

8.1 Assign MOH fixed costs, then calculate and analyze flexible-budget variances.

1) Capacity refers to the quantity of outputs that can be produced from long-term resources available to the company.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-1

2) Capacity cost is a variable overhead cost.

Answer: FALSE

Explanation: Capacity refers to the quantity of outputs that can be produced from long-term resources available to the company, and is acquired through the purchase or lease of long-term assets.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-1

3) Capacity decisions are considered operating decisions because they involve the long-term acquisition of assets by purchase or lease.

Answer: FALSE

Explanation: ...decisions about capacity are *strategic* decisions.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1

4) Fixed overhead costs are a lump sum that does not change in total despite changes in the cost driver.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1

5) The budgeted fixed overhead rate per output unit is computed by dividing budgeted fixed overhead costs by the level of input units.

Answer: FALSE

Explanation: Denominator is the budgeted quantity of allocation base units.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1

6) The (production) denominator level is the quantity of the allocation base used to allocate fixed overhead costs to a cost object in developing a budgeted fixed overhead rate.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1

7) The fixed overhead flexible budget variance is the same as the fixed overhead static budget variance.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-1

8) The difference between budgeted fixed overhead and fixed overhead allocated for actual output units achieved, is the production-volume variance.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-1

9) The production -volume overhead variance is favourable when actual outputs exceed the denominator level.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-1

10) The production-volume variance arises because the actual output level differs from the output level used as the denominator to calculate the budgeted fixed overhead rate.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1

11) The fixed manufacturing overhead efficiency variance is used to analyze overhead costs.

Answer: FALSE

Explanation: Production-volume and rate variances are used to analyze fixed overhead costs.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-1

12) An unfavourable fixed setup overhead rate variance could be due to higher lease costs of new setup equipment or higher salaries paid to engineers and supervisors.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-1

13) A favourable production-volume variance arises when manufacturing capacity planned for is not used.

Answer: FALSE

Explanation: An *unfavourable* production-volume variance arises when manufacturing capacity planned for is not used.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-1

14) In the journal entry that records overhead variances, the manufacturing overhead allocated accounts are closed.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-1

15) Managers should use unitized fixed manufacturing overhead costs for planning and control.

Answer: FALSE

Explanation: Managers should *not* use unitized fixed manufacturing overhead costs for planning and control, but only for inventory costing purposes.

Diff: 3 Type: TF

Skill: Understand

Objective: LO 8-1

16) Fixed Manufacturing Overhead Variances that are not material should only be written off to Cost of Goods Sold.

Answer: FALSE

Explanation: If it is immaterial, it may be either written off to Cost of Goods Sold or prorated among the Work-In-Process Control, Finished Goods Control, and Cost of Goods Sold accounts on the basis of the fixed overhead allocated to these accounts.

Diff: 3 Type: TF

Skill: Remember

Objective: LO 8-1

17) Human capital refers to the intangible skills provided by people and is an inventoriable cost under ASPE/IFRS.

Answer: FALSE

Explanation: ASPE/IFRS prohibits accounting for costs of this type in inventory.

Diff: 3 Type: TF

Skill: Remember

Objective: LO 8-1

18) An unfavourable production volume variance (a result of lower-than-budgeted output) should be expensed (to COGS) in the period it arises rather than be allocated to inventory.

Answer: TRUE

Diff: 3 Type: TF

Skill: Remember

Objective: LO 8-1

19) A favourable production volume variance, if it is the result of an *unusual* fluctuation in production output, should be credited to COGS in the period that it arises.

Answer: FALSE

Explanation: A favourable production volume variance, if it is the result of a usual fluctuation in production output, should be credited to COGS in the period that it arises.

Diff: 2 Type: TF

20) Which decisions are most likely to have been made by the start of the accounting period?

- A) decisions affecting value-added costs
- B) decisions affecting non-value-added costs
- C) decisions affecting variable overhead costs
- D) decisions affecting both fixed and variable overhead costs
- E) decisions affecting fixed overhead costs

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-1

21) Decisions about capacity are considered to be

- A) operating decisions.
- B) best done by plant supervisors.
- C) best done during production.
- D) more relevant for variable costs.
- E) strategic decisions.

Answer: E

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-1

22) In flexible budgets, costs that remain the same regardless of the output levels within the relevant range are

- A) allocated costs.
- B) budgeted costs.
- C) fixed costs.
- D) variable costs.
- E) estimated costs.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-1

23) Which of the following statements is TRUE?

- A) The fixed manufacturing sales-volume variance is rarely zero.
- B) The difference between the allocated and the budgeted overhead is the production-volume variance.
- C) The production-volume variance arises for both fixed and variable costs.
- D) The fixed manufacturing overhead sales-volume variance can be written-off to cost of goods sold.
- E) The production-volume variance arises only for variable costs.

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 8-1

24) In variance analysis, fixed manufacturing overhead will have

- A) an efficiency variance.
- B) a flexible-budget variance.
- C) a rate variance.
- D) a static-budget variance.
- E) no variance, because it is fixed.

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-1

25) The difference between budgeted fixed manufacturing overhead and the fixed manufacturing overhead allocated to actual output units achieved is called

- A) an efficiency variance.
- B) a flexible-budget variance.
- C) a manufacturing overhead flexible-budget variance.
- D) a production-volume overhead variance.
- E) an unallocated variable cost.

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-1

26) The production-volume variance

- A) only pertains to variable overhead costs.
- B) only pertains to fixed overhead costs.
- C) is not applicable in analysis of inventory costs.
- D) pertains to both fixed and variable overhead costs.
- E) equals the rate variance minus the efficiency variance.

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 8-1

- 27) Capacity cost is
- A) only an inventoriable cost.
  - B) only a period cost.
  - C) never amortized.
  - D) a variable manufacturing overhead cost.
  - E) a fixed manufacturing overhead cost.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 8-1

- 28) The production-volume variance may also be referred to as the
- A) flexible-budget variance.
  - B) static-budget variance.
  - C) rate variance.
  - D) efficiency variance.
  - E) denominator-level variance.

Answer: E

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-1

- 29) A favourable production-volume variance indicates that the company
- A) has good management.
  - B) produced more than it has sold.
  - C) has a total economic gain from using excess capacity.
  - D) should increase capacity.
  - E) has allocated more fixed overhead costs than budgeted.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-1

- 30) When machine-hours are used as a cost allocation base, the item MOST likely to contribute to a favourable production-volume variance is
- A) an increase in the selling price of the product.
  - B) the purchase of a new manufacturing machine costing considerably less than expected.
  - C) a decline in the cost of energy.
  - D) strengthened demand for the product.
  - E) a competitor lowering the price of a similar product.

Answer: D

Diff: 3 Type: MC

Skill: Understand

Objective: LO 8-1

31) When machine-hours are used as a cost allocation base, the item MOST likely to contribute to an unfavourable production-volume variance is

- A) a new competitor gaining market share.
- B) a new manufacturing machine costing considerably more than expected.
- C) an increase in the cost of energy.
- D) strengthened demand for the product.
- E) an increase in the number of direct-labour hours.

Answer: A

Diff: 3 Type: MC

Skill: Understand

Objective: LO 8-1

32) When the actual output is more than expected and the volume is unusually high then the production volume variance is

- A) unfavourable and should be prorated to work-in-process inventory, finished goods inventory, and cost of goods sold.
- B) unfavourable and should be charged to cost of goods sold.
- C) favourable and should be offset against cost of goods sold.
- D) unfavourable and should be applied to inventory.
- E) favourable and should be applied to inventory.

Answer: E

Diff: 3 Type: MC

Skill: Remember

Objective: LO 8-1

33) Randy's Production Company uses a single cost pool for fixed manufacturing overhead. The amount for May 2015 was budgeted at \$250,000; however, the actual amount was \$350,000. Actual production for May was 12,500 units, and actual machine hours were 10,000. Budgeted production included 17,750 units and 12,375 machine hours. What is the budgeted fixed overhead rate per input unit?

