Cost Accounting
A Managerial Emphasis

thirteenth edition

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This presentation includes:

Exercises on: Chapter 8

Exercise 8-1

Franklin Company provides the following information about its manufacturing operations for the month just ended:

Actual machine-hours used	22,000
Budgeted total overhead	$900,000
Actual variable overhead incurred	$352,000
Actual fixed overhead incurred	$575,000

Budgeted production is 200,000 units of output and actual production is 198,000 units of output. One-tenth of a machine-hour is budgeted per unit of output. The budgeted fixed overhead cost rate is $30 per machine-hour. The company uses 4-variance analysis for overhead.

a) Using the columnar solution format below, compute the variable overhead spending and efficiency variances. Indicate whether each variance is favorable or unfavorable. Use F for favorable variances and U for unfavorable variances.

b) Using the columnar solution format below, compute the fixed overhead spending and production-volume variances. Indicate whether each variance is favorable or unfavorable. Use F for favorable variances and U for unfavorable variances.

c) Is total overhead underallocated or overallocated? By what amount?

Solution 8-1

a) Three steps are used to compute the variable overhead variances. First, compute budgeted variable overhead.

Budgeted total overhead	$900,000
Deduct budgeted fixed overhead, 200,000 x (0.10 x $30)	600,000
Budgeted variable overhead	300 000

Second, compute the budgeted variable overhead cost rate per machine-hour.
Budgeted variable overhead cost rate = $300,000/ 200,000 x 0.10 = $15 per machine hour

Third, compute the variances and indicate whether each is favorable or unfavorable.

Actual costs incurred	**Actual Input X Budgeted rate**	**Flexible Budget: Budgeted Input Allowed for Actual Output X Budgeted rate**
$352,000	(22,000 x $15) $330,000	($198,000 X 0.10 X $15) $ 297,000

$ __$22,000 U_____ VOH spending variance

$ ___$33,000 U_____ VOH Efficiency variance

Solution 8-1

b) The budgeted fixed overhead, $600,000, is computed in part (a).

Actual Costs Incurred	Same Budgeted Lump-Sum Regardless of Output Level	Allocated Budgeted Input Allowed for Actual Output x Budgeted Rate (198,000 x 0.10 x $30)
$575,000	$600,000	$594,000

$25,000 F FOH spending variance

$6,000 U Production-volume variance

Solution 8-1

:) Variable overhead allocated is $297,000, the flexible-budget amount from column 3 in part a). Fixed overhead allocated is $594,000 from column 3 in part (b).

	Variable	Fixed	Total
Actual overhead incurred	$352,000	$575,000	$927,000
Allocated overhead	$297,000	$594,000	$891,000
Under-allocated	$55,000	$(19,000)	$ 36,000

Note: because total overhead is under-allocated by $36,000, the total overhead variance is $36,000 U

Exercise 8-2

Regal Company provides the following information on its manufacturing operations for April:

Production in output units	400
Budgeted variable overhead cost rate per output unit	$3
Actual machine-hours used	700
Actual variable overhead costs	$1,350
Budgeted machine-hours allowed per output unit	1.50

a. Compute the budgeted variable overhead cost rate per machine-hour.
b. Compute the budgeted machine-hours allowed for actual output produced.

Exercise 8-2

c. Using the columnar solution format below, compute the variable overhead spending and efficiency variances. Use F for favorable variances and U for unfavorable variances.

Actual costs incurred	Actual Input X Budgeted rate	Flexible Budget: Budgeted Input Allowed for Actual Output X Budgeted rate

$ _____ VOH spending variance

$ _____ VOH Efficiency variance

d. Prepare the journal entries to record variable overhead incurred, variable overhead allocated, and the variable overhead spending and efficiency variances.

Solution 8-2

a) Budgeted VOH cost rate = $3 / 1.50 = $2 per machine-hour
b) Budgeted machine-hours allowed for actual output produced = 400 x 1.50 = 600 hours
c)

Actual costs incurred	Actual Input X Budgeted rate	Flexible Budget: Budgeted Input Allowed for Actual Output X Budgeted rate
$1,350	(700 x $2) $1400	(600 X $2) $1,200

$ __$50 F_____ VOH spending variance

$ ___$200 U_____ VOH Efficiency variance

Solution 8-2

d) In the following journal entries, MOH denotes manufacturing overhead:

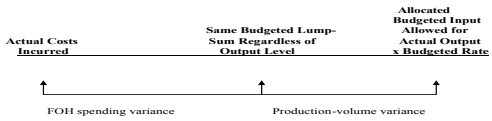
General Journal	Debit	Credit
Var MOH control	1,350	
Acc payable control and other accounts		1,350
WIP control	1,200	
Var Moh allocated		1,200
Var MOH allocated	1,200	
Var MoH efficiency Variance	200	
Var MOH control		1,350
Var MoH Spending variance		50

