- Cost Object: Anything for which a measurement of costs is desired. There are two major cost objects:
  - Product
  - Responsibility Centers: Subunits of organizations whose managers are accountable for specified activities (department, division, etc.)
- Direct Costs of a Cost Object: Costs that can be traced to the cost object in a cost-effective way
- Indirect Costs of a Cost Object: Costs that cannot be traced to the cost object in a cost-effective way
- Cost Pool: A grouping of individual indirect cost items
- Cost-Allocation Base: A factor that links in a systematic way an indirect cost or group of indirect costs to a cost object.

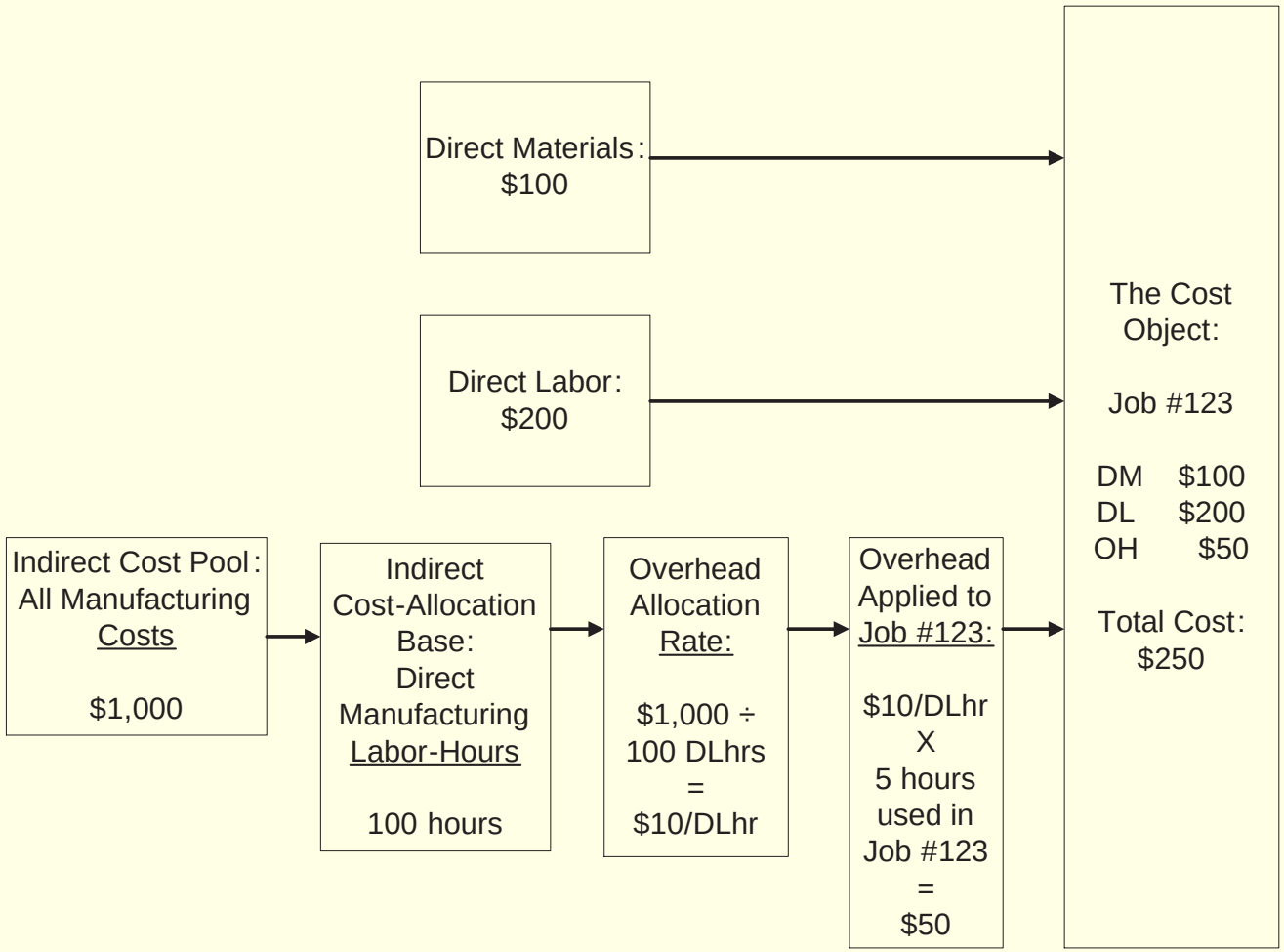
Two basic methods to assign costs to products or services