- A) \$25.00 per unit
- B) \$35.00 per unit
- C) \$20.00 per unit
- D) \$14.09 per unit
- E) \$14.08 per unit

Answer: D

Explanation: D)  $\$250,000 / 17,750 = \$14.09 / \text{Input}$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-1

34) Actual overhead is \$700,000, while budgeted overhead is \$598,000. What is the fixed overhead static-budget variance if 250,000 units are produced and 225,000 are budgeted?

- A) \$80,000 favourable
- B) \$100,000 unfavourable
- C) \$100,000 favourable
- D) \$102,000 unfavourable
- E) \$102,000 favourable

Answer: D

Explanation: D)  $\$700,000 - \$598,000 = \$102,000$  unfavourable

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-1

35) Davis Company produced 20,000 cases of beer. Machinery usage is 1.5 hours per case. Budget outputs are 22,000 cases. What are the required static budget machine hour inputs and flexible budget machine hour inputs, respectively?

- A) 30,000 Machine hours, 33,000 Machine hours
- B) 33,000 Machine hours, 30,000 Machine hours
- C) 39,000 Machine hours, 34,000 Machine hours
- D) 34,000 Machine hours, 39,000 Machine hours
- E) 39,000 Machine hours, 33,000 Machine hours

Answer: B

Explanation: B) SB =  $22,000 \times 1.50/\text{CASE} = 33,000$  MH

FB =  $20,000 \times 1.50/\text{CASE} = 30,000$  MH

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

*Use the information below to answer the following question(s).*

Regal Company uses a single cost pool for fixed manufacturing overhead. The amount for June 2016 was budgeted at \$500,000; however, the actual amount was \$700,000. Actual production for June was 12,500 units, and actual machine hours were 10,000. Budgeted production included 17,750 units and 12,375 machine hours.

36) What is Regal Company's budgeted fixed overhead rate per output unit?

- A) \$28.17 per unit
- B) \$39.44 per unit
- C) \$40.40 per unit
- D) \$56.56 per unit
- E) \$65.17 per unit

Answer: A

Explanation: A)  $\$500,000/17,750 = \$28.17/\text{Output unit}$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-1



37) What is Regal Company's budgeted fixed overhead rate per machine hour?

- A) \$28.17 per machine hour
- B) \$39.44 per machine hour
- C) \$40.40 per machine hour
- D) \$56.56 per machine hour
- E) \$65.17 per machine hour

Answer: C

Explanation: C)  $\$500,000/12,375 = \$40.40/\text{machine hour}$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-1

38) Leek Company predicted that the fixed overhead would be \$200,000 in April 2015. Production amounted to 60,000 actual and 50,000 budgeted decks of cards. Each deck takes approximately 0.20 machine hours to produce. The actual overhead costs per machine hour are \$25. What is the production-volume variance?

- A) \$40,000 unfavourable
- B) \$40,000 favourable
- C) \$150,000 unfavourable
- D) \$150,000 favourable
- E) \$0

Answer: B

Explanation: B)  $\$200,000 - (60,000 \times (\$200,000/50,000)) = \$40,000 \text{ favourable}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

39) Budgeted output for DuCane Small Engines Inc. was 20,000 engines during February 2016. Budgeted fixed overhead per output unit was \$2.50, and 30,000 engines were actually produced. Actual fixed overhead was allocated at \$3.00 per engine. What is the production-volume variance?

- A) \$33,500 favourable
- B) \$25,000 unfavourable
- C) \$30,000 favourable
- D) \$30,000 unfavourable
- E) \$25,000 favourable

Answer: E

Explanation: E)  $(20,000 - 30,000) \times \$2.50 = 25,000 \text{ favourable}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

40) In order to properly record a fixed manufacturing overhead rate variance of \$30,000 unfavourable and a production-volume overhead variance of \$20,000 favourable, what would the appropriate journal entry be if actual fixed overhead is \$500,000?

A)

Fixed Overhead Allocated	500,000
Various Payable Accounts	500,000

B)

Work-in-Process Control	500,000
Fixed Overhead Production-Vol Variance	20,000
Fixed Overhead Rate Variance	30,000
Fixed Overhead Allocated	490,000

C)

Fixed Overhead Allocated	500,000
Fixed Overhead Production-Vol Variance	20,000
Fixed Overhead Rate Variance	30,000
Fixed Overhead Control	490,000

D)

Fixed Overhead Allocated	490,000
Fixed Overhead Rate Variance	30,000
Fixed Overhead Production-Volume Variance	20,000
Fixed Overhead Control	500,000

E)

Fixed Overhead Rate Variance	30,000
Fixed Overhead Production-Volume Variance	20,000
Various Payable Accounts	10,000

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-1

*Answer the following question(s) using the information below.*

Jenny's Corporation manufactured 25,000 grooming kits for horses during March. The fixed-overhead cost allocation rate is \$20.00 per machine-hour. The following fixed overhead data pertain to March:

	<u>Actual</u>	<u>Static Budget</u>
Production	25,000 units	24,000 units
Machine-hours	6,100 hours	6,000 hours
Fixed overhead costs for March	\$123,000	\$120,000

41) What is the flexible-budget amount for fixed-overhead?

- A) \$120,000
- B) \$122,000
- C) \$123,000
- D) \$125,000
- E) \$120,983

Answer: A

Explanation: A) \$120,000, the same lump sum as the static budget

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

42) What is the amount of fixed overhead allocated to production?

- A) \$120,000
- B) \$122,000
- C) \$123,000
- D) \$125,000
- E) \$130,000

Answer: D

Explanation: D)  $25,000 \times (6,000/24,000) \times \$20.00 = \$125,000$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-1

43) What is the fixed overhead rate variance?

- A) \$1,000 unfavourable
- B) \$2,000 favourable
- C) \$3,000 unfavourable
- D) \$5,000 favourable
- E) \$983 unfavourable

Answer: C

Explanation: C) \$123,000 actual costs - \$120,000 budgeted cost = \$3,000 unfavourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-1

44) What is the production-volume variance?

- A) \$2,000 unfavourable
- B) \$3,000 favourable
- C) \$4,000 unfavourable
- D) \$5,000 favourable
- E) \$10,000 favourable

Answer: D

Explanation: D)  $\$120,000 - [25,000 \times (6,000/24,000) \times \$20.00] = \$5,000$  favourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-1

*Answer the following question(s) using the information below.*

Rutch Corporation manufactured 54,000 door jambs during September. The fixed-overhead cost allocation rate is \$50.00 per machine-hour. The following fixed overhead data pertain to September:

	<u>Actual</u>	<u>Static Budget</u>
Production	54,000 units	60,000 units
Machine-hours	985 hours	1,150 hours
Fixed overhead costs for March	\$53,400	\$57,500

45) What is the flexible-budget amount for fixed overhead?

- A) \$63,888
- B) \$53,400
- C) \$49,250
- D) \$51,750
- E) \$57,500

Answer: E

Explanation: E) \$57,500, the same lump sum as the static budget

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

46) What is the amount of fixed overhead allocated to production?

- A) \$51,750
- B) \$100,000
- C) \$53,400
- D) \$57,500
- E) \$49,250

Answer: A

Explanation: A) Rate for applying budgeted overhead =  $\$57,500/1,150 = \$50/\text{hr}$   
 $54,000 \times (1,150/60,000) \times \$50.00 = \$51,750$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-1

47) What is the fixed overhead rate variance?

- A) \$5,750 unfavourable
- B) \$5,750 favourable
- C) \$4,100 favourable
- D) \$4,100 unfavourable
- E) \$1,650 unfavourable

Answer: C

Explanation: C) \$53,400 actual costs - \$57,500 budgeted cost = \$4,100 favourable

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

48) What is the production-volume variance?

