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ACCY 121
Chapter 16 Practice Quiz
Fundamentals of Variance Analysis

101. The Hageness Company has had great difficulty in controlling overhead costs. At a recent convention, the president heard about a control device for overhead costs known as a flexible budget and she has hired you to implement this budgeting program. After some effort, you develop the following cost formulas for the company's machining department. These costs are based on a normal operating range of 15,000 to 23,000 machine-hours per month:

Machine setup	\$0.20 per machine-hour
Lubricants	\$1.00 per machine-hour plus \$8,000 per month
Utilities	\$0.70 per machine-hour
Indirect labor	\$0.60 per machine-hour plus \$20,000 per month
Depreciation	\$32,000 per month

During March, the first month after your preparation of the above data, the machining department worked 18,000 machine-hours and produced 9,000 units of product. The actual costs of this production were:

Machine set-up	\$ 4,800
Lubricants	24,500
Utilities	12,000
Indirect labor	32,500
Depreciation	<u>32,500</u>
	<u>\$106,300</u>

The department had originally been budgeted to work 19,000 machine-hours during March.

Required:

Prepare a performance report for the machining department for the month of March including columns for the (a) actual results, (b) flexible budget, (c) flexible budget variance, (d) master budget, and (e) sales activity variance.

	(a) 18000 MH <u>Actual</u>	(b) 18000 MH <u>Flexible Budget</u>	(a-b) Flex B <u>Variance</u>	(c) 19000 MH <u>Master Budget</u>	(b-c) Sales Activity V	VC Rate 1 MH	FC
Machine set-up	4,800	3,600	1,200 U	3,800	200 F	.20	0
Lubricants	24,500	26,000	1,500 F	27,000	1,000 F	1.00	8,000
Utilities	12,000	12,600	600 F	13,300	700 F	.70	0
Indirect labor	32,500	30,800	1,700 U	31,400	600 F	.60	20,000
Depreciation	32,500	32,000	500 U	32,000	0	0	32,000
Total costs	106,300	105,000	1,300 U	107,500	2,500 F		

		<u>Variable</u>	<u>Fixed</u>	<u>Total</u>
Master Budget:				
Machine setup	\$0.20 x 19,000	3,800	0	3,800
Lubricants	\$1.00 x 19,000	19,000	8,000	27,000
Utilities	\$0.70 x 19,000	13,300	0	13,300
Indirect labor	\$0.60 x 19,000	11,400	20,000	31,400
Depreciation		0	32,000	32,000
Total		47,500	60,000	107,500
Flexible Budget:				
Machine setup	\$0.20 x 18,000	3,600	0	3,600
Lubricants	\$1.00 x 18,000	18,000	8,000	26,000
Utilities	\$0.70 x 18,000	12,600	0	12,600
Indirect labor	\$0.60 x 18,000	10,800	20,000	30,800
Depreciation		0	32,000	32,000
Total		45,000	60,000	105,000

Feedback:

AACSB: Analytic
 AICPA: FN-Decision Making
 Bloom's: Analysis
 Difficulty: Medium
 Learning Objective: 3
 Topic Area: Flexible Budgeting

L03

Diff: Medium

105. Western Company manufactures special electrical equipment and parts. Western employs a standard cost accounting system with separate standards established for each product. A special transformer is manufactured in the Transformer Department. Production volume is measured by direct labor hours in this department and a flexible budget system is used to plan and control department overhead. Standard costs for the special transformer are determined annually in September for the coming year. The standard cost of a transformer was computed at \$57.00 as shown below.

Direct materials:			
Copper	3 spools	@ \$3.00	9.00
Direct labor	4 hours	@ \$7.00	28.00
Variable overhead	4 hours	@ \$3.00	12.00
Fixed overhead	4 hours	@ \$2.00	8.00
Total			<u>\$57.00</u>

} standard
Cost Card
per transformer

flex
budget
level

Overhead rates were based upon normal and expected monthly capacity, both of which were 4,000 direct labor hours. Practical capacity for this department is 5,000 direct labor hours per month. Variable overhead costs are expected to vary with the number of direct labor hours actually used.

During October, 900 transformers were produced. This was below expectations because a work stoppage occurred during contract negotiations with the labor force. Once the contract was settled, the wage rate was increased to \$7.25/hour and overtime was scheduled in an attempt to catch up to expected production levels.

The following costs were incurred in October:

Direct Materials:
 Copper: purchased 2,600 spools @ \$3.08/spool
 Used: 2,600 spools
 Direct labor:
 Regular time 2,000 hours @ \$7.00
 Overtime 1,400 hours @ \$7.25

600 of the 1,400 hours were subject to overtime premium. The total overtime premium is included in variable overhead in accordance with company accounting practices

Overhead:
 Variable \$16,670
 Fixed \$ 8,800

Required: Compute each of the following variances, showing all your work. Be sure to indicate whether the variances are favorable or unfavorable.

