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Chapter 2 – Job-Order Costing: Calculating Unit Product Costs

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Exercise 2-2

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Garret Corporation uses a predetermined overhead rate of $42.45 per direct labor-hour. This plantwide predetermined rate was based on a cost formula that estimated $7,216,500 of total manufacturing overhead for an estimated activity level of 170,000 direct labor-hours. The company incurred actual total manufacturing overhead costs of $7,110,375 and 165,000 total direct labor-hours during the period.

Required:
Determine the amount of manufacturing overhead that would have been applied to all jobs during the period.

Actual direct labor-hours	165,000
× Predetermined overhead rate	$ 42.45
= Applied manufacturing overhead	$7,004,250

[LO2]

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Exercise 2-3

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Weaver Company's plantwide predetermined overhead rate is $21.00 per direct labor-hour and its direct labor wage rate is $14.00 per hour. The following information pertains to Job A-200:

Direct materials……$290
Direct labor……$210

Required:
1. What is the total manufacturing cost assigned to Job A-200?
2. If Job A-200 consists of 50 units, what is the average cost assigned to each unit in the job?

[LO3]

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Total direct labor-hours required for Job A-200

Direct labor cost	$210
Direct labor wage rate per hour	÷ $14
Total direct labor-hours	15

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Requirement 1: What is the total manufacturing cost assigned to Job A-200?

Direct materials		$290
Direct labor		210
Manufacturing overhead applied	$21 per DLH x 15 DLHs	315
Total manufacturing cost		$815

Manufacturing overhead applied=
Predetermined overhead rate per DLH x Jobs Actual Quantity of DLH

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Requirement 2: If Job A-200 consists of 50 units, what is the average cost assigned to each unit in the job?

Direct materials		$290
Direct labor		210
Manufacturing overhead applied	$21 per DLH x15 DLHs	315
Total manufacturing cost		$815
Number of units in the job		÷ 50
Unit product cost		$16.30

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Exercise 2-5

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Lionheart Company has two manufacturing departments—Molding and Firing. The predetermined departmental overhead rates in Molding and Firing are $23.00 per direct labor-hour and 150% of direct materials cost, respectively. The company's direct labor wage rate is $18.00 per hour. The following information pertains to Job HC-916

	Molding	Firing
Direct materials	$290	$340
Direct labor	$198	$72

Required:

1. What is the total manufacturing cost assigned to Job HC-916?
2. If Job HC-916 consists of 20 units, what is the average cost assigned to each unit in the job?

[LO4]

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Total direct labor-hours required for Job HC-916

	Molding
Direct labor cost	$198
Direct labor wage rate per hour	$18
Total direct labor hours	11

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Requirement 1: What is the total manufacturing cost assigned to Job HC-916?

Direct materials		$630
Direct labor		270
Manufacturing Overhead Molding Department	$253	
Manufacturing Overhead Firing Department	510	763
Total manufacturing cost		$1,663

Manufacturing overhead applied Molding =
Predetermined overhead rate per DLH x Actual Quantity of DLH
= $23/DLH x 11

Manufacturing overhead applied Firing=
Predetermined overhead rate per DM$ x DM$
=150% x $340

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Requirement 2: If Job HC-916 consists of 20 units, what is the average cost assigned to each unit in the job?

Total manufacturing cost	$1,663
Number of units in the job	20
Unit product cost	$83.15

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Exercise 2-6

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Smart Strat is an advisory firm that uses a job-order costing system. Its direct materials consist of hardware and software that it purchases and installs on behalf of its clients. The firm's direct labor includes salaries of advisors that work at the client's job site, and its overhead consists of costs such as depreciation, utilities, and insurance related to the office headquarters as well as the office supplies that are consumed serving clients.

Smart Strat computes its predetermined overhead rate annually on the basis of direct labor-hours. At the beginning of the year, it estimated that 65,000 direct labor-hours would be required for the period's estimated level of client service. The company also estimated $445,250 of fixed overhead cost for the coming period and variable overhead of $1.50 per direct labor-hour. The firm's actual overhead cost for the year was $550,000 and its actual total direct labor was 67,000 hours.

Required:

1. Compute the predetermined overhead rate.
2. During the year, Smart Strat started and completed the Valencia Company engagement. The following information was available with respect to this job:

Direct materials	$29,000
Direct labor cost	$28,500
Direct labor hours worked	300

Compute the total job cost for the Valencia Company engagement.

[LO1, LO2, LO3]

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Requirement:

Compute the company's predetermined overhead rate for the year.

$$Y = a + bX$$

$$Y = \$445{,}250 + (\$1.50)\ (65{,}000 \text{ direct labor-hours})$$

Component	Amount
Estimated fixed overhead	$445,250
Estimated variable overhead:	
$1.50 per DLH × 65,000 DLHs	97,500
Estimated total overhead cost	$542,750

Estimated total overhead	$542,750	
÷ Estimated total direct labor-hours (DLHs)	65,000	DLHs
= Predetermined plantwide overhead rate	$8.35	per DLH

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Guided Example

Requirement 2: Compute the total job cost for the Valencia Company engagement.

