Chapter 19

STANDARD COSTING: INCORPORATING STANDARDS INTO THE ACCOUNTING RECORDS

MULTIPLE CHOICE

Question Nos. 8-15, 17, and 19-21 are AICPA adapted.
Question Nos. 16, 22, and 23 are ICMA adapted.
Question No. 18 is CIA adapted.

D **1.** **When the amount for materials inventory in the general ledger represents the standard cost of materials and the materials ledger cards are kept in quantities only, the materials price variance is:**

- **A. recorded at the time of disposition of the inventory**
- **B. ignored**
- **C. recorded when materials are requisitioned for production**
- **D. recorded when materials are received**
- **E. allocated to cost of sales only**

B **2.** **A company recorded the following journal entry when materials were issued to the factory:**

Work in Process	**9,000**	
Materials Quantity Variance		**200**
Materials		**8,800**

Assuming that there was both a price variance and a quantity variance associated with these materials, this entry indicates that the method used for materials price variances is to:

- **A. allocate variances to ending inventories and cost of sales**
- **B. record variances at the time materials are received**
- **C. record variances at the time of disposition of work in process**
- **D. allocate variances to cost of sales only**
- **E. record variances at the time materials are used**

D **3.** **Variances resulting from materials price changes that are to be passed on to customers are:**

- **A. charged to cost of goods sold**
- **B. carried as a special credit to inventory accounts**
- **C. recorded as ordinary inflation revenue**
- **D. allocated to inventories and cost of goods sold**
- **E. charged to a special loss account**

E **4.** **When standard cost variances are significant, Cost Accounting Standards require that the variances be:**
- **A. charged to cost of goods sold**
- **B. deferred**
- **C. allocated to inventories only if they are allocated solely for financial reporting purposes**
- **D. recorded as extra income in the current period**
- **E. allocated to inventories as well as cost of goods sold**

D **5.** **If new standard costs reflect conditions that affected the actual cost of goods in the ending inventory, then ending inventories are costed at:**
- **A. the contra amount carried in cost of sales**
- **B. the old standard**
- **C. the amount carried in the variance accounts**
- **D. the new standard**
- **E. actual cost**

A **6.** **A credit balance in the labor efficiency variance indicates that:**
- **A. standard hours exceed actual hours**
- **B. actual hours exceed standard hours**
- **C. standard rate and standard hours exceed actual rate and actual hours**
- **D. actual rate and actual hours exceed standard rate and standard hours**
- **E. none of the above**

D **7.** **A debit balance in a direct labor efficiency variance account indicates that:**
- **A. actual total direct labor costs incurred were less than standard direct labor costs allowed for the units produced**
- **B. the number of units produced was less than the number of units budgeted for the period**
- **C. the average wage rate paid to direct labor employees was less than the standard rate**
- **D. the standard hours allowed for the units produced were less than actual direct labor hours used**
- **E. all of the above**

E 8. Josey Manufacturing Corporation uses a standard cost system that records direct materials at actual cost, records materials price variances at the time that direct materials are issued to work in process, and prorates all variances at year end. Variances associated with direct materials are prorated based on the direct materials balances in the appropriate accounts, and variances associated with direct labor and factory overhead are prorated based on the direct labor balances in the appropriate accounts.

The following information is available for Josey for the year ended December 31:

Finished goods inventory at December 31:	
Direct materials	**$ 87,000**
Direct labor	**130,500**
Applied factory overhead	**104,400**
Direct materials inventory at December 31	**65,000**
Cost of goods sold for the year ended December 31:	
Direct materials	**348,000**
Direct labor	**739,500**
Applied factory overhead	**591,600**
Direct materials price variance (unfavorable)	**12,500**
Direct materials usage variance (favorable)	**15,000**
Direct labor rate variance (unfavorable)	**20,000**
Direct labor efficiency variance (favorable)	**5,000**
Factory overhead incurred	**690,000**

There were no beginning inventories and no ending work in process inventory. Factory overhead is applied at 80% of standard direct labor cost.

