 30,000	$30,000		

Because the ending cash balance is exactly $30,000, Royal will not repay the loan this month.

Quick Check ✔

What is the excess (deficiency) of cash available over disbursements for June?

a. $ 85,000

b. $(10,000)

c. $ 75,000

d. $ 95,000

Quick Check ✔

What is the excess (deficiency) of cash available over disbursements for June?

a. $ 85,000

b. $(10,000)

c. $ 75,000

d. $ 95,000

The Cash Budget

	April	May	June	Quarter
Beginning cash balance	$ 40,000	$ 30,000	$ 30,000	$ 40,000
Add cash collections	170,000	400,000	335,000	905,000
Total cash available	210,000	430,000	365,000	945,000
Less disbursements				
Materials	40,000	72,300	72,700	185,000
Direct labor	15,000	23,000	15,000	53,000
Mfg. overhead	56,000	76,000	59,000	191,000
Selling and admin.	70,000	85,000	75,000	230,000
Equipment purchase	-	143,700	48,300	192,000
Dividends	49,000	-	-	49,000
Total disbursements	230,000	400,000	270,000	900,000
Excess (deficiency) of cash available over disbursements	$(20,000)	$ 30,000	$ 95,000	$ 45,000

The Cash Budget

	April	May	June	Quarter
Beginning cash balance	$ 40,000	$ 30,000	$ 30,000	$ 40,000
Add cash collections	170,000	400,000	335,000	905,000
Total cash available	210,000	430,000	365,000	945,000
Less disbursements				
Materials	40,000	72,300	72,700	185,000
Direct labor	15,000	23,000	15,000	53,000
Mfg. overhead	56,000	76,000	59,000	191,000
Selling and				
Equipment				
Dividends				
Total disbursements	230,000	400,000	270,000	900,000
Excess (deficiency) of cash available over disbursements	$(20,000)	$ 30,000	$ 95,000	$ 45,000

At the end of June, Royal has enough cash to repay the $50,000 loan plus interest at 16%.

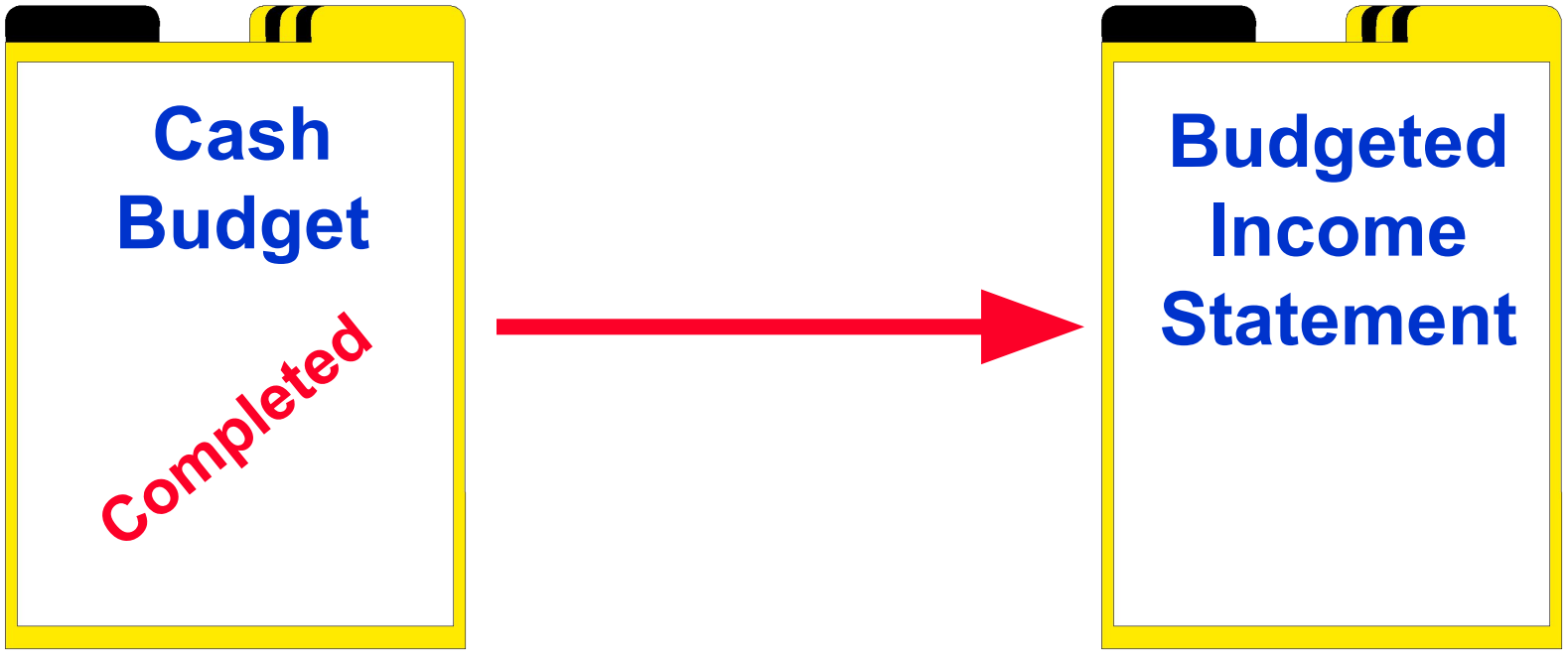
Financing and Repayment

	April	May	June	Quarter
Excess (deficiency) of Cash available over disbursements	$(20,000)	$30,000	$95,000	$45,000
Financing:				
Borrowing	50,000	-	-	50,000
Repayments	-	-	(50,000)	(50,000)
Interest	-	-	(2,000)	(2,000)
Total financing	50,000	-	(52,000)	(2,000)
Ending cash balance	$ 30,000	$30,000	$43,000	$43,000

$50,000 × 16% × 3/12 = $2,000

Borrowings on April 1 and repayment of June 30.

The Budgeted Income Statement



After we complete the cash budget, we can prepare the budgeted income statement for Royal.

The Budgeted Income Statement

Royal Company
Budgeted Income Statement
For the Three Months Ended June 30

Sales (100,000 units @ $10)	$1,000,000
Cost of goods sold (100,000 @ $4.99)	499,000
Gross margin	501,000
Selling and administrative expenses	260,000
Operating income	241,000
Interest expense	2,000
Net income	$ 239,000

The Budgeted Balance Sheet

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

- Land - $50,000
- Common stock - $200,000
- Retained earnings - $146,150

Royal Company Budgeted Balance Sheet June 30		
Current assets		
Cash	$	43,000
Accounts receivable		75,000
Raw materials inventory		4,600
Finished goods inventory		24,950
Total current assets		147,550
Property and equipment		
Land		50,000
Equipment (assumed)		367,000
Total property and equipment		417,000
Total assets	$	564,550
Accounts payable	$	28,400
Common stock		200,000
Retained earnings		336,150
Total liabilities and equities	$	564,550

25%of June sales of $300,000

11,500 lbs. at $0.40/lb.

5,000 units at $4.99 each

50% of June purchases of $56,800

Royal Company
Budgeted Balance Sheet
June 30

Current assets		
Cash	$	
Accounts receivable		
Raw materials inventory		
Finished goods inventory		
Total current assets		
Property and equipment		
Land		50,000
Equipment (assumed)		367,000
Total property and equipment		417,000
Total assets	$	564,550
Accounts payable	$	28,400
Common stock		200,000
Retained earnings		336,150
Total liabilities and equities	$	564,550

Beginning balance	$146,150
Add: net income	239,000
Deduct: dividends	(49,000)
Ending balance	$336,150

End of Chapter 7