- Job Costing: The cost object is a unit or multiple units of a *distinct* product or service called a job
  - Costs are accumulated separately for each product or service
  - Costing of a repair job at Audi Service Center
- Process Costing: The cost object is masses of *identical* or *similar* units of a product or service.
  - Total cost of production is divided by the total number of units produced to obtain a per-unit cost
  - Intel provides the same product (a Pentium 4 chip) to each of its customers

	Job Costing Environment	Process Costing Environment
Sales/Production	Sales precede production; production is for a specific order	Production precedes sales; production is for inventory
Materials inventory	Required materials for jobs unknown, minimal inventory	Materials needed are known, inventory size depends on costs
Direct Labor	Generally skilled; wide range of tasks	Generally less skilled, routine and well-defined tasks
Overhead	relatively low, most costs are direct costs	Automation is more feasible; leading to higher overhead costs
Production Runs	Short; depends on specific orders	Long, often continuous
Costing	Unit costs are determined as each job is completed	Unit costs are determined periodically

- Actual Costing
  - Indirect costs allocated to the cost object based on the actual indirect cost rates times the actual quantity of the cost allocation bases
- Normal Costing
  - Indirect costs allocated to the cost object based on the budgeted indirect cost rates times the actual quantity of the cost allocation bases
- Both methods allocate direct costs to a cost object the same way:
  - actual direct-cost rates times actual consumption

- Step 1: Identify the job to be costed
- Step 2: Identify the direct costs of the job
- Step 3: Select the cost allocation base(s) to use for allocating indirect costs to the job
- Step 4: Match indirect costs to their respective cost allocation base(s)
- Step 5: Compute an overhead allocation rate
- Step 6: Allocate overhead costs to the job
- Step 7: Compute Total Job Costs by adding all direct and indirect costs together


Direct Materials: $100
Direct Labor: $200
Indirect Cost Pool: All Manufacturing Costs
$1,000
Indirect Cost-Allocation Base: Direct Manufacturing Labor-Hours
100 hours
Overhead Allocation Rate:
$1,000 ÷ 100 DLhrs = $10/DLhr
Overhead Applied to Job #123:
$10/DLhr X 5 hours used in Job #123 = $50
The Cost Object:
Job #123
DM $100
DL $200
OH $50
Total Cost: $250

Source Documents

- A source document is a record that supports the journal entries in an accounting system
- A job cost record (job-cost sheet) records and accumulates all the costs assigned to a specific job

JOB-COST RECORD

JOB NO: WPP 298 CUSTOMER: Western Pulp and Paper
Date Started: Feb. 3, 2006 Date Completed: Feb. 28, 2006

DIRECT MATERIALS

Date Received	Materials Requisition No.	Part No.	Quantity Used	Unit Cost	Total Costs
Feb. 3, 2006	2006: 198	MB 468-A	8	$14	$ 112
Feb. 3, 2006	2006: 199	TB 267-F	12	63	756
					•
					•
Total					$ 4,606

DIRECT MANUFACTURING LABOR

Period Covered	Labor-Time Record No.	Employee No.	Hours Used	Hourly Rate	Total Costs
Feb. 3–9, 2006	LT 232	551-87-3076	25	$18	$ 450
Feb. 3–9, 2006	LT 247	287-31-4671	5	19	95
					•
					•
Total					$ 1,579