The amount of direct materials price variance to be prorated to finished goods inventory at December 31 is a:

A. $1,740 debit
B. $2,000 debit
C. $2,610 credit
D. $3,000 credit
E. none of the above

SUPPORTING CALCULATION:

$$\frac{\$87{,}000}{\$87{,}000 + \$348{,}000} \_ \$12{,}500 = \$2{,}500$$

A 9. Josey Manufacturing Corporation uses a standard cost system that records direct materials at actual cost, records materials price variances at the time that direct materials are issued to work in process, and prorates all variances at year end. Variances associated with direct materials are prorated based on the direct materials balances in the appropriate accounts, and variances associated with direct labor and factory overhead are prorated based on the direct labor balances in the appropriate accounts.

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Direct materials usage variance (favorable)	**15,000**
Direct labor rate variance (unfavorable)	**20,000**
Direct labor efficiency variance (favorable)	**5,000**
Factory overhead incurred	**690,000**

There were no beginning inventories and no ending work in process inventory. Factory overhead is applied at 80% of standard direct labor cost.

The total amount of direct materials in finished goods inventory at December 31, after all materials variances have been prorated, is:

A. $86,500
B. $87,500
C. $88,000
D. $86,000
E. none of the above

$$\$87{,}000 + \left(\frac{\$87{,}000}{\$87{,}000 + \$348{,}000} - \$12{,}500\right) \bullet \left(\frac{\$87{,}000}{\$87{,}000 + \$348{,}000} - \$15{,}000\right)$$

$$= \$86{,}500$$

SUPPORTING CALCULATION:

C 10. Josey Manufacturing Corporation uses a standard cost system that records direct materials at actual cost, records materials price variances at the time that direct materials are issued to work in process, and prorates all variances at year end. Variances associated with direct materials are prorated based on the direct materials balances in the appropriate accounts, and variances associated with direct labor and factory overhead are prorated based on the direct labor balances in the appropriate accounts.

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Cost of goods sold for the year ended December 31:	
Direct materials	**348,000**
Direct labor	**739,500**
Applied factory overhead	**591,600**
Direct materials price variance (unfavorable)	**12,500**
Direct materials usage variance (favorable)	**15,000**
Direct labor rate variance (unfavorable)	**20,000**
Direct labor efficiency variance (favorable)	**5,000**
Factory overhead incurred	**690,000**

There were no beginning inventories and no ending work in process inventory. Factory overhead is applied at 80% of standard direct labor cost.

The total amount of direct labor in finished goods inventory at December 31, after all variances have been prorated, is:

A. $126,750
B. $134,250
C. $132,750
D. $133,750
E. none of the above

SUPPORTING CALCULATION:

$$\$130{,}500 + \left(\frac{\$130{,}500}{\$130{,}500 + \$739{,}500} - \$20{,}000\right)\left(\frac{\$130{,}500}{\$130{,}500 + \$739{,}500} - \$5{,}000\right)$$

$$= \$132{,}750$$

B 11. Josey Manufacturing Corporation uses a standard cost system that records direct materials at actual cost, records materials price variances at the time that direct materials are issued to work in process, and prorates all variances at year end. Variances associated with direct materials are prorated based on the direct materials balances in the appropriate accounts, and variances associated with direct labor and factory overhead are prorated based on the direct labor balances in the appropriate accounts.

The following information is available for Josey for the year ended December 31:

Finished goods inventory at December 31:	
Direct materials	**$ 87,000**
Direct labor	**130,500**
Applied factory overhead	**104,400**
Direct materials inventory at December 31	**65,000**
Cost of goods sold for the year ended December 31:	
Direct materials	**348,000**
Direct labor	**739,500**
Applied factory overhead	**591,600**
Direct materials price variance (unfavorable)	**12,500**
Direct materials usage variance (favorable)	**15,000**
Direct labor rate variance (unfavorable)	**20,000**
Direct labor efficiency variance (favorable)	**5,000**
Factory overhead incurred	**690,000**

There were no beginning inventories and no ending work in process inventory. Factory overhead is applied at 80% of standard direct labor cost.