- A) \$4,100 unfavourable
- B) \$4,100 favourable
- C) \$1,650 unfavourable
- D) \$5,750 unfavourable
- E) \$5,750 favourable

Answer: D

Explanation: D) \$57,500 - [54,000 × (1,150/60,000) × \$50.00] = \$5,750 unfavourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-1

49) A company had the following information pertaining to two different cases:

	<u>Case X</u>	<u>Case Y</u>
Budgeted fixed overhead	\$130,000	\$230,000
Standard direct-labour hours	1,000	6,000
Flexible-budget variance	\$10,000 F	\$20,000 U
Production-volume variance	\$6,000 U	\$8,000 F

The total fixed overhead variance in Case Y was

- A) \$4,000 unfavourable.
- B) \$4,000 favourable.
- C) \$10,000 unfavourable.
- D) \$12,000 favourable.
- E) \$12,000 unfavourable.

Answer: E

Explanation: E) \$20,000 unfavourable + \$8,000 favourable = \$12,000 unfavourable

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-1

50) All Clean of Alberta manufactures individual shampoos for hotel/motel clientele. The fixed manufacturing overhead costs for 2016 will total \$576,000. The company uses good units finished for fixed overhead allocation and anticipates 300,000 units of production. Good units finished average 92 percent of total units produced. During January, 20,000 units were produced. Actual fixed overhead cost per good unit averaged \$2.82 in January.

Required:

- Determine the fixed overhead rate for 2016.
- Determine the fixed overhead static-budget variance for January.
- Determine the fixed overhead production-volume variance for January.
- Determine the fixed overhead rate variance for January.

Answer:

a. Fixed overhead rate =  $\$576,000 / (300,000 \times 0.92) = \$2.087$  per finished unit

b. Fixed overhead for January =  $20,000 \times 0.92 \times \$2.82 = \$51,888$

Fixed overhead static-budget variance =  $\$51,888 - \$576,000/12$   
 $\$51,888 - \$48,000 = \$3,888$  U

c. Fixed overhead production-volume variance =  $\$48,000 - (20,000 \times 0.92 \times \$2.087) = \$9,600$  U

d. Fixed overhead rate variance =  $\$51,888 - \$48,000 = \$3,888$  U

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-1

51) Johnston Equipment develops food processing equipment. The budgeted fixed overhead costs for 2015 total \$768,000. The company uses direct labour-hours for fixed overhead allocation and anticipates 480,000 hours during the year for 960,000 units. An equal number of units are budgeted for each month.

During April 84,000 packages (units) were produced and \$66,000 was spent on fixed overhead.

Required:

- Determine the fixed overhead rate for 2015 based on direct labour-hours.
- Determine the fixed overhead static-budget variance for April.
- Determine the production-volume overhead variance for April.

Answer:

a. Fixed overhead rate =  $\$768,000 / 480,000 = \$1.60$  per hour

b. Fixed overhead static budget variance =  $\$66,000 - \$768,000/12$   
 $\$66,000 - \$64,000 = \$2,000$  unfavourable

c. Budgeted fixed overhead rate per output unit =  $\$768,000 / 960,000 = \$0.80$

Denominator level in output units =  $(80,000 - 84,000) \times \$0.80 = \$3,200$  favourable

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-1

52) Everjoice Company makes clocks. The budgeted fixed overhead costs for 2015 total \$720,000. The company uses direct labour-hours for fixed overhead allocation and anticipates 240,000 hours during the year for 480,000 units. An equal number of units are budgeted for each month.

During June, 42,000 clocks were produced and \$63,000 were spent on fixed overhead.

Required:

- a. Determine the fixed overhead rate for 2015 based on units of input.
- b. Determine the fixed overhead static-budget variance for June.
- c. Determine the production-volume overhead variance for June.

Answer:

- a. Fixed overhead rate =  $\$720,000 / 240,000 = \$3.00$  per hour
- b. Fixed overhead static-budget variance =  $\$63,000 - (\$720,000 / 12) = \$3,000$  unfavourable
- c. Budgeted fixed overhead rate per output unit =  $\$720,000 / 480,000 = \$1.50$

Denominator level in output units =  $(40,000 - 42,000) \times \$1.50 = \$3,000$  favourable

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-1

53) Calculate the fixed manufacturing overhead rate variance based on the following data:

Fixed manufacturing overhead allocated	\$65,000 debit
Fixed manufacturing production-volume variance	\$20,000 debit
Variable manufacturing overhead rate variance	\$4,000 Unfavourable
Fixed manufacturing overhead control	\$135,000 credit

Answer:  $\$135,000 - 65,000 - 20,000 = \$50,000$  Unfavourable.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-1

54) Brown Company makes watches. The budgeted fixed overhead costs for 2016 total \$324,000. The company uses direct labour-hours for fixed overhead allocation and anticipates 10,800 hours during the year for 540,000 units. An equal number of units are budgeted for each month.

During October, 48,000 watches were produced and \$28,000 was spent on fixed overhead.

Required:

- a. Determine the fixed overhead rate for 2016 based on the units of input.
- b. Determine the fixed overhead static-budget variance for October.
- c. Determine the production-volume overhead variance for October.

Answer:

- a. Fixed overhead rate =  $\$324,000 / 10,800 = \$30.00$  per hour
- b. Fixed overhead static-budget variance =  $\$28,000 - (\$324,000 / 12) = \$1,000$  unfavourable
- c. Budgeted fixed overhead rate per output unit =  $\$324,000 / 540,000 = \$0.60$

Denominator level in output units =  $(45,000 - 48,000) \times \$0.60 = \$1,800$  favourable

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-1



55) The Saskatchewan division of a Canadian farm machinery company uses a standard cost system for its machine-based production of grain drying equipment. Data regarding production for April are as follows:

Variable manufacturing overhead costs incurred	\$ 549,600	
Variable manufacturing overhead costs allocation rate	\$750 per machine hour	
Fixed manufacturing overhead costs incurred	\$86,500	
Fixed manufacturing overhead budgeted	\$90,000	
Denominator level machine hours	800	hours
Standard machine hours allowed per unit of output	40	hours
Units produced	22	units
Actual machine-hours used	820	hours
Ending work-in-process inventory	nil	

Required:

1. Prepare the necessary journal entries to account for the fixed manufacturing overhead incurred and allocated to production.
2. Prepare the journal entry to close the fixed overhead variance accounts assuming that the fluctuation in denominator level is considered to be normal.

Answer:

1. Fixed manufacturing overhead journal entries

Dr. Fixed Manufacturing Overhead Control	86,500	
Cr. Accounts Payable, etc.		86,500
Dr. WIP Control	99,000	
Cr. Fixed Overhead Allocated		99,000
<i>22 units × (\$90,000/20 units) = \$99,000</i>		
Dr. Fixed Manufacturing Overhead Allocated	99,000	
Cr. Fixed Overhead Rate Variance		3,500
Cr. Production-volume Variance		9,000
Cr. Fixed Manufact. Overhead Control		86,500

2. Close variance accounts

Dr. Fixed Overhead Rate Variance	3,500	
Dr. Production-volume Variance	9,000	
Cr. Cost of Goods Sold		12,500

Diff: 2 Type: ES

56) Mostly Miniatures has just implemented a new cost accounting system that provides two variances for fixed manufacturing overhead. While the company's managers are familiar with the concept of static-budget variance, they are unclear as to how to interpret the production-volume overhead variances. Currently the company has a production capacity of 54,000 miniatures a month although it generally produces only 46,000 cases. However, in any given month the actual production is probably something other than 46,000.

Required:

- a. Does the production-volume overhead variance measure the difference between the 54,000 and 46,000, or the difference between the 46,000 and the actual monthly production? Explain.
- b. What advice can you provide the managers that will help them interpret the production-volume overhead variances?