MANUFACTURING OVERHEAD*

Date	Cost Pool Category	Allocation-Base	Allocation-Base Units Used	Allocation-Base Rate	Total Costs
Dec. 31, 2006	Manufacturing	Direct Manufacturing Labor-Hours	88 hours	$45	$ 3,960
Total					$ 3,960
TOTAL MANUFACTURING COST OF JOB					$10,145

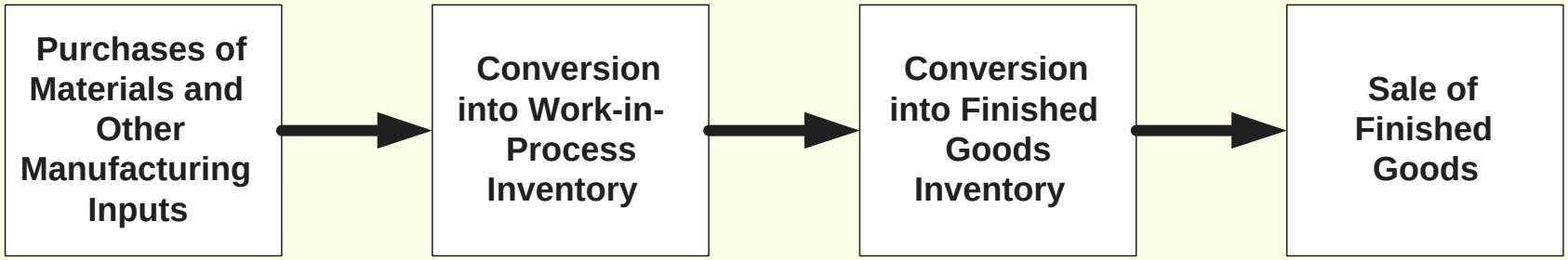
- Indirect cost rates are usually computed on an annual bases

$$\text{Indirect Cost Rate} = \frac{\text{Total costs in indirect cost pool}}{\text{Total quantity of cost allocation base}}$$

- Reasons for using longer periods
  - The shorter the period, the greater the influence of seasonal patterns on the amount of costs
  - Costs incurred in a particular period may benefit operations during future periods
  - Spread periodical fixed indirect costs over fluctuating levels of output

- Longer periods for computing indirect cost rates mean that actual cost of jobs cannot be computed as they are completed
- Need for immediate access to job costs
  - budgeted indirect cost rate determined at the beginning of a fiscal year

$$\text{Budgeted Indirect Cost Rate} = \frac{\text{Budgeted total costs in indirect cost pool}}{\text{Budgeted Total quantity of cost allocation base}}$$



- Journal entries are made at each step of the production process
- All product costs are accumulated in the Work-in-Process Control account
  - Direct Materials used
  - Direct Labor incurred
  - Factory Overhead allocated
- Actual Indirect Costs (overhead) are first accumulated in the Manufacturing Overhead Control account, then allocated to individual jobs and become part of WIP inventory.