The total cost of goods sold for the year ended December 31, after all variances have been prorated, is:

A. $1,693,850
B. $1,684,750
C. $1,675,450
D. $1,683,270
E. none of the above

SUPPORTING CALCULATION:

$348,000 + $739,500 + $591,600 + ($15,000 x .85) - ($2,500 x .80) - .85 ($6,000) = $1,684,750

B 12. Kaiser Manufacturing Company uses a standard cost system in accounting for the costs of production of its only product, Product A. The standards for the production of one unit of Product A are as follows:

Direct materials: 10 feet of Item 1 at $.78 per foot and 3 feet of Item 2 at $1 per foot
Direct labor: 4 hours at $3.60 per hour
Factory overhead: applied at 150% of standard direct labor costs

There was no inventory on hand at the end of the year. Materials price variances are isolated at purchase. Following is a summary of costs and related data for the production of Product A during the year:

100,000 feet of Item 1 were purchased at $.75 per foot.
30,000 feet of Item 2 were purchased at $.90 per foot.
8,000 units of Product A were produced that required 78,000 feet of Item 1, 26,000 feet of Item 2, and 31,000 hours of direct labor at $3.50 per hour.
6,000 units of Product A were sold.

The total debits to the direct materials account for the purchase of Item 1 should be:
A. $75,000
B. $78,000
C. $58,500
D. $60,000
E. none of the above

SUPPORTING CALCULATION:

100,000 x $.78 = $78,000

D 13. Kaiser Manufacturing Company uses a standard cost system in accounting for the costs of production of its only product, Product A. The standards for the production of one unit of Product A are as follows:

Direct materials: 10 feet of Item 1 at $.78 per foot and 3 feet of Item 2 at $1 per foot
Direct labor: 4 hours at $3.60 per hour
Factory overhead: applied at 150% of standard direct labor costs

There was no inventory on hand at the end of the year. Materials price variances are isolated at purchase. Following is a summary of costs and related data for the production of Product A during the year:

100,000 feet of Item 1 were purchased at $.75 per foot.
30,000 feet of Item 2 were purchased at $.90 per foot.
8,000 units of Product A were produced that required 78,000 feet of Item 1, 26,000 feet of Item 2, and 31,000 hours of direct labor at $3.50 per hour.
6,000 units of Product A were sold.

The total debits to the work in process account for direct labor should be:
A. $111,600
B. $108,500
C. $112,000
D. $115,200
E. none of the above

SUPPORTING CALCULATION:

8,000 x 4 x $3.60 = $115,200

A 14. Kaiser Manufacturing Company uses a standard cost system in accounting for the costs of production of its only product, Product A. The standards for the production of one unit of Product A are as follows:

Direct materials: 10 feet of Item 1 at $.78 per foot and 3 feet of Item 2 at $1 per foot
Direct labor: 4 hours at $3.60 per hour
Factory overhead: applied at 150% of standard direct labor costs

There was no inventory on hand at the end of the year. Materials price variances are isolated at purchase. Following is a summary of costs and related data for the production of Product A during the year:

100,000 feet of Item 1 were purchased at $.75 per foot.
30,000 feet of Item 2 were purchased at $.90 per foot.
8,000 units of Product A were produced that required 78,000 feet of Item 1, 26,000 feet of Item 2, and 31,000 hours of direct labor at $3.50 per hour.
6,000 units of Product A were sold.

Before allocation of standard variances, the balance in the materials quantity variance account of Item 2 was:

A. $2,000 debit
B. $1,000 credit
C. $2,600 debit
D. $600 debit
E. $1,000 debit

SUPPORTING CALCULATION:

26,000 - (8,000 x 3 x $1) = $2,000

C 15. Kaiser Manufacturing Company uses a standard cost system in accounting for the costs of production of its only product, Product A. The standards for the production of one unit of Product A are as follows:

Direct materials: 10 feet of Item 1 at $.78 per foot and 3 feet of Item 2 at $1 per foot
Direct labor: 4 hours at $3.60 per hour
Factory overhead: applied at 150% of standard direct labor costs

There was no work in process inventory on hand at the end of the year. Materials price variances are isolated at purchase. Following is a summary of costs and related data for the production of Product A during the year:

100,000 feet of Item 1 were purchased at $.75 per foot.
30,000 feet of Item 2 were purchased at $.90 per foot.
8,000 units of Product A were produced that required 78,000 feet of Item 1, 26,000 feet of Item 2, and 31,000 hours of direct labor at $3.50 per hour.
6,000 units of Product A were sold.