Answer:

- a. It is the difference between the 46,000 and the actual production level for the period. The difference between the 54,000 and the 46,000 is the unused capacity that was planned for the period. The difference between the 46,000 and the actual level was not planned.
- b. When actual outputs are less than the denominator level, the production-volume variance is unfavourable. This is opposite the label given other variances that have a favourable label when costs are less than the budgeted amount; therefore, caution is needed.

The production-volume variance is favourable when actual production exceeds what was planned for the period. This actually provides for a cost per unit amount that was less than budgeted using the planned denominator.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-1

57) What are the arguments for prorating a production-volume variance that has been deemed to be material among work-in-process, finished goods, and cost of goods sold, as opposed to writing it all off to cost of goods sold?

Answer: If variances are always written off to cost of goods sold, a company could set its standards to either increase (for financial reporting purposes) or decrease (for tax purposes) operating incomes. The proration method has the effect of approximating the allocation of fixed costs based on actual costs and actual output so it is not susceptible to the manipulation of operating income based on the choice of the denominator level.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-1

58) Explain two concerns when interpreting the production-volume variance as a measure of the economic cost of unused capacity.

Answer: The first concern would be the fact that management might have maintained some extra capacity to meet uncertain demand surges that are important to satisfy. If these surges are not occurring in a given year an unfavourable production-volume variance might occur.

The second concern would be to note that this variance only focuses on fixed overhead costs, and ignores the possibility that price decreases might have been necessary to spur the extra demand to make use of any idle capacity.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-1

59) Explain why there is no efficiency variance for fixed manufacturing overhead costs.

Answer: There is no efficiency variance for fixed overhead costs because a given lump sum of fixed costs will be unaffected by how efficiently machine-hours are used to produce output in a given budget period.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-1

60) How is a budgeted fixed overhead cost rate calculated?

Answer: The budgeted fixed overhead cost rate is calculated by dividing the budgeted fixed overhead costs by the denominator level of the cost allocation base.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 8-1

61) Explain the meaning of a favourable production-volume variance.

Answer: The production-volume variance is favourable when actual production exceeds that which is planned for the period. When this happens, it results in a fixed cost per unit that is less than budgeted amount using the planned production.

Diff: 3 Type: ES

Skill: Remember

Objective: LO 8-1

62) Describe if the production-volume variance is favourable or unfavourable for each of the following situations; and, provide the ASPE/IFRS treatment for the disposition of the variance.

1. actual output is less than expected
2. actual output is more than expected but still considered a usual fluctuation
3. actual output is more than expected and is abnormally high

Answer:

1. unfavourable; expense to cost of goods sold
2. favourable; offset to cost of goods sold
3. favourable; apply to inventories

Diff: 3 Type: ES

Skill: Remember

Objective: LO 8-1

8.2 Establish variable overhead cost allocation rates; calculate and analyze flexible-budget variances.

1) Using a standard costing system makes it possible to use a simple recording system.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-2

2) Variable overhead rate variance is the difference between the actual amount of variable overhead incurred and the budgeted amount allowed for the actual quantity of the variable overhead allocation base used for the actual output units achieved.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-2

3) When separate variable and fixed manufacturing overhead control accounts are used for job costing, it is not necessary to have separate overhead allocated accounts.

Answer: FALSE

Explanation: Control accounts need to balance with their subsidiary ledgers so separate allocation accounts are required. A single overhead account that is not a control account could have both actual and allocated costs.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1, 2

4) If a manager views the proration approach as not being cost-effective, then adjusting cost of goods sold is acceptable provide the amount is material.

Answer: FALSE

Explanation: Proration should be used when the amount is material.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-1, 2

5) An unfavourable variable overhead rate variance can be the result of paying lower prices than budgeted for variable overhead items such as energy.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-2

6) The variable overhead efficiency variance is computed in a different way than the efficiency variance for direct-cost items.

Answer: FALSE

Explanation: The variable overhead efficiency variance is computed the same way as the efficiency variance for direct-cost items.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-2

7) The variable overhead flexible-budget variance measures the difference between standard variable overhead costs and flexible-budget variable overhead costs.

Answer: FALSE

Explanation: The variable overhead flexible-budget variance measures the difference between the *actual* variable overhead costs and the flexible-budget variable overhead costs.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-2

8) The variable overhead efficiency variance measures the efficiency with which the cost-allocation base is used.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-2

9) The variable overhead efficiency variance can be interpreted the same way as the efficiency variance for direct-cost items.

Answer: FALSE

Explanation: The interpretations are different. The variable overhead efficiency variance focuses on the quantity of allocation-base used, while the efficiency variance for direct-cost items focuses on the quantity of materials and labour-hours used.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-2

10) There is causal relationship between the variable overhead allocation base and the variable overhead cost pool.

Answer: FALSE

Explanation: The relationship is not causal but rather one of cost and benefit.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 8-2

11) Effective planning of variable overhead costs means that a company performs those variable overhead costs that primarily add value

A) for the current shareholders.

B) for the customer using the products or services.

C) for plant employees.

D) for major suppliers of component parts.

E) for management.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-2

12) Two of the primary ways to manage variable overhead costs include

A) eliminating non-value-added costs and reducing the consumption of cost drivers.

B) eliminating non-value-added costs and increasing fixed overhead expenses.

C) reducing the consumption of cost drivers and increasing variable costs.

D) using more energy-efficient equipment and planning for appropriate capacity levels.

E) increasing variable costs and eliminating non-value added costs.

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-2

13) If budgeted machine-hours allowed per actual output unit equals 1.0 hour, and budgeted variable manufacturing overhead per machine-hour is \$200, what is the budgeted variable manufacturing overhead rate per output unit?

A) \$100

B) \$200

C) \$300

D) \$400

E) \$500

Answer: B

Explanation: B)  $1.00 \text{ MH} \times \$200 = \$200$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-2

14) What is the variable manufacturing overhead static-budget variance given the following information?

Actual output units produced	28,000 units
Actual machine-hours used	10,000 hours
Actual variable manufacturing overhead costs	\$300,000
Budgeted variable manufacturing overhead costs	\$250,000
Budgeted output units	25,000 units

- A) \$20,000 favourable
- B) \$20,000 unfavourable
- C) \$50,000 unfavourable
- D) \$50,000 favourable
- E) \$55,000 favourable

Answer: C

Explanation: C)  $\$300,000 - \$250,000 = \$50,000$  unfavourable

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-2

*Use the information below to answer the following question(s).*

Moeller Electric manufactures light fixtures. The following information pertains to the company's manufacturing overhead data.

Budgeted output units	30,000 fixtures
Budgeted machine-hours	10,000 hours
Budgeted variable manufacturing overhead costs for 30,000 fixtures	\$80,625
Actual output units produced	44,000 fixtures
Actual machine-hours used	10,000 hours
Actual variable manufacturing overhead costs	\$121,000

15) What is Moeller Electric's variable manufacturing overhead static-budget variance?

- A) \$2,750 favourable
- B) \$2,750 unfavourable
- C) \$40,375 favourable
- D) \$40,375 unfavourable
- E) \$44,000 unfavourable

Answer: D

Explanation: D)  $\$121,000 - \$80,625 = \$40,375$  unfavourable

Diff: 1 Type: MC

Skill: Apply

Objective: LO 8-2

16) What is Moeller Electric's variable manufacturing overhead sales-volume variance?

- A) \$2,750 favourable
- B) \$37,625 favourable
- C) \$37,625 unfavourable
- D) \$40,375 favourable
- E) \$40,375 unfavourable

Answer: C

Explanation: C)  $(44,000 - 30,000) \times (\$80,625/30,000) = \$37,625$  unfavourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

17) What is the variable manufacturing overhead flexible-budget variance?