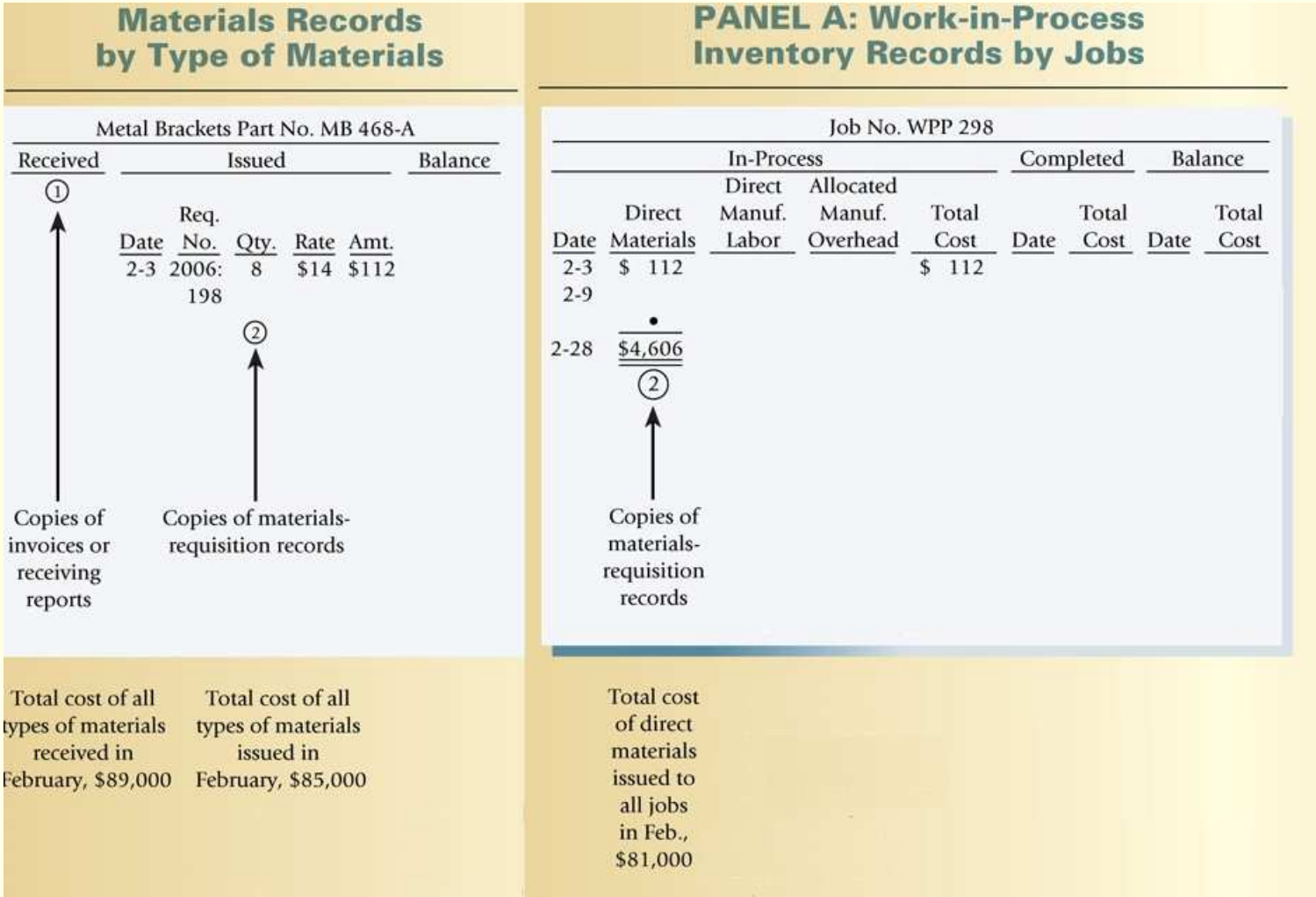
- Transaction 1: Purchases of materials (direct and indirect) on credit; $89,000

Materials Control	89,000	
Accounts Payable Control		89,000

- Transaction 2: Materials sent to the plant floor: direct materials $81,000; indirect materials $4,000

Work in Process Control	81,000	
Manufacturing Overhead Control	4,000	
Materials Control		85,000