If all standard variances are prorated to inventories and cost of goods sold, the amount of materials quantity variance for Item 2 to be prorated to direct materials inventory would be:

A. $500 debit
B. $500 credit
C. 0
D. $333 credit
E. $333 debit

SUPPORTING CALCULATION:

The variance would be allocated only to finished goods and cost of goods sold.

E 16. The most *appropriate* time from a control standpoint to record any variance of actual materials prices from standard is:

A. at the time of materials usage
B. as needed to evaluate the performance of the purchasing manager
C. at the time the materials are issued by the storeroom
D. at year end, when all variances will be known
E. at the time of purchase

C 17. Standard costing will produce the same income before extraordinary items as does actual costing when standard cost variances are assigned to:

A. work in process and finished goods inventories
B. an income or expense account
C. cost of goods sold and inventories
D. cost of goods sold
E. income summary

D **18.** **When items are transferred from stores to production, an accountant debits Work in Process and credits Materials. During production, a materials quantity variance may occur. Materials Quantity Variance is debited for an unfavorable variance and credited for a favorable variance. The intent of variance entries is to provide:**

A. accountability for materials lost during production
B. a means of safeguarding assets in the custody of the system
C. compliance with GAAP
D. information for use in controlling the cost of production
E. all of the above

B **19.** **At the end of an accounting period, a quantity variance that is significant in amount should be:**

A. reported as a deferred charge or credit
B. allocated among work in process inventory, finished goods inventory, and cost of goods sold
C. charged or credited to cost of goods manufactured
D. allocated among cost of goods manufactured, finished goods inventory, and cost of goods sold
E. none of the above

C **20.** **What is the normal year-end treatment of immaterial variances recognized in a cost accounting system utilizing standards?**

A. reclassified to deferred charges until all related production is sold
B. allocated among cost of goods manufactured and ending work in process inventory
C. closed to Cost of Goods Sold in the period in which they arose
D. capitalized as a cost of ending finished goods inventory
E. none of the above

A **21.** **An unacceptable treatment of factory overhead variances at an interim reporting date is to:**

A. apportion the total only between work in process and finished goods inventories on hand at the end of the interim reporting period
B. apportion the total only between that part of the current period's production remaining in inventories at the end of the period and that part sold during the period
C. carry forward the total to be offset by opposite balances in later periods
D. charge or credit the total to Cost of Goods Sold during the period
E. all are acceptable

A 22. Sam Company adopted a standard cost system several years ago. The standard costs for the prime costs of its single product are as follows:

Material (8 kilograms x $5.00/kg.)	**$40.00**
Labor (6 hours x $8.20/hr.)	**$49.20**

The operating data in the following column were taken from the records for November:

In-process beginning inventory—none
In-process ending inventory—800 units, 75% complete as to labor; material is issued at the beginning of processing
Units completed—5,600 units
Budgeted output—6,000 units
Purchases of materials—50,000 kilograms
Total actual labor costs—$300,760
Actual hours of labor—36,500 hours
Material usage variance—$1,500 unfavorable
Total material variance—$750 unfavorable

The total amount of material and labor cost transferred to the finished goods account for November is:

A. $499,520
B. $535,200
C. $550,010
D. $561,040
E. none of the above

SUPPORTING CALCULATION:

(5,600 x $40) + (5,600 x $49.20) = $499,520

C 23. Sam Company adopted a standard cost system several years ago. The standard costs for the prime costs of its single product are as follows:

Material (8 kilograms x $5.00/kg.)	**$40.00**
Labor (6 hours x $8.20/hr.)	**$49.20**

The operating data in the following column were taken from the records for November:

In-process beginning inventory—none
In-process ending inventory—800 units, 75% complete as to labor; material is issued at the beginning of processing
Units completed—5,600 units
Budgeted output—6,000 units
Purchases of materials—50,000 kilograms
Total actual labor costs—$300,760
Actual hours of labor—36,500 hours
Material usage variance—$1,500 unfavorable
Total material variance—$750 unfavorable