Exercise 8-3

The following information pertains to the manufacturing operations of Payton Corporation:

Budgeted fixed overhead	$1,800
Actual fixed overhead costs	$1,750
Denominator level in machine-hours	300
Budgeted machine-hours allowed for actual output produced	280

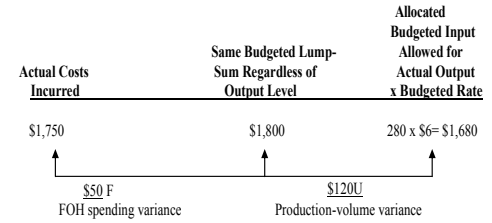
a. Compute the budgeted fixed overhead cost rate per machine-hour.
b. Using the columnar solution format below, compute the fixed overhead spending and production-volume variances. Use F for favorable variances and U for unfavorable variances.



Solution 8-3

a. Budgeted FOH cost rate = $1,800/ 300 = $6 per machine-hour

b.



Exercise 8-4

The following information relates to the manufacturing operations of Herman Company for March:

Actual total overhead costs $178,500
Flexible-budget formula based on machine-hours (MH) $110,000 +$0.50 per MH
Budgeted total overhead cost rate per MH $1.50 per MH
Total overhead spending variance $8,000 unfavorable
Production-volume variance $5,000 favorable

Herman uses the 3-variance analysis of overhead costs.

a. Compute the actual machine-hours used,

b. Compute the budgeted machine-hours allowed for actual output produced.

Solution 8-4

a) Let X = Actual machine-hours used:

Actual Costs Incurred		Budgeted FOH + (Actual Input x Budgeted VOH Rate)
$178,500		$110,000 + $0.50X
	TOH spending variance $ 8,000 U	

$ 178,500 - $ 8,000 = $110,000 + $ 0.50X
$0.50X = 178,500- & 8,000 -$ 110,000
X = 121,000 machine hours

Because the TOH spending variance is unfavorable, in the equation it is subtracted from the actual costs incurred to equal the flexible-budget amount of $110,000 + $0.50X.

b) Let Y = Budgeted machine-hours allowed for actual output produced:

Same Budgeted Lump-Sum Regardless of Output Level		Allocated: Budgeted Input Allowed for Actual Output x Budgeted Rate
$110,000		$1.50Y - $0.50Y
	$5,000 Production-volume variance	

$110,000+ $5,000 = $1.50Y - $0.50Y
$115,000 = $1.00Y
Y = 115,000 machine-hours

Because the production-volume variance is favorable, in the equation it is added to the flexible budget amount of $110,000 to equal the FOH allocated amount of $1.50Y- $0.50

Multiple Choice 1

Select the best answer to each question. Space is provided for computations after the quantitative questions.

Information on Fire Company's overhead costs is as follows:

Actual variable overhead	$73,000
Actual fixed overhead	$17,000
Budgeted hours allowed for actual output produced	32,000
Budgeted variable overhead cost rate per machine-hour	$2.50
Budgeted fixed overhead cost rate per machine-hour	$0.50

The total overhead variance is:

a. $1,000 unfavorable.
b. $6,000 favorable.
c. $6,000 unfavorable.
d. $7,000 favorable.

Solution Multiple Choice 1

Correct answer is (b)
Total overhead variance = Total overhead incurred - Total overhead allocated
Total overhead variance = ($73,000 + $17,000) - 32,000($2.50 + $0.50)
Total overhead variance = $90,000 - $96,000 = - $6,000, or $6,000 F

Multiple Choice 2

Geyer Company uses standard costing. For the month of April 2006, total overhead is budgeted at $80,000 based on using 20,000 machine-hours. At standard, each finished unit of output requires 2 machine-hours. The following data are available for April 2006:

Actual units of output produced	9,500
Machine-hours used	19,500
Total overhead incurred	$79,500

What total amount of variable and fixed overhead should Geyer credit to the Manufacturing Overhead Allocated account for April 2006?

a. $76,000
b. $78,000
c. $79,500
d. $80,000

Solution Multiple Choice 2

Correct answer is (a).

Budgeted total overhead cost rate = $80,000 -s- 20,000 = $4 per machine-hour
Budgeted hours allowed for actual output produced = 9,500 x 2 = 19,000 machine-hours
Manufacturing overhead allocated = 19,000 x $4 = $76,000

Multiple Choice 3

The following information is for Pappillon Corporation's variable manufacturing overhead costs last month: favorable flexible-budget variance of $3,000, unfavorable efficiency variance of $2,500. The spending variance is:

a. $500 favorable.
b. $5,500 unfavorable.
c. $5,500 favorable.
d. none of the above.