Direct materials		$29,000
Direct labor		28,500
Overhead applied	$8.35 per DLH x 300 DLHs	2,505
Total cost		$60,005

Overhead applied=
Predetermined manufacturing overhead rate per DLH x Actual Quantity of DLH

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Exercise 2-7

Guided Example

Ahad Company uses a job-order costing system. Its plantwide predetermined overhead rate uses direct labor-hours as the allocation base. The company pays its direct laborers $16 per hour. During the year, the company started and completed only two jobs—Job Antelope, which used 42,500 direct labor-hours, and Job Zebra. The job cost sheets for the these two jobs are shown below:

Job Antelope		Job Zebra	
Direct materials	?	Direct materials	$150,000
Direct labor cost	?	Direct labor cost	288,000
Manufacturing overhead applied	?	Manufacturing overhead applied	183,960
Total job cost	$1,285,000	Total job cost	$621,960

Required:

1. Calculate the plantwide predetermined overhead rate.
2. Complete the job cost sheet for Job Antelope.

[LO1, LO2, LO3]

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Requirement 1:

Calculate the plantwide predetermined overhead rate.

Direct labor cost	$288,000
Direct labor wage rate per hour	$16
Total direct labor hours worked	18,000

Manufacturing overhead applied to Job Zebra	$183,960	
Direct labor hours worked on Job Zebra	18,000	
Plantwide predetermined overhead rate	$10.22	per DLH

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Requirement 2: Complete the job cost sheet for Job Antelope.

Direct materials (plug)		$170,650
Direct labor	$16.00 per DLH x 42,500 DLHs	680,000
Overhead applied	$10.22 per DLH x 42,500 DLHs	434,350
Total cost		$1,285,000

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Exercise 2-8

Guided Example

Newhard Company assigns overhead cost to jobs on the basis of 140% of direct labor cost. The job cost sheet for Job XN99 includes $19,000 in direct materials cost and $15,000 in direct labor cost. A total of 500 units were produced in Job XN99.

Required:
What is the total manufacturing cost assigned to Job XN99?
What is the unit product cost for Job XN99.

[LO2],[LO3]

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Requirement : What is the total manufacturing cost assigned to Job XN99? What is the unit product cost for Job XN99.

Direct material	$19,000
Direct labor	15,000
Manufacturing overhead applied:	
$15,000 × 140%	21,000
Total manufacturing cost	$55,000
Total manufacturing cost	$55,000
Number of units in job	500
Unit product cost	$110

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Exercise 2-9

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Vence Corporation is currently operating at 40% of its available manufacturing capacity. It uses a job-order costing system with a plantwide predetermined overhead rate based on machine-hours. At the beginning of the year, the company made the following estimates:

Machine-hours required to support estimated production	40,000
Fixed manufacturing overhead cost	$792,000
Variable manufacturing overhead cost per machine-hour	$1.50

Required:

1. Compute the plantwide predetermined overhead rate.
2. During the year, Job 2K17 was started, completed, and sold to the customer for $4,000. The following information was available with respect to this job:

Direct materials	$2,100
Direct labor cost	$1,265
Machine hours used	90

Compute the total manufacturing cost assigned to Job 2K17.

3. Upon comparing Job 2K17's sales revenue to its total manufacturing cost, the company's chief financial officer said "If this exact same opportunity walked through our front door tomorrow, I'd turn it down rather than making it and selling it for $4,000." Do you agree?

[LO1, LO2, LO3, LO6]

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Requirement:

Compute the company's predetermined overhead rate for the year.

$$Y = a + bX$$

$$Y = \$792{,}000 + (\$1.50 \times 40{,}000 \text{ machine hours})$$

Component	Amount
Estimated fixed overhead	$792,000
Estimated variable overhead:	
$1.50 per MH × 40,000 MHs	60,000
Estimated total manufacturing overhead cost	$852,000

Estimated total overhead	$852,000	
÷ Estimated total machine hours (MHs)	40,000	MHs
= Predetermined plantwide overhead rate	$21.30	per MH

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Guided Example

Requirement 2: Compute the total manufacturing cost assigned to Job 2K17.

Direct materials		$2,100
Direct labor		1,265
Overhead applied	$21.30 per MH x 90 MHs	1,917
Total cost		$5,282

Overhead applied=
Predetermined plantwide manufacturing overhead rate per MH
x
Actual Quantity of MH

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Requirement 3: Prepare some analysis to support or refute the CFO's position

Sales		$ 4,000
Direct materials	$2,100	
Direct labor	1,265	
Manufacturing overhead applied	1,917	5,282
Loss on Job		$(1,282)

Sales		$ 4,000
Direct materials	$2,100	
Direct labor	1,265	
Variable overhead applied	135	3,500
Contribution margin		$ 500

Current machine hours	40,000
Current capacity	40%
Machine hours at full capacity	100,000

Estimated fixed overhead	$792,000	
Estimated total machine-hours	100,000	MHs
Predetermined fixed overhead rate	$7.92	per MH
Add: variable overhead per MH	$1.50	per MH
Predetermined capacity overhead rate	$9.42	per MH

Sales		$ 4,000
Direct materials	$2,100	
Direct labor	1,265	
Overhead applied	848	4,213
Loss on job		$ (213)