The total amount of material and labor cost in the ending balance of work in process inventory at the end of November is:

A. 0
2. $9,840
3. $61,520
4. $71,360
E. none of the above

SUPPORTING CALCULATION:

(800 x $40) + (800 x .75 x $49.20) = $61,520

C 24. When the amount for materials inventory in the general ledger represents the actual cost of materials and the materials ledger cards show quantities and dollar values, the materials price variance is:
A. recorded at the time of disposition of the inventory
B. ignored
C. recorded when materials are requisitioned for production
D. recorded when materials are received
E. allocated to cost of sales only

E 25. The treatment of variances depends upon all of the following, *except* the:
A. type of variance
B. size of the variance
C. cause of the variance
D. timing of the variance
E. it depends upon all of the above

The following questions are based on the material in the Appendix to the chapter.

C 26. A company recorded the following journal entry:

Work in Process	10,310	
Factory Overhead Variable Efficiency Variance	950	
Factory Overhead Fixed Efficiency Variance	425	
Factory Overhead Control		11,685

This entry indicates that the:

A. four-variance method is in use and the variance is favorable
B. three-variance method is in use and the variance is favorable
C. four-variance method is in use and the variance is unfavorable
D. two-variance method is in use and the variance is favorable
E. three-variance method is in use and the variance is unfavorable

A 27. In the alternative three-variance method, the amount of over- or underapplied factory overhead is analyzed as:

A. spending, idle capacity, and efficiency variances
B. volume, variable efficiency, and fixed efficiency variances
C. controllable, spending, and idle capacity variances
D. volume, variable efficiency, and spending variances
E. none of the above

D 28. In the four-variance method, the amount of over- or underapplied factory overhead is analyzed as:

A. spending, idle capacity, efficiency, and volume variances
B. controllable idle capacity, spending, and efficiency variances
C. variable efficiency, fixed efficiency, controllable, and volume variances
D. variable efficiency, fixed efficiency, spending, and idle capacity variances
E. none of the above

PROBLEMS

PROBLEM

1.

Journal Entries for Variances. Parrothead Corp. determines that the following variances arose in production during March:

Variance	Amount	
Materials purchase price	$2,400	favorable
Materials quantity	1,000	favorable
Labor efficiency	500	favorable
Labor rate	750	unfavorable
Factory overhead volume	1,700	favorable
Factory overhead controllable	2,950	unfavorable

Materials purchases totaled $90,000 at standard costs, while $77,000 in materials were taken from inventory for use in production. Labor payroll totaled $144,000, and actual overhead incurred was $256,000.

Required: **Prepare the journal entries to record the above variances, including the recording of the actual and applied factory overhead using a single factory overhead control account.**

SOLUTION

Materials	90,000	
Materials Purchase Price Variance		2,400
Accounts Payable		87,600
Work in Process	78,000	
Materials		77,000
Materials Quantity Variance		1,000
Work in Process	143,750	
Labor Rate Variance	750	
Payroll		144,000
Labor Efficiency Variance		500
Factory Overhead Control	256,000	
Various Credits		256,000
Work in Process	254,750	
Factory Overhead Controllable Variance	2,950	
Factory Overhead Control		256,000
Factory Overhead Volume Variance		1,700

or

Work in Process	254,750	
Factory Overhead Control		254,750

Factory Overhead Controllable Variance	**2,950**	
Factory Overhead Volume Variance		**1,700**
Factory Overhead Control		**1,250**

PROBLEM

2.
Journal Entries, Three-Variance Method. Canelli Products Co. presents the following data related to June production:

Item	100% Budget	80% Budget	Actual
Materials	**$ 30,000**	**$ 24,000**	**$ 23,600**
Labor	**60,000**	**48,000**	**52,500**
Factory overhead	**280,000**	**250,000**	**252,500**
	$ 370,000	**$ 322,000**	**$ 328,600**

Item	100% Budget	80% Budget	Actual
Direct labor hours	**5,000**	**4,000**	**4,200**
Labor rate	**--**	**--**	**$12.50**
Materials purchases	**--**	**--**	**--**
Production in units	**2,500**	**2,000**	**2,000**