Solution Multiple Choice 3

Correct answer is c)

VOH flexile budget variance = VOH spending variance + VOH efficiency variance
$3,000 F = VOH spending variance + $ 2,500 U
VOH Spending variance = $ 3,000 F – ($2,500U)
= $3,000 F + $ 2,500 F = $ 5,500 F

Proof : VOH spending variance = $ 5,500 F
VOH efficiency variance = $ 2,500 U
VOH flexible budget variance = $ 3,000 F

Multiple Choice 4

Fawcett Company prepared the following information on its manufacturing operations for 2005:

	Static Budget	Maximum Capacity
Percent of capacity	80%	100%
Machine-hours	3,200	4,000
Variable overhead	$64,000	$80,000
Fixed overhead	$160,000	$160,000

Fawcett operated at 90% of maximum capacity during 2005. Actual manufacturing overhead for 2005 is $252,000. Fawcett uses the 2-variance analysis of manufacturing overhead. The total overhead flexible-budget variance for the year is:

a. $36,000 unfavorable.
b. $0.
c. $18,000 unfavorable.
d. $20,000 unfavorable.

Solution Multiple Choice 4

Correct answer is d

Budgeted VOH cost rate = $64,000 / 3,200 = $20 per machine-hour
(or $80,000 / 4,000 = $20 per machine-hour)
TOH flexible-budget variance = $252,000 - [$160,000 + (4,000 x 0.90)($20)]
= $252,000 - ($160,000 + $72,000)
= $252,000 - $232,000 = $20,000, or $20,000 U

Multiple Choice 5

Edney Company uses standard costing. The standard cost of its product is as follows:

Direct materials	$14.50
Direct manufacturing labor	16.00
Manufacturing overhead	
2 machine-hours @ $11	22.00
Total standard cost	52.50

The manufacturing overhead cost rate is based on a denominator level of 600,000 machine-hours. Edney planned to produce 25,000 units each month during 2005. The budgeted manufacturing overhead for 2005 is as follows:

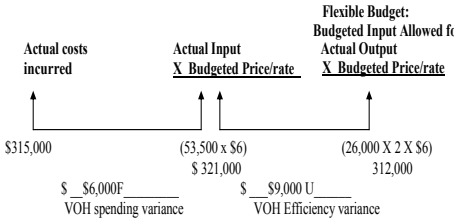
Variable	$3,600,000
Fixed	3,000,000
Total	$6,600,000

During November 2005, Edney Company produced 26,000 units. Edney used 53,500 machine-hours in November. Actual manufacturing overhead for the month is $315,000 variable and $260,000 fixed. The total manufacturing overhead allocated during November is $572,000. The variable overhead spending variance for November is:

a. $9,000 unfavorable.
b. $4,000 unfavorable.
c. $11,350 unfavorable.
d. $9,000 favorable.
e. $6,000 favorable.

Solution Multiple Choice 5

5. e Budgeted VOH cost rate = $3,600,000/(25,000 x 2 machine-hours x 12months)= $6
Or $3,600,000/600,000 = $6 per machine-hour



Multiple Choice 6

Using the information in question 5, the variable overhead efficiency variance for November is:
a. $3,000 unfavorable.
b. $9,000 unfavorable.
c. $1,000 favorable.
d. $12,000 unfavorable.
e. $0.

Solution Multiple Choice 6

b See the preceding answer. The VOH efficiency variance is $9,000 U.

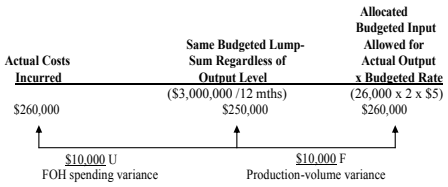
Multiple Choice 7

Using the information in question 5, the fixed overhead flexible-budget (spending) variance for November is:

a. $10,000 favorable.
b. $10,000 unfavorable.
c. $6,000 favorable.
d. $4,000 unfavorable.
e. $0.

Solution Multiple Choice 7

7. b Budgeted FOH cost rate = $3,000,000 / 600,000 = $5 per machine-hour



Multiple Choice 8

Using the information in question 5, the production-volume variance for November is:
a. $10,000 favorable.
b. $10,000 unfavorable.
c. $3,000 unfavorable.
d. $22,000 favorable.
e. $0.

Solution Multiple Choice 8

See the preceding answer. The production volume variance is $10,000 F.

Multiple Choice 9

Considering questions 5 through 8, Edney Company is using which type of overhead variance analysis?
a. 1-variance analysis
b. 2-variance analysis
c. 3-variance analysis
d. 4-variance analysis

Solution Multiple Choice 9

Correct answer is d

Edney company uses 4 variances analysis because four overhead variances are isolated

VOH spending variance	$ 6,000 F
VOH efficiency variance	$ 9,000 U
FOH spending variance	$ 10,000 U
Production volume variance	$ 10,000 F
TOH variance	$ 3,000 U

Since the TOH variance is $ 3,000 U this means TOH is under-allocated by $ 3,000.

THE END