- A) \$387 favourable
- B) \$2,363 unfavourable
- C) \$2,363 favourable
- D) \$2,750 favourable
- E) \$2,750 unfavourable

Answer: E

Explanation: E)  $\$121,000 - 44,000 \times (\$80,625/30,000) = \$2,750$  unfavourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

18) Assume that variable manufacturing overhead is allocated according to machine-hours. Aladdin Company expects to produce 400 cases of Product A using 400 machine-hours. Each machine hour is expected to take 10 KWH of electricity, which costs \$6 per KWH. What is the maximum amount the company would be willing to pay for the new machine based solely on rate and efficiency variances if a new energy-efficient machine only used 8 KWH per machine-hour?

- A) \$120
- B) \$4,680
- C) \$4,920
- D) \$4,800
- E) \$4,120

Answer: D

Explanation: D)  $BVOHR = 10 \text{ KWH/MH} \times \$6/\text{KWH} = \$60$  per MH

$AVOHR = 8 \text{ KWH/MH} \times \$6/\text{KWH} = \$48$  per MH

$VOH \text{ Flexible Variance} = (\$60 - \$48) \times 400 \text{ MH} = \$4,800$  favourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2



19) Cady Machine Shop used 15,000 machine hours during January. It takes 0.90 machine-hours to produce one unit; 15,000 units were produced during the month. Budgeted production included 12,000 units, using 10,800 machine hours. Budgeted variable manufacturing overhead costs per machine-hour is \$22.50. What is the variable overhead efficiency variance for Cady?

- A) \$67,500 unfavourable
- B) \$67,500 favourable
- C) \$37,000 favourable
- D) \$33,750 favourable
- E) \$33,750 unfavourable

Answer: E

Explanation: E) VOHEF =  $[15,000 \text{ MH} - (15,000 \times 0.90)] \times (\$22.50) = \$33,750$  unfavourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

20) A favourable variable manufacturing overhead efficiency variance may be interpreted as meaning which of the following if machine hours are the cost allocation base?

- A) Employees used too much electricity during production.
- B) Improved quality of materials resulting in less downtime to clean the machines of debris.
- C) Excess supplies were used.
- D) Too much of the cost driver was used.
- E) The cost driver is inappropriate.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-2

21) If Ferg Company has a \$12,000 unfavourable variable overhead efficiency variance, which of the following statements would be TRUE?

- A) Ferg would credit the Cost of Goods Sold account to write-off the variance.
- B) Ferg used the variable overhead components more effectively than expected.
- C) Ferg made efficient use of the cost driver.
- D) Ferg used the variable overhead components and cost driver as expected.
- E) Ferg did not use the cost driver efficiently.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-2

22) A leased factory building has a fixed monthly rental payment, and a variable overhead cost of energy and indirect labour. Which of the following is TRUE, assuming that all activity levels are within the relevant range?

- A) Variable OVH costs will increase as production increases, but Fixed OVH costs will decrease.
- B) Variable OVH costs will decrease as production increases, but Fixed OVH costs will increase.
- C) Variable OVH costs will increase as production increases, and Fixed OVH costs will increase.
- D) Variable OVH costs will increase as production increases, but Fixed OVH costs will remain constant.
- E) Both will increase with production, but at different rates.

Answer: D

Diff: 1 Type: MC

Skill: Understand

Objective: LO 8-1, 2

23) During October Foxmore Inc. used \$250,000 in manufacturing overhead costs, of which \$66,500 was variable. Budgeted manufacturing overhead was \$229,500, of which \$75,000 was variable. Which of the following entries for manufacturing overhead could have been recorded?

A)

Variable Manufacturing Overhead Allocated	75,000
Work -in-Process Control	75,000

B)

Variable Manufacturing Overhead Allocated	75,000
Accounts Payable and other accounts	75,000

C)

Work-in-Process Control	66,500
Accounts Payable and other accounts	66,500

D)

Variable Manufacturing Overhead Control	66,500
Accounts Payable and other accounts	66,500

E)

Work-in-Process Control	66,500
Variable Manufacturing Overhead Allocated	66,500

Answer: D

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

- 24) If Pope Inc. uses standard costing, the overhead allocated to work-in-process is recorded as a
- A) debit to Manufacturing Overhead Allocated and a credit to Work-in-Process.
  - B) debit to Work-in-Process and credit to Manufacturing Overhead Control.
  - C) debit to Manufacturing Overhead Allocated and a credit to Manufacturing Overhead Control.
  - D) debit to Manufacturing Overhead Control and a credit to Manufacturing Overhead Allocated.
  - E) debit to Work-in-Process and a credits to Manufacturing Overhead Allocated.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 8-2

- 25) If Miller Company makes the following journal entry:

Variable Overhead Allocated	50,000
Variable Overhead Efficiency Variance	15,000
Variable Overhead Control	62,500
Variable Overhead Rate Variance	2,500

It may be inferred that

- A) Miller over-allocated variable manufacturing overhead.
- B) the net variance is a \$12,500 favourable rate variance.
- C) actual variable manufacturing overhead costs were \$62,500.
- D) the journal entry accounts are incorrect.
- E) the net variance is \$12,500 unfavourable.

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-2

- 26) Which option(s) would be consistent with the proration approach for end-of-period adjustments when the underallocated or overallocated variable overhead costs are significant?

- A) prorate based on the allocated overhead amount in the ending balance of work-in-process inventory and cost of goods sold
- B) immediate write-off to cost of goods sold
- C) prorate based on the total ending balance of variable overhead allocated and variable overhead control
- D) prorate based on the allocated overhead amount in the ending balance of work-in-process inventory, finished goods inventory, and cost of goods sold
- E) prorate based on the total ending balance of cost of goods sold and variable overhead control

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-2

27) The variable overhead flexible-budget variance can be further subdivided into the

- A) price variance and the efficiency variance.
- B) static-budget variance and sales-volume variance.
- C) rate variance and production-volume variance.
- D) sales-volume variance and the rate variance.
- E) rate variance and the efficiency variance.

Answer: E

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-2

28) An unfavourable variable overhead rate variance indicates that

- A) variable overhead items were used efficiently.
- B) the price and/or use of variable overhead items was more than budgeted.
- C) the variable overhead cost-allocation base was not used efficiently.
- D) the denominator level was not accurately determined.
- E) the denominator level was used more than planned.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 8-2

29) When machine-hours are used as an overhead cost-allocation base, the LEAST likely cause of a unfavourable variable overhead rate variance is

- A) excessive machine breakdowns.
- B) the production scheduler inefficiently scheduled jobs.
- C) poor coordination between sales and production resulting in displacement of normal batches by. rush orders and excessive setup times.
- D) strengthened demand for the product.
- E) a decrease in the cost of energy.

Answer: E

Diff: 3 Type: MC

Skill: Understand

Objective: LO 8-2

*Answer the following question(s) using the information below.*

Kellar Corporation manufactured 1,500 chairs during June. The following variable overhead data pertain to June:

Budgeted variable overhead cost per unit	\$12.00
Actual variable manufacturing overhead cost	\$16,800
Flexible-budget amount for variable manufacturing overhead	\$18,000
Variable manufacturing overhead efficiency variance	\$360 unfavourable

30) What is the variable overhead flexible-budget variance?

- A) \$1,200 favourable
- B) \$360 unfavourable
- C) \$840 favourable
- D) \$1,200 unfavourable
- E) \$1,560 unfavourable

Answer: A

Explanation: A)  $\$16,800 - \$18,000 = \$1,200$  (F)

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-2

31) What is the variable overhead rate variance?