Required: **Prepare the journal entries to record the above data, including the recording of the actual and applied factory overhead using a single factory overhead control account and using the three-variance method. The company records the materials price variance at the time that materials are purchased. The factory overhead is based on the budget at 100%. (*Hint:* To obtain the overhead variances, first solve for the variable overhead rate.)**

SOLUTION

Work in Process	**24,000**	
Materials Quantity Variance		**400**
Materials		**23,600**
Work in Process	**48,000**	
Labor Efficiency Variance [$12 x (4,200 DLH - 4,000 DLH)]	**2,400**	
Labor Rate Variance [($12.50 - $12) x 4,200 DLH]	**2,100**	
Payroll ($12.50 x 4,200 DLH)		**52,500**
Factory Overhead Control	**252,500**	
Various Credits		**252,500**

$$\frac{\text{Overhead at 100\%} \quad \text{Overhead at 80\%}}{\text{Hours at 100\%} \quad \text{Hours at 80\%}} = \frac{\$280{,}000 \quad \$250{,}000}{5{,}000 \quad 4{,}000}$$

$$= \$30 \text{ per hour varia ble overhead}$$

Work in Process	**224,000**	
Factory Overhead Variable Efficiency Variance	**6,000[2]**	
Factory Overhead Volume Variance	**26,000[3]**	
Factory Overhead Control		**252,500**
Factory Overhead Spending Variance		**3,500[1]**

Actual factory overhead		**$ 252,500**	
Budget allowance based on actual hours:			
Fixed expense	**$ 130,000[1]**		
Variable expense (4,200 hours x $30)	**126,000**	**256,000**	
Factory overhead spending variance		**$ (3,500)**	**fav.**

[1]$250,000 - $30 (4,000) = $130,000 fixed overhead

[2]Budget allowance based on actual hours		**$ 256,000**	
Budget allowance based on standard hours allowed:			
Variable overhead (4,000 x $30)	**$ 120,000**		
Fixed overhead ($250,000 - $120,000)	**130,000**	**250,000**	
Variable efficiency variance		**$ 6,000**	
unfav.			

[3]Budget allowance based on standard hours allowed		**$ 250,000**	
Standard factory overhead charged to production ($56 x 4,000)		**224,000**	
Volume variance		**$ 26,000**	
unfav.			

PROBLEM

3.
Materials, Labor, and Overhead Variance Analyses. TYPCO Corp. manufactures changeable typeheads for use on portable typewriters. Each typehead is in a set consisting of the lead alloy typehead itself, a cover for the key on the typewriter keyboard, and a plastic box to hold the two items. At the beginning and end of June, there were no materials inventories. The following standards were developed for each unit:

Item	**Standard per Unit**
Materials:	
Lead alloy (3 oz. @ $.22)	**$ .66**
Cover materials (6 oz. @ $.04)	**.24**
Container boxes (1 @ $.10)	**.10**
Direct labor (1/4 hr. @ $12 per hr.)	**3.00**
Overhead ($10 per direct labor hour)	**2.50**
Total cost	**$ 6.50**

Annual production is estimated at 50,000 units, with fixed overhead of $25,000. During the past year, the following costs were incurred to produce 40,000 units:

Materials:
Lead alloy: 122,000 oz. @ $.20
Cover materials: 235,000 oz. @ $.04
Container boxes: 40,500 @ $.09
Direct labor: 9,500 hrs. @ $12.50
Overhead: $90,000

Required: **Compute the variances for each materials and labor item, recording the materials price variance at the time of usage. Show the overhead variances using the two-variance method. (Indicate whether each variance is favorable or unfavorable.)**