- a. Direct materials price variance
- b. Direct material efficiency (quantity) variance
- c. Direct labor rate variance
- d. Direct labor efficiency variance
- e. Variable overhead spending variance
- f. Variable overhead efficiency variance
- g. Fixed overhead spending (budget) variance
- h. Production volume variance

- a. \$208 unfavorable
- b. \$300 favorable
- c. \$350 unfavorable
- d. \$1,400 favorable
- e. \$6,470 unfavorable
- f. \$600 favorable
- g. \$800 unfavorable
- h. \$800 unfavorable

- Feedback: a. $(\$3.08 - \$3.00) \times 2,600 = \$208$ unfavorable
- b. $[2,600 - (3 \times 900)] \times \$3.00 = \$300$ favorable
- c. $[(\$7.00 \times 2,000) + (\$7.25 \times 1,400)] - (\$7.00 \times 3,400) = \350 unfavorable
- d. $[3,400 - (4 \times 900)] \times \$7.00 = \$1,400$ favorable
- e. $\$16,670 - (\$3.00 \times 3,400) = \$6,470$ unfavorable
- f. $(\$3.00 \times 3,400) - [\$3.00 \times (4 \times 900)] = \600 favorable
- g. $\$8,800 - (\$2.00 \times 4,000) = \$800$ unfavorable
- h. $(\$2.00 \times 4,000) - [(\$2.00 \times (4 \times 900))] = \800 unfavorable

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Medium

Learning Objective: 5

Learning Objective: 6

Topic Area: Variable Cost Variance Analysis, Fixed Cost Variances

	(a)	(a-b)	(b)	(c-b)	(c)
	Actual	Flexible	Flexible	Sales	Master
	Results	Budget	Budget	Activity	Budget
		Variance		Variance	
Units	#54 13,000		#55 ?	2000 U	? #57
Sales revenue	169,050 (3)	13,000F	156,000 (4)	?	189,000 (7)
Less:					
<Variable mfg. Costs>	\$87,750	3,250 F	\$91,000	14,000 F	\$105,000
<Variable mktg/adm. costs>	29,250 (2)	\$3,250 U	26,000 (1)	\$4,000 F	30,000 #58
Contribution margin	\$52,000	?	39,000 (5)	\$6,000 U	45,000 (6)

54. What is the actual sales revenue?

- A. \$156,000.
- B. \$169,000.**
- C. \$180,000.
- D. \$191,000.

First, solve for actual variable marketing & administrative costs = \$29,250; Second, add actual contribution margin to the actual variable costs to find actual sales = \$169,000

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 2

Topic Area: Sales Activity Variance

55. What is the sales revenue in the flexible budget?

- A. \$139,000.
- B. \$156,000.
- C. \$169,000.
- D. \$180,000.

\$169,000 (actual sales from previous question) - \$13,000 = \$156,000

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 2

Topic Area: Sales Activity Variance

56. What is the flexible budget contribution margin?

- A. \$39,000.
- B. \$45,000.
- C. \$52,000.
- D. \$58,000.

\$156,000 - \$91,000 - \$26,000 = \$39,000

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 2

Topic Area: Sales Activity Variance

57. What is the master budget sales revenue?

- A. \$124,000.
- B. \$148,000.
- C. \$156,000.
- D. \$180,000.

$$(\$156,000/13,000) = \$12 \text{ selling price; } \$12 \times (13,000 + 2,000) = \$180,000$$

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 2

Topic Area: Sales Activity Variance

58. What is the master budget contribution margin?

- A. \$52,000.
- B. \$47,500.
- C. \$45,000.
- D. \$39,000.

$$\$180,000 - \$105,000 - \$30,000 = \$45,000$$

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 2

Topic Area: Sales Activity Variance

The following information summarizes the standard cost for producing one metal tennis racket frame. In addition, the variances for one month's production are given. Assume that all inventory accounts have zero balances at the beginning of the month.

	<i>Standard Cost</i> <u>Per Unit</u>	<i>Standard</i> <u>Monthly Costs</u>
Materials	\$ 4.00	\$ 8,400
Direct Labor 2 hrs. @ \$2.60	5.20	10,920
Factory Overhead:		
Variable	1.80	3,780
Fixed	<u>5.00</u>	<u>10,500</u>
	<u>\$16.00</u>	<u>\$33,600</u>

Variances:	
Material price	244.75 unfavorable
Material quantity	500.00 unfavorable
Labor rate	520.00 favorable
Labor efficiency	2,080.00 unfavorable

assume = purchased = used

69. What were the actual direct labor hours worked during the month?

- A. 5,000.
- B. 4,800.
- C. 4,200.
- D. 4,000.
- E. 3,400.