- A) \$840 unfavourable
- B) \$1,200 favourable
- C) \$1,200 unfavourable
- D) \$1,560 favourable
- E) \$1,560 unfavourable

Answer: D

Explanation: D)  $\$1,200$  (F) -  $\$360$  (U) =  $\$1,560$  (F)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

*Answer the following question(s) using the information below.*

Willis Corporation manufactures industrial-sized gas furnaces and uses budgeted machine-hours to allocate variable manufacturing overhead. The following information pertains to the company's manufacturing overhead data:

Budgeted output	30,000 units
Budgeted machine-hours	10,000 hours
Budgeted variable manufacturing overhead costs for 30,000 units	\$322,500
Actual output produced	44,000 units
Actual machine-hours used	14,400 hours
Actual variable manufacturing overhead costs	\$484,000

32) What is the flexible-budget amount for variable manufacturing overhead?

- A) \$330,000
- B) \$473,000
- C) \$484,000
- D) \$322,500
- E) \$464,400

Answer: B

Explanation: B)  $44,000 \times (\$322,500/30,000) = \$473,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-2

33) What is the flexible-budget variance for variable manufacturing overhead?

- A) \$54,000 unfavourable
- B) \$19,600 unfavourable
- C) \$11,000 favourable
- D) \$11,000 unfavourable
- E) \$161,500 unfavourable

Answer: D

Explanation: D)  $\$473,000 - \$484,000 = \$11,000 \text{ U}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-2

34) What is the variable overhead rate variance?

- A) \$11,000 favourable
- B) \$13,611 unfavourable
- C) \$13,611 favourable
- D) \$19,600 favourable
- E) \$19,600 unfavourable

Answer: E

Explanation: B)

E)  $[(\$322,500/10,000 \text{ hrs.}) - (\$484,000/14,400 \text{ hrs.})] \times 14,400 \text{ hrs.} = \$19,600 \text{ U}$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

35) What is the variable overhead efficiency variance?

- A) \$8,600 favourable
- B) \$8,600 unfavourable
- C) \$141,900 favourable
- D) \$141,900 unfavourable
- E) \$11,000 unfavourable

Answer: A

Explanation: A)  $((44,000 \text{ units} \times (10,000 \text{ units}/30,000 \text{ hrs.})) - 14,400 \text{ hrs.}) \times (\$322,500/10,000 \text{ hrs.}) = \$8,600 \text{ F}$

B)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-2

36) Cirilla's Weathervane Company manufactures weathervanes. The current year operating budget is based on the production of 10,000 weathervanes with 1.25 machine-hour allowed per weathervane. Variable manufacturing overhead is anticipated to be \$300,000.

Actual production was 11,000 weathervanes using 12,100 machine-hours. Actual variable costs were \$23.75 per machine-hour.

Required:

Calculate the variable overhead rate and the efficiency variances.

Answer: Budgeted variable overhead per hour =  $\$300,000/(10,000 \times 1.25) \text{ machine-hours} = \$24$

Rate variance =  $(\$24 - \$23.75) \times 12,100 = \$3,025 \text{ favourable}$

Efficiency variance =  $[12,100 - (11,000 \times 1.25)] \times \$24 = \$39,600 \text{ favourable}$

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-2

37) Trilite Windows manufactures windows. The current year operating budget is based on production of 56,000 windows with 1.0 machine hours allowed per window. Variable manufacturing overhead is anticipated to be \$896,000.

Actual production for was 58,000 windows using 60,000 machine hours. Actual variable costs were \$15 per machine hour.

Required:

Determine the variable overhead rate and efficiency variances.

Answer: Budgeted variable overhead per hour =  $\$896,000 / 56,000$  machine hours = \$16

Rate variance =  $(\$16 - \$15) \times 60,000 = \$60,000$  favourable

Efficiency variance =  $(60,000 - (58,000 \times 1.0)) \times \$16 = \$32,000$  unfavourable

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-2

38) Heather's Pillow Company manufactures pillows. The current year operating budget is based on production of 20,000 pillows with 0.5 machine-hour allowed per pillow. Variable manufacturing overhead is anticipated to be \$220,000.

Actual production was 18,000 pillows using 9,500 machine-hours. Actual variable costs were \$20 per machine-hour.

Required:

Calculate the variable overhead rate and efficiency variances.

Answer: Budgeted variable overhead per hour =  $\$220,000 / (20,000 \times 0.5)$  machine-hours = \$22

Rate variance =  $(\$22 - \$20) \times 9,500 = \$19,000$  favourable

Efficiency variance =  $[9,500 - (18,000 \times 0.5)] \times \$22 = \$11,000$  unfavourable

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-2



39) Kelly's Pillow Company manufactures pillows. The current year operating budget is based on production of 40,000 pillows with 0.5 machine-hour allowed per pillow. Variable manufacturing overhead is anticipated to be \$440,000.

Actual production was 36,000 pillows using 19,000 machine-hours. Actual variable costs were \$20 per machine-hour.

Required:

Calculate the variable overhead rate and efficiency variances.

Answer: Budgeted variable overhead per hour =  $\$440,000 / (40,000 \times 0.5) \text{ machine-hours} = \$22$

Rate variance =  $(\$22 - \$20) \times 19,000 = \$38,000 \text{ favourable}$

Efficiency variance =  $[19,000 - (36,000 \times 0.5)] \times \$22 = \$22,000 \text{ unfavourable}$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-2

40) Zebra Jewellers planned to produce 1,800 necklaces during March with a total overhead budget of \$49,600. However, while manufacturing the 2,000th necklace the microcomputer that contained the month's cost information broke down. With the computer out of commission, the accountant has been unable to complete the variance analysis report. The missing information of the report is lettered in the following set of data:

Variable overhead:

Standard cost per necklace:	0.4 labour hour at \$8 per hour
Actual costs:	\$8,400 for 752 hours
Flexible budget:	<u>a</u>
Total flexible-budget variance:	<u>b</u>
Variable overhead rate variance:	<u>c</u>
Variable overhead efficiency variance:	<u>d</u>

Fixed overhead:

Budgeted costs:	<u>e</u>
Actual costs:	<u>f</u>
Flexible-budget variance:	\$2,000 favourable

Required:

Compute the missing elements in the report represented by the lettered items.

Answer:

- a.  $2,000 \times 0.40 \times \$8 = \$6,400$
- b.  $\$8,400 - \$6,400 = \$2,000$  unfavourable
- c.  $\$8,400 - (752 \times \$8) = \$2,384$  unfavourable
- d.  $\$6,016 - \$6,400 = \$384$  favourable
- e.  $\$49,600 - (1,800 \times 0.4 \times \$8) = \$43,840$
- f.  $\$43,840 - \$2,000$  favourable = \$41,840

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-1, 2

41) McKenna Company planned to produce 900 units during April with a total overhead budget of \$12,400.

However, while manufacturing the 1,000 units the microcomputer that contained the month's cost information broke down. With the computer out of commission, the accountant has been unable to complete the variance analysis report. The information missing from the report is lettered in the following set of data:

Variable overhead:

Standard cost per unit:	0.4 labour hour at \$4 per hour
Actual costs:	\$2,100 for 376 hours
Flexible budget:	<u>a</u>
Total flexible-budget variance:	<u>b</u>
Variable overhead rate variance:	<u>c</u>
Variable overhead efficiency variance:	<u>d</u>

Fixed overhead:

Budgeted costs:	<u>e</u>
Actual costs:	<u>f</u>
Flexible-budget variance:	\$500 favourable

Required:

Compute the missing elements in the report represented by the lettered items

Answer:

- a.  $1,000 \times 0.40 \times \$4 = \$1,600$
- b.  $\$2,100 - \$1,600 = \$500$  unfavourable
- c.  $\$2,100 - (376 \times \$4) = \$596$  unfavourable
- d.  $\$1,504 - \$1,600 = \$96$  favourable
- e.  $\$12,400 - (900 \times 0.4 \times \$4) = \$10,960$
- f.  $\$10,960 - \$500 \text{ favourable} = \$10,460$

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-1, 2

42) Teri's Furniture uses variance analysis to evaluate manufacturing overhead in its' table factory. The information for the May overhead expenditures is as follows:

Budgeted output units	14,000 tables
Budgeted fixed manufacturing overhead	\$22,400
Budgeted variable manufacturing overhead	\$3.00 per direct labour hour
Budgeted direct manufacturing labour hours	0.2 hour per table
Fixed manufacturing costs incurred	\$24,000
Direct manufacturing labour hours used	4,000 hours
Variable manufacturing costs incurred	\$11,000
Actual units manufactured	15,000 tables

Required:

- Calculate the variable manufacturing overhead rate and efficiency variances; and, the fixed manufacturing overhead rate and production-volume variances.
- Prepare all necessary journal entries to record the actual costs, allocated costs, and variances. Keep variable and fixed entries separate.