SOLUTION

Materials Variances

Lead alloy:	
Actual (122,000 oz. @ $.20)	**$ 24,400**
Actual usage at standard cost (122,000 oz. @ $.22)	**26,840**
Price variance	**$ (2,440) fav.**
Actual usage at standard cost	**$ 26,840**
Standard usage at standard cost (3 oz. per unit x 40,000 units x $.22)	**26,400**
Quantity variance	**$ 440 unfav.**
Cover materials:	
Actual (235,000 oz. @ $.04)	**$ 9,400**
Actual usage at standard cost (same)	**9,400**
Price variance	**$ 0**
Actual usage at standard cost	**$ 9,400**
Standard usage at standard cost (6 oz. per unit x 40,000 units x $.04)	**9,600**
Quantity variance	**$ (200) fav.**
Container boxes:	
Actual (40,500 @ $.09)	**$ 3,645**
Actual usage at standard cost (40,500 @ $.10)	**4,050**
Price variance	**$ (405) fav.**
Actual usage at standard cost	**$ 4,050**
Standard usage at standard cost (40,000 x $.10)	**4,000**
Quantity variance	**$ 50 unfav.**

Labor Variances

Actual (9,500 hrs. @ $12.50)	**$ 118,750**
Actual hours at standard rate (9,500 hrs. @ $12.00)	**114,000**
Labor rate variance	**$ 4,750 unfav.**
Actual hours at standard rate	**$ 114,000**
Standard hours at standard rate (1/4 hr. per unit x 40,000 units x $12.00)	**120,000**
Labor efficiency variance	**$ (6,000) fav.**

Overhead Variances

Actual overhead		**$ 90,000**	
Budget allowance based on standard hours allowed:			
Fixed overhead	**$25,000**		
Variable overhead [($2.50 per unit x 50,000 units) - $25,000] x 80%	**80,000**	**105,000**	
Controllable variance		**$ (15,000)**	**fav.**
Budget allowance		**$ 105,000**	
Standard cost charged in (40,000 units x 1/4 hr. per unit x $10)		**100,000**	
Volume variance		**$ 5,000**	
unfav.			

PROBLEM

4.
Allocation of Variances to Inventory and Cost of Goods Sold. The management of Paco Products was presented with the following distribution of materials, labor, and overhead costs in inventories and cost of goods sold:

	Materials Costs	Direct Labor Costs	Overhead Costs
Materials—ending inventory	**$ 100,000**	**--**	**--**
Work in process—ending inventory	**150,000**	**$ 250,000**	**$ 150,000**
Finished goods—ending inventory	**50,000**	**250,000**	**150,000**
Cost of goods sold	**800,000**	**2,000,000**	**1,200,000**
	$ 1,100,000	**$ 2,500,000**	**$ 1,500,000**

During the year, the following variances were noted:

Materials price usage	**$(10,000)**	**favorable**
Materials quantity	**22,280**	
unfavorable		
Labor rate	**(27,000)**	**favorable**
Labor efficiency	**23,000**	
unfavorable		
Net overhead	**31,500**	
unfavorable		

Required:

(1) Allocate the variances to inventories and cost of goods sold.
(2) Determine the cost of goods sold after the allocation of variances.

SOLUTION

(1)
Materials price usage variance to:

Work in process	$\frac{\$150,000}{\$1,000,000}$	**x**	**$ (10,000)**	**=**	**(1,500)**	**fav.**
Finished goods	$\frac{\$50,000}{\$1,000,000}$	**x**	**$ (10,000)**	**=**	**(500)**	**fav.**
Cost of goods sold	$\frac{\$800,000}{\$1,000,000}$	**x**	**$ (10,000)**	**=**	**(8,000)**	**fav.**
Total					**$ (10,000)**	**fav.**

Materials quantity variance to:

Work in process	$\frac{\$150,000}{\$1,000,000}$	**x**	**$ 22,280**	**=**	**$ 3,342**	**unfav.**
Finished goods	$\frac{\$50,000}{\$1,000,000}$	**x**	**$ 22,280**	**=**	**1,114**	**unfav.**
Cost of goods sold	$\frac{\$800,000}{\$1,000,000}$	**x**	**$ 22,280**	**=**	**17,824**	**unfav.**
Total					**$ 22,280**	**unfav.**

Labor variances to:

Work in process	$\frac{\$250,000}{\$2,500,000}$	**x**	**$ (4,000)**	**=**	**$ (400)**	**fav.**
Finished goods (same as to work in process)				**=**	**(400)**	**fav.**
Cost of goods sold	$\frac{\$2,000,000}{\$2,500,000}$	**x**	**$ (4,000)**	**=**	**(3,200)**	**fav.**
Total					**$ (4,000)**[1]	**fav.**

[1] **Labor rate variance - Labor efficiency variance = Net labor variance**
($27,000) fav. - $23,000 unfav. = ($4,000) fav.