- Subsidiary Ledgers

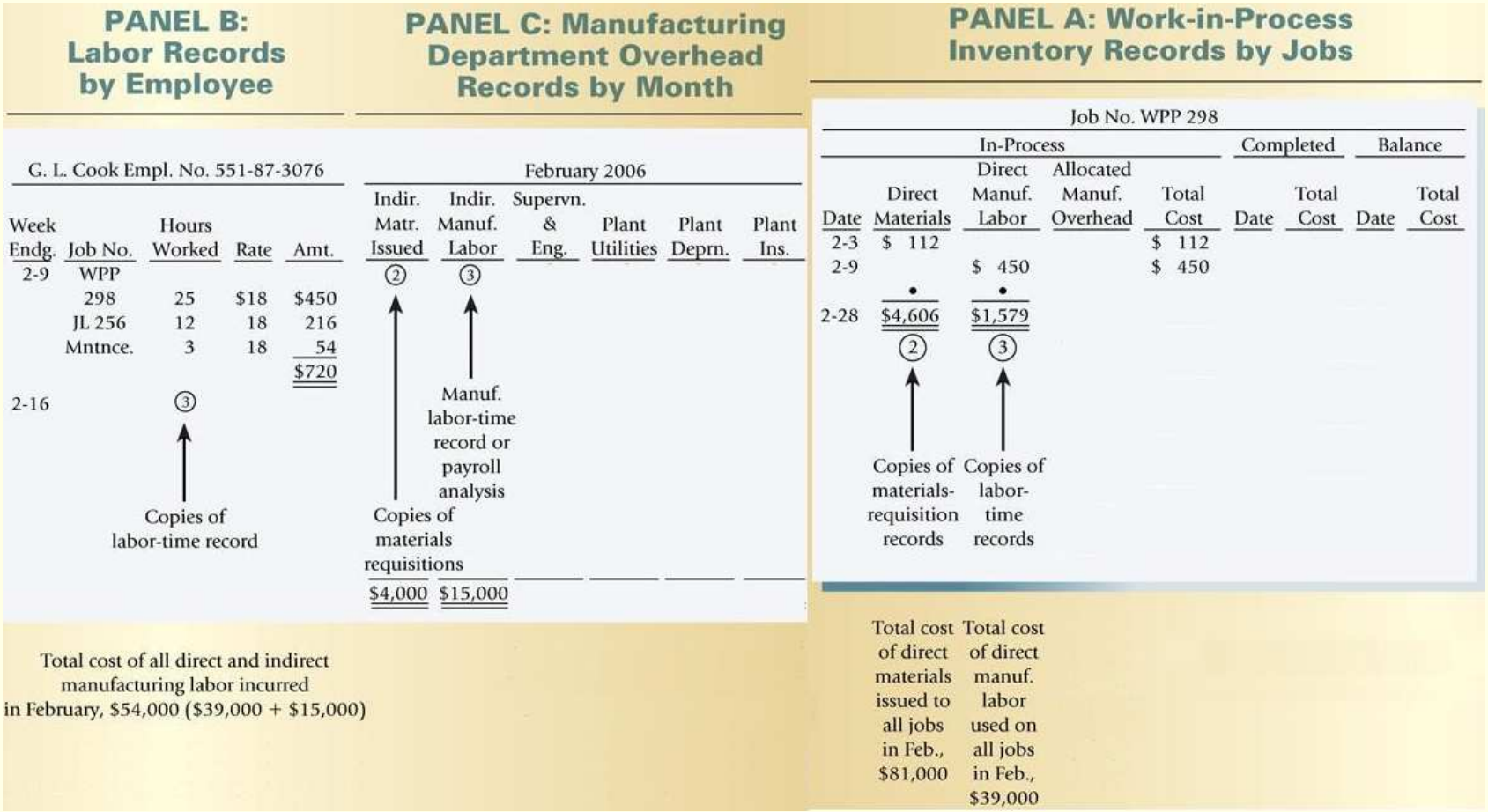


- Transaction 3: Total Manufacturing payroll in February: direct $39,000; indirect $15,000

Work in Process Control	39,000	
Manufacturing Overhead Control	15,000	
Wages Payable Control		54,000