Answer:

- Variance analysis

Variable overhead rate variance =  $\$11,000 - (4,000 \times \$3) = \$1,000$  favourable

Variable overhead efficiency variance =  $\$3 \times (4,000 - 3,000) = \$3,000$  unfavourable

$15,000 \text{ units} \times 0.2 \text{ hours} = 3,000$

Fixed overhead rate variance =  $\$24,000 - \$22,400 = \$1,600$  unfavourable

Fixed OH production-volume variance =  $\$22,400 - (15,000 \times 0.2 \times \$8) = \$1,600$  favourable

$\$22,400 / (14,000 \text{ units} \times 0.2 \text{ hours}) = \$8$

b. Journal entries

Variable Overhead Control	11,000	
Account Payable and other accounts		11,000
To record actual variable construction overhead.		

Fixed Overhead Control	24,000	
Accumulated Amortization, etc.		24,000
To record actual fixed construction overhead.		

Work-in-Process Control	9,000	
Variable Overhead Allocated		9,000

To record allocation of variable manufacturing overhead costs;  
 $3,000 \times \$3$

Work-in-Process Control	24,000	
Fixed Overhead Allocated		24,000

To record allocation of fixed manufacturing overhead costs:  
 $15,000 \times 0.2 \times \$8$

Variable Overhead Allocated	9,000	
Variable Overhead Efficiency Variance	3,000	
Variable Overhead Rate Variance		1,000
Variable Overhead Control		11,000

To record variances for the period.

Fixed Overhead Allocated	24,000	
Fixed Overhead Rate Variance	1,600	
Fixed Overhead Production Volume Overhead Variance		1,600
Fixed Overhead Control		24,000

To record variances for the period.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-1, 2

43) Sam's Furniture uses variance analysis to evaluate manufacturing overhead in its' factory. The information for the June overhead expenditures is as follows:

Budgeted output units	22,000 chairs
Budgeted fixed manufacturing overhead	\$26,400
Budgeted variable manufacturing overhead	\$2.50 per direct labour hour
Budgeted direct manufacturing labour hours	0.3 hour per chair
Fixed manufacturing costs incurred	\$25,300
Direct manufacturing labour hours used	7,600 hours
Variable manufacturing costs incurred	\$17,100
Actual units manufactured	19,000 chairs

Required:

- Calculate the variable manufacturing overhead rate and efficiency variances; and, the fixed manufacturing overhead rate and production-volume variances.
- Prepare all necessary journal entries to record the actual costs, allocated costs, and variances. Keep variable and fixed entries separate.

Answer:

- Variance analysis

Variable overhead rate variance =  $\$17,100 - (7,600 \times \$2.50) = \$1,900$  favourable

Variable overhead efficiency variance =  $\$2.50 \times (5,700 - 7,600) = \$4,750$  unfavourable

$19,000 \text{ units} \times 0.3 \text{ hours} = 5,700$  budgeted hrs. allowed per unit

Fixed overhead rate variance =  $\$26,400 - \$25,300 = \$1,100$  favourable

Fixed OH production-volume variance =  $\$26,400 - (19,000 \times 0.3 \times \$4) = \$3,600$  unfavourable

$\$26,400 / (22,000 \text{ units} \times 0.3 \text{ hours}) = \$4$

b. Journal entries

Variable Overhead Control	17,100	
Account Payable and other accounts		17,100
To record actual variable construction overhead.		

Fixed Overhead Control	25,300	
Accumulated Amortization, etc.		25,300
To record actual fixed construction overhead.		

Work-in-Process Control	14,250	
Variable Overhead Allocated		14,250
To record allocation of variable manufacturing overhead costs		

Work-in-Process Control	22,800	
Fixed Overhead Allocated		22,800
To record allocation of fixed manufacturing overhead costs		

Variable Overhead Allocated	14,250	
Variable Overhead Efficiency Variance	4,750	
Variable Overhead Rate Variance		1,900
Variable Overhead Control		17,100
To record variances for the period.		

Fixed Overhead Allocated	22,800	
Fixed Overhead Production Volume Overhead Variance	3,600	
Fixed Overhead Rate Variance		1,100
Fixed Overhead Control		25,300
To record variances for the period.		

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-1, 2

44) Lungren has allocated budgeted construction overhead for August of \$260,000 for variable costs and \$440,000 for fixed costs. Actual costs for the month totalled \$275,000 for variable and \$445,000 for fixed. Allocated fixed overhead totalled \$440,000. The company tracks each item in an overhead control account before allocations are made to individual jobs. Rate variances for August were \$10,000 unfavourable for variable and \$10,000 unfavourable for fixed. The production-volume overhead variance was \$5,000 favourable.

Required:

- Prepare journal entries for the actual costs incurred.
- Prepare journal entries to record the variances for August.

Answer:

a.

Variable Overhead Control	\$275,000	
Account Payable and other accounts		\$275,000

To record actual variable construction overhead.

Fixed Overhead Control	\$445,000	
Accumulated Amortization, etc.		\$445,000

To record actual fixed construction overhead.

b.

Variable Overhead Allocated	\$260,000	
Variable Overhead Rate Variance	10,000	
Variable Overhead Efficiency Variance*	5,000	
Variable Overhead Control		\$275,000

To record variances for the period.

\*arrived at this number by default

Fixed Overhead Allocated	\$440,000	
Fixed Overhead Rate Variance	10,000	
Fixed Overhead Production-Volume Variance		\$5,000
Fixed Overhead Control		445,000

To record variances for the period.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-1, 2



45) The Saskatchewan division of a Canadian farm machinery company uses a standard cost system for its machine-based production of grain drying equipment. Data regarding production for April are as follows:

Variable manufacturing overhead costs incurred	\$ 549,600	
Variable manufacturing overhead costs allocation rate	\$750 per machine hour	
Fixed manufacturing overhead costs incurred	\$86,500	
Fixed manufacturing overhead budgeted	\$90,000	
Denominator level machine hours	800	hours
Standard machine hours allowed per unit of output	40	hours
Units produced	22	units
Actual machine-hours used	820	hours
Ending work-in-process inventory	nil	

Required:

1. Prepare the necessary journal entries to account for the variable manufacturing overhead incurred and allocated to production.
2. Prepare the journal entry to close the variable overhead variance accounts under the assumption that the amount is immaterial.

Answer:

1. Fixed manufacturing overhead journal entries

Dr. Variable Manufacturing Overhead Control	549,600	
Cr. Accounts Payable		549,600
Dr. WIP Control	660,000	
Cr. Variable Manufact. Overhead Allocated		660,000
<i>22 units × (\$750 × 40 hours) = \$</i>		
Dr. Variable Manufacturing Overhead Allocated	660,000	
Cr. Variable Overhead Efficiency Variance		45,000
Cr. Variable Overhead Rate Variance		65,400
Cr. Variable Manufact. Overhead Control		549,600

2. Close variance accounts

Dr. Variable Overhead Rate Variance	65,400	
Dr. Variable Overhead Efficiency Variance	15,000	
Cr. Cost of Goods Sold		80,400

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-2

46) Can the variable overhead efficiency variance

- a. be *computed* the same way as the efficiency variance for direct-cost items?
- b. be *interpreted* the same way as the efficiency variance for direct-cost items? Explain.