Overhead variances to:

Work in process	**$150,000 / $1,500,000**	**x**	**$**	**31,500**	**=**	**$ 3,150**	**unfav.**
Finished goods	**$150,000 / $1,500,000**	**x**	**$**	**31,500**	**=**	**3,150**	**unfav.**
Cost of goods sold	**$1,200,000 / $1,500,000**	**x**	**$**	**31,500**	**=**	**25,200**	**unfav.**
Total						**$ 31,500**	**unfav.**

(2)

Standard cost of goods sold:	
Materials	**$ 800,000**
Labor	**2,000,000**
Overhead	**1,200,000**
	$ 4,000,000
Add unfavorable variances:	
Materials quantity	**17,824**
Overhead	**25,200**
Less favorable variances:	
Materials price usage	**(8,000)**
Labor	**(3,200)**
Cost of goods sold after allocation	**$ 4,031,824**

The following problems are based on material in the Appendix to the chapter.

PROBLEM

5.

Journal Entries for Factory Overhead; Alternate Three-Variance Method. The practical capacity of Mindy Manufacturing Company is 10,000 units of product Mork. At the normal capacity level (80% of practical), the following factory amounts have been budgeted:

Fixed	**$27,000**
Variable	**$29,000**

Standards were set as follows:

Processing time, 2 hours per unit of Mork
Factory overhead, $3.50 per hour of processing

Actual data for November were:

Production, 7,600 units of Mork
Processing time, 15,400
Factory overhead, $55,500

Required: **Assuming that actual and applied overhead are recorded in separate accounts, give the general journal entries to record actual overhead, to charge overhead to production, to close the two overhead accounts, and to record the overhead variances using the alternative three-variance method.**

SOLUTION

Factory Overhead Control	**55,500.00**	
Various Credits		**55,500.00**
Work in Process ($3.50 F.O. rate x 7,600 units x 2 SH per unit)	**53,200.00**	
Applied Factory Overhead		**53,200.00**
Applied Factory Overhead	**53,200.00**	
Efficiency Variance [$3.50 F.O. rate x (15,400 AH - 15,200 SH)]	**700.00**	
Idle Capacity Variance [$1.6875 fix. rate x (16,000 BH - 15,400 AH)]	**1,012.50**	
Spending Variance	**587.50**	
Factory Overhead Control		**55,500.00**

PROBLEM

6.
Journal Entries for Factory Overhead; Four-Variance Method. Melvin Corporation charges factory overhead to production on the basis of the standard processing time allowed for actual production. The following data relate to the results of operations for December:

Normal capacity in processing hours	**5,000**
Standard processing hours allowed for actual production	**4,600**
Actual processing hours required during December	**5,200**

The factory overhead rate per hour of processing based on normal capacity follows:

Variable overhead	**$ 45,000**	**÷ 5,000 hours =**	**$ 9**
Fixed overhead	**155,000**	**÷ 5,000 hours =**	**31**
Total factory overhead	**$ 200,000**	**÷ 5,000 hours =**	**$ 40**

Actual factory overhead incurred during December totaled $199,000.

Required: **Give the appropriate general journal entries to record the actual overhead cost, to record the charge to production for overhead (assuming that actual and applied overhead are recorded in separate accounts), and the closing of the two overhead accounts along with the appropriate overhead variances using the four-variance method.**

SOLUTION

Factory Overhead Control	**199,000**	
Various Credits		**199,000**
Work in Process ($40 F.O. rate x 4,600 SH)	**184,000**	
Applied Factory Overhead		**184,000**
Applied Factory Overhead	**184,000**	
Variable Efficiency Variance [$9 var. x (5,200 AH - 4,600 SH)]	**5,400**	
Fixed Efficiency Variance [$31 fix. x (5,200 AH - 4,600 SH)]	**18,600**	
Spending Variance		**2,800**
Idle Capacity Variance [$31 fix. x (5,000 BH - 5,200 AH)]		**6,200**
Factory Overhead Control		**199,000**