Number of units = $\$33,600 / 16.00 = 2,100$; $[AH - (2,100 \times 2)] \times \$2.60 = \$2,080 \text{ U}$; $AH = 5,000$

AACSB: Analytic
AICPA: FN-Decision Making
Bloom's: Analysis
Difficulty: Hard
Learning Objective: 5
Topic Area: Direct Labor

70. What were the actual quantity of materials used during the month?

A. 2,156.

B. 2,100.

C. 2,225.

D. 1,975.

$$(\$4.00 \times AQ) - (2,100 \times \$4.00) = \$500 \text{ U}; AQ = 2,225$$

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 5

Topic Area: Direct Materials

71. What was the actual price paid for the direct material during the month, assuming all materials purchased were put into production?

A. \$4.34.

B. \$4.22.

C. \$4.11.

D. \$4.00.

E. \$3.90.

$$(AP - \$4.00) 2,225 = \$244.75\text{U}; AP = \$4.11 \text{ (rounded)}$$

AACSB: Analytic

AICPA: FN-Decision Making

Bloom's: Analysis

Difficulty: Hard

Learning Objective: 5

Topic Area: Direct Materials

Variance Analysis Template

(1)

#69-71

Metal Tennis Racket Frames

	Actual Costs AQ x AP	Actual Inputs at Standard Prices AQ x SP	Standard Quantity Allowed for Actual Output, at Standard Price SQ x SP
Direct Materials	$\boxed{} \times \boxed{} \#71$ purchased	$\boxed{} \times \4 used	$\boxed{} \times \4 \$8,400
	\$244.75 U Price Variance	\$500 U Quantity Variance	
Direct Labor	$\boxed{} \times \boxed{}$ #69	$\boxed{} \times 2.60$	$\boxed{} \times 12 \text{ hrs} \times \2.60 \$10,920
	520 F Rate Variance	\$2080 U Efficiency Variance	
Variable Overhead			$\boxed{} \times \1.80 \$3,780
	Spending Variance	Efficiency Variance	
Fixed Overhead	Actual	Flex Budget	Applied $\boxed{} \times \5.00 \$10,500
	Budget Variance	Volume Variance	

Variance Analysis Template

(2)

#69-71

Metal Tennis Racket Frames

	Actual Costs AQ x AP	Actual Inputs at Standard Prices AQ x SP	Standard Quantity Allowed for Actual Output, at Standard Price SQ x SP
Direct Materials	$\text{[]} \times 4.11$ (#71)	$\text{[]} \times \$4$	$2100 \times \$4$
		purchased []	$\$8400$
		used $2225 \times \$4$ (#70)	
		8900	
	$(AP - \$4) 2225 = 244.75 U$		$500 U$
	Price Variance		Quantity Variance
Direct Labor	5000×2.50 (#69)	5000×2.60	$2100 \times 2 \text{ hrs} = 4200 \times \2.60
	$12,480$	$13,000$	$\$10,920$
	$520 F$		$2080 U$
	Rate Variance		Efficiency Variance
Variable Overhead	[]	[]	[]
	[]	[]	[]
	Spending Variance		Efficiency Variance
Fixed Overhead	[]	[]	[]
	[]	[]	[]
	Budget Variance		Volume Variance

Variance Analysis Template

	Actual Costs $AQ \times AP$		Actual Inputs at Standard Prices $AQ \times SP$		Standard Quantity Allowed for Actual Output, at Standard Price $SQ \times SP$
Direct Materials		<input type="text"/>		<input type="text"/>	
		Price Variance		Quantity Variance	
	$AH \times AR$		$AH \times SR$		$SH \times SR$
Direct Labor		<input type="text"/>		<input type="text"/>	
		Rate Variance		Efficiency Variance	
	$AH \times AR$		$AH \times SR$		$SH \times SR$
Variable Overhead		<input type="text"/>		<input type="text"/>	
		Spending Variance		Efficiency Variance	
	Actual		Flex Budget		Applied
Fixed Overhead		<input type="text"/>		<input type="text"/>	
		Budget Variance		Volume Variance	

Variance Analysis Template

	Actual Costs $AQ \times AP$		Actual Inputs at Standard Prices $AQ \times SP$		Standard Quantity Allowed for Actual Output, at Standard Price $SQ \times SP$
Direct Materials					
Direct Labor					
Variable Overhead					
Fixed Overhead					