Answer:

- a. Yes, the variable overhead efficiency variance can be computed the same way as the efficiency variance for direct-cost items.
- b. No, the interpretations are different. The variable overhead efficiency variance focuses on the quantity of allocation-base used, while the efficiency variance for direct-cost items focuses on the quantity of materials and labour-hours used.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-2

47) Briefly explain the meaning of the variable overhead efficiency variance and the variable overhead rate variance.

Answer: The variable overhead efficiency variance is the difference between actual quantity of the cost-allocation base used and the budgeted amount of the cost allocation base that should have been used to produce the actual output, multiplied by budgeted variable overhead cost per unit of the cost-allocation base. The efficiency variance for variable overhead cost is based on the efficiency with which the cost allocation base was used to make the actual output.

The variable overhead rate variance is the difference between the actual variable overhead cost per unit of the cost-allocation base and the budgeted variable overhead cost per unit of the cost-allocation base, multiplied by actual quantity of the variable overhead cost-allocation base used for actual output. The meaning of this variance hinges on an explanation of why the per unit cost of the allocation base is lower or higher than the amount budgeted. Some explanations might include different-than-budgeted prices for the individual inputs to variable overhead or perhaps more efficient usage of some of the variable overhead items.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-2

48) Briefly explain why a favourable variable overhead rate variance may not always be desirable.

Answer: The variable overhead rate variance is the difference between the actual variable overhead cost per unit of the cost-allocation base and the budgeted variable overhead cost per unit of the cost-allocation base, multiplied by the actual quantity of the variable overhead cost-allocation base used for the actual output. If a favourable variable overhead rate variance had been obtained by the managers of the company purchasing low-priced, poor-quality indirect materials, hired less talented supervisors, or performed less machine maintenance there could be negative future consequences. The long-run prospects for the business may suffer as the company ends up putting out a lower quality product, or it may end up having very large equipment repairs as a result of cutting corners in the short term.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-2

49) How can a standard costing system be useful in negotiating new sales?

Answer: Standard costs, with the resulting variance analysis, assist companies in identifying problems, and thus in reducing actual costs. Lower costs in turn, give a company more leeway in negotiations of prices that must be charged for a sale to be profitable and in meeting competitive pressures.

Where a company has customers that vary greatly in terms of sizes of orders, the related costs of manufacturing can likewise vary considerably. The company obviously needs information on costs for each of the various situations in order to be able to determine the prices it must charge

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-1, 2

8.3 Calculate ABC overhead variances.

1) Batch-level costs are resources sacrificed on activities that are related to individual units of product(s) or service(s).

Answer: FALSE

Explanation: Batch-level costs are resources sacrificed on activities that are related to a group of units of product(s) or service(s) rather than to each individual unit of product or service.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-3

*Answer the following question(s) using the information below.*

Munoz Inc. produces a special line of plastic toy racing cars in batches. To manufacture a batch of the cars Munoz Inc. must setup the machines and molds. Setup costs are batch-level costs because they are associated with batches rather than individual units of products. A separate Setup Department is responsible for setting up machines and molds for different styles of car.

Setup overhead costs consist of some costs that are variable and some costs that are fixed with respect to the number of setup hours. The following information pertains to June 2012:

	<b><u>Actual Amounts</u></b>	<b><u>Static-budget Amounts</u></b>
Units produced and sold	15,000	11,250
Batch size (number of units per batch)	250	225
Setup hours per batch	5	5.25
Variable overhead cost per setup hour	\$40	\$38
Total fixed setup overhead costs	\$14,400	\$14,000

2) Calculate the efficiency variance for variable setup overhead costs.

- A) \$1,900 unfavourable
- B) \$600 favourable
- C) \$1,900 favourable
- D) \$600 unfavourable
- E) \$400 unfavourable

Answer: C

Explanation: C)  $\{[(15,000/250) \times 5] - [(15,000/225) \times 5.25]\} \times \$38 = \$1,900$  (F)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

3) Calculate the rate variance for variable setup overhead costs.

- A) \$1,900 unfavourable
- B) \$1,900 favourable
- C) \$400 unfavourable
- D) \$600 favourable
- E) \$600 unfavourable

Answer: E

Explanation: E)  $(15,000/250) \times 5 \times (\$38 - \$40) = \$600$  (U)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

4) Calculate the flexible-budget variance for variable setup overhead costs.

- A) \$600 unfavourable
- B) \$1,300 favourable
- C) \$600 favourable
- D) \$1,300 unfavourable
- E) \$400 unfavourable

Answer: B

Explanation: B)  $\$1,900 \text{ (F)} - \$600 \text{ (U)} = \$1,300 \text{ (F)}$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

5) Calculate the rate variance for fixed setup overhead costs.

- A) \$1,600 unfavourable
- B) \$400 unfavourable
- C) \$600 unfavourable
- D) \$400 favourable
- E) \$600 favourable

Answer: B

Explanation: B)  $\$14,000 - \$14,400 = \$400 \text{ (U)}$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

6) Calculate the production-volume variance for fixed setup overhead costs.

- A) \$4,666.67 unfavourable
- B) \$400 unfavourable
- C) \$1,600 unfavourable
- D) \$4,666.67 favourable
- E) \$400 favourable

Answer: D

Explanation: D) Normal setup hours =  $(11,250/225) \times 5.25 = 262.5$  hours

OH rate =  $\$14,000/262.5 = \$53.33$  per setup hour

$[(15,000/225) \times 5.25 \times \$53.33] - \$14,000 = \$4,666.67$  favourable

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

*Answer the following question(s) using the information below.*

Lukehart Industries Inc. produces air purifiers in batches. To manufacture a batch of the purifiers Lukehart Inc. must setup the machines and assembly line tooling. Setup costs are batch-level costs because they are associated with batches rather than individual units of products. A separate Setup Department is responsible for setting up machines and tooling for different models of the air purifiers.

Setup overhead costs consist of some costs that are variable and some costs that are fixed with respect to the number of setup hours. The following information pertains to June 2012:

	<b><u>Budget Amounts</u></b>	<b><u>Actual Amounts</u></b>
Units produced and sold	10,000	9,000
Batch size (number of units per batch)	400	375
Setup hours per batch	6	5.5
Variable overhead cost per setup hour	\$50	\$52
Total fixed setup overhead costs	\$18,000	\$17,750

7) Calculate the efficiency variance for variable setup overhead costs.

- A) \$150 favourable
- B) \$114 favourable
- C) \$264 unfavourable
- D) \$264 favourable
- E) \$250 favourable

Answer: A

Explanation: A)  $\{[(9,000/375) \times 5.5] - [(9,000/400) \times 6]\} \times \$50 = \$150$  (F)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

8) Calculate the rate variance for variable setup overhead costs.

- A) \$150 unfavourable
- B) \$150 favourable
- C) \$264 unfavourable
- D) \$264 favourable
- E) \$114 favourable

Answer: C

Explanation: C)  $(9,000/375) \times 5.5 \times (\$50 - \$52) = \$264$  (U)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

9) Calculate the flexible-budget variance for variable setup overhead costs.

- A) \$114 favourable
- B) \$264 favourable
- C) \$264 unfavourable
- D) \$114 unfavourable
- E) \$150 unfavourable

Answer: D

Explanation: D)  $\$150 \text{ (F)} - \$264 \text{ (U)} = \$114 \text{ (U)}$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

10) Calculate the rate variance for fixed setup overhead costs.

- A) \$114 unfavourable
- B) \