- Transaction 4: Payment of total manufacturing payroll: $54,000

Wages Payable Control	54,000	
Cash Control		54,000


PANEL B: Labor Records by Employee
G. L. Cook Empl. No. 551-87-3076
Week Endg. | Job No. | Hours Worked | Rate | Amt.
2-9 | WPP 298 | 25 | $18 | $450
JL 256 | 12 | 18 | 216
Mntnce. | 3 | 18 | 54
$720
2-16 ③
Copies of labor-time record
PANEL C: Manufacturing Department Overhead Records by Month
February 2006
Indir. Matr. Issued ② | Indir. Manuf. Labor ③ | Supervn. & Eng. | Plant Utilities | Plant Deprn. | Plant Ins.
Manuf. labor-time record or payroll analysis
Copies of materials requisitions
$4,000 | $15,000
Total cost of all direct and indirect manufacturing labor incurred in February, $54,000 ($39,000 + $15,000)
PANEL A: Work-in-Process Inventory Records by Jobs
Job No. WPP 298
In-Process | Completed | Balance
Date | Direct Materials | Direct Manuf. Labor | Allocated Manuf. Overhead | Total Cost | Date | Total Cost | Date | Total Cost
2-3 | $ 112 | | | $ 112
2-9 | | $ 450 | | $ 450
2-28 | $4,606 ② | $1,579 ③
Copies of materials-requisition records
Copies of labor-time records
Total cost of direct materials issued to all jobs in Feb., $81,000
Total cost of direct manuf. labor used on all jobs in Feb., $39,000

Tracking the Flow of Costs: Normal Job Costing

- Transaction 5: Additional manufacturing overhead costs incurred during February, $75,000: engineering and supervisory salaries, $44,000; plant utilities and repairs, $11,000; plant depreciation $18,000; plant insurance $2,000.

Manufacturing Overhead Control	75,000	
Salaries Payable Control		44,000
Accounts Payable Control		11,000
Accumulated Depreciation Control		18,000
Prepaid Insurance Control		2,000

- Transaction 6: Allocation of manufacturing overhead to jobs: $80,000

Work-in-Process control	80,000	
Manufacturing overhead allocated		80,000

PANEL C: Manufacturing Department Overhead Records by Month

February 2006

Indir. Matr. Issued	Indir. Manuf. Labor	Supervn. & Eng.	Plant Utilities	Plant Deprn.	Plant Ins.
②	③	⑤	⑤	⑤	⑤
$4,000	$15,000	$44,000	$11,000	$18,000	$2,000

Copies of materials requisitions

Manuf. labor-time record or payroll analysis

Payroll analysis invoices, special authorizations

Other manufacturing overhead costs incurred in February, $75,000

PANEL A: Work-in-Process Inventory Records by Jobs

Job No. WPP 298

	In-Process				Completed		Balance	
Date	Direct Materials	Direct Manuf. Labor	Allocated Manuf. Overhead	Total Cost	Date	Total Cost	Date	Total Cost
2-3	$ 112			$ 112				
2-9		$ 450		$ 450				
2-28	$4,606	$1,579	$3,520	$9,705				
	②	③	⑥					

Copies of materials-requisition records

Copies of labor-time records

Budgeted rate × actual direct manuf. labor-hours

Total cost of direct materials issued to all jobs in Feb., $81,000

Total cost of direct manuf. labor used on all jobs in Feb., $39,000

Total manuf. overhead allocated to all jobs in Feb., $80,000

- Transaction 7: Completion and transfer to finish goods of 12 individual jobs: $188,800

Finished Goods Control	188,800	
Work-in Process Control		188,800

- Transaction 8: Cost of Goods sold: $180,000

Cost of Goods Sold	180,000	
Finished Goods Control		180,000

- Transaction 9: Sales revenues, all on credit: $270,000

Accounts Receivable Control	270,000	
Revenues		270,000

- Transaction 10: Marketing ($35,000) and customer-service payroll ($15,000) and advertising costs ($10,000) accrued for February

Marketing and Advertising Costs	45,000	
Customer Service Costs	15,000	
Salaries Payable Control		50,000
Accounts Payable Control		10,000

PANEL A: Work-in-Process Inventory Records by Jobs

Job No. WPP 298

In-Process					Completed		Balance	
Date	Direct Materials	Direct Manuf. Labor	Allocated Manuf. Overhead	Total Cost	Date	Total Cost	Date	Total Cost
2-3	$ 112			$ 112				
2-9		$ 450		$ 450				
2-28	$4,606	$1,579	$3,520	$9,705	2-28	$9,705	2-28	$0
	(2)	(3)	(6)			(7)		

(2) Copies of materials-requisition records

(3) Copies of labor-time records

(6) Budgeted rate × actual direct manuf. labor-hours

(7) Completed job-cost record

Total cost of direct materials issued to all jobs in Feb., $81,000

Total cost of direct manuf. labor used on all jobs in Feb., $39,000

Total manuf. overhead allocated to all jobs in Feb., $80,000

Total cost of all jobs completed and transferred to finished goods in Feb., $188,800

PANEL B: Finished Goods Inventory Records by Job

Job No. WPP 298

Received		Issued		Balance	
Date	Amt.	Date	Amt.	Date	Amt.
2-28	$9,705	2-28	$9,705	2-28	$0
(7)		(8)			

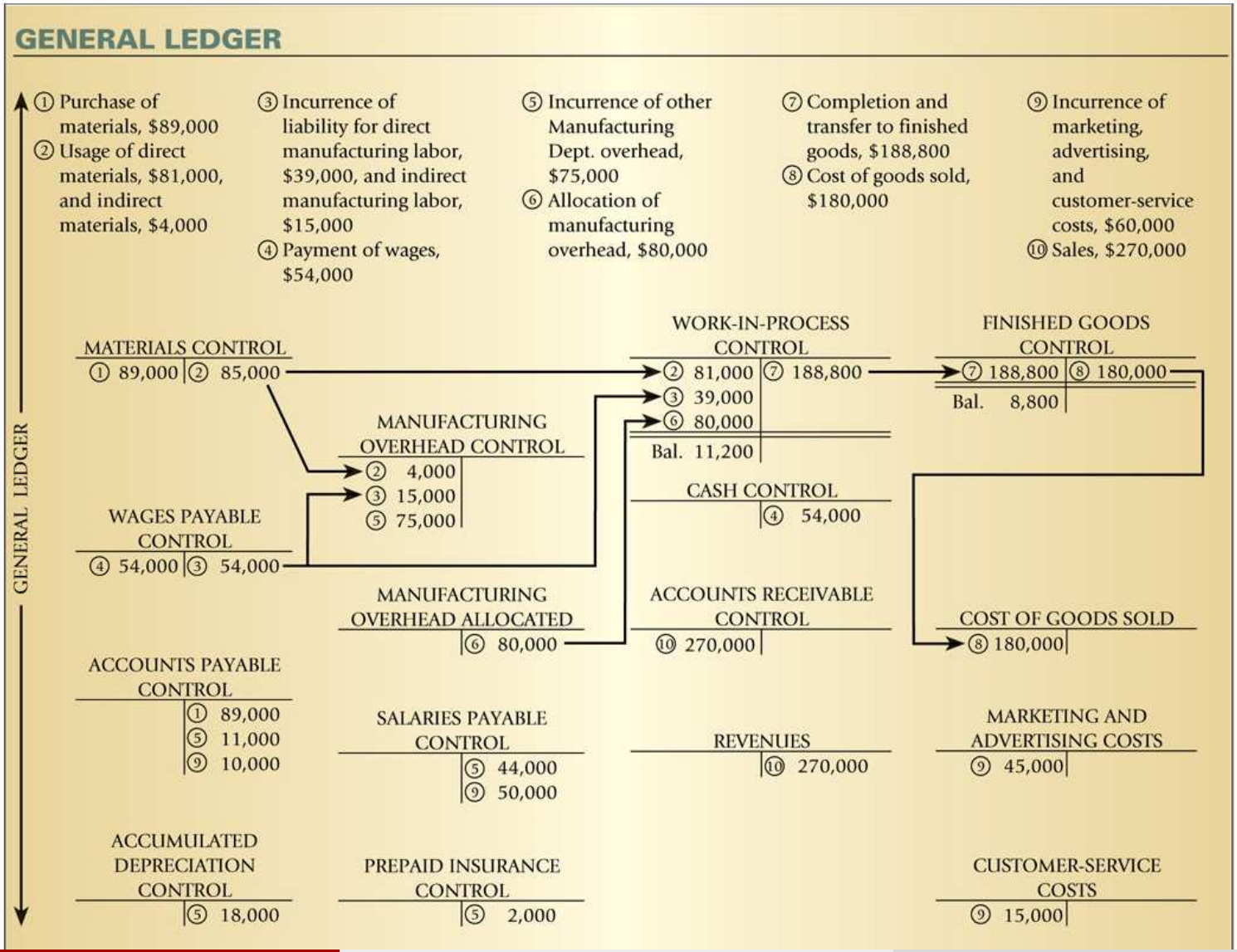
(7) Completed job-cost record

(8) Costed sales invoice

Total cost of all jobs transferred to finished goods in Feb., $188,800

Total cost of all jobs sold and invoiced in Feb., $180,000

Tracking the Flow of Costs: Normal Job Costing



- Two different overhead accounts were used in journal entries:
  - Manufacturing Overhead Control was debited for the actual overhead costs incurred
  - Manufacturing Overhead Allocated was credited for estimated (budgeted) overhead applied to production through the Work-in-Process account
- Budgeted rates are likely to be inaccurate: an imbalance occurs between the two overhead accounts
  - If Overhead Control $>$ Overhead Allocated, this is called Underallocated Overhead
  - If Overhead Control $<$ Overhead Allocated, this is called Overallocated Overhead

Consider the following example:

Robinson Company estimated its manufacturing overhead costs for 2003 to be $1,120,000. The cost allocation base is the total direct manufacturing labor hours, which was estimated to be 28,000 hours. At the end of 2003, actual manufacturing overhead costs incurred turned out to be $1,215,000, and actual total manufacturing labor hours was 27,000.

- Budgeted overhead allocation rate: $1,120,000 / 28,000 = $40/hour
- Overhead allocated at the end of 2003: 27,000 $\times$ $40 = $1,080,000
- The overhead cost is underallocated. Reasons for underallocation:
  - Actual manufacturing overhead costs are greater than the budgeted amount
  - Actual direct manufacturing labor hours are fewer than the budgeted hours.

- Adjusted Allocation Method
  - All overhead entries in the general and subsidiary ledgers are restated using actual rates rather than budgeted rates.
- Proration Approach
  - The difference is spread among ending work-in-process, finished goods, and cost of goods sold
  - The allocation of the difference is in proportion to the amount of overhead allocated to these accounts before proration
  - Assume before Proration $16,200 was allocated to WIP inventory, $31,320 to Finished Goods control and $1,032,480 to cost of goods sold.

- Proration Approach
  - before Proration $\frac{\$16{,}200}{\$1{,}080{,}000} = 1.5\%$ was allocated to WIP inventory, $\frac{\$31{,}320}{\$1{,}080{,}000} = 2.9\%$ to Finished Goods control and $\frac{\$1{,}032{,}480}{\$1{,}080{,}000} = 95.6\%$ to cost of goods sold.
  - Therefore, $\$135,000 \times 0.015 = \$2,025$ will be additionally allocated to to WIP inventory, $\$135,000 \times 0.029 = \$3,915$ to Finished Goods control, and $\$135,000 \times 95.6 = \$129,060$ to cost of goods sold.

Work in Process Control	2,025	
Finished Goods control	3,915	
Cost of Goods Sold	129,060	
Manufacturing Overhead Allocated	1,080,000	
Manufacturing Overhead Control		1,215,000

- Write-Off to Cost of Goods Sold Approach

Cost of Goods Sold	135,000	
Manufacturing Overhead Allocated	1,080,000	
Manufacturing Overhead Control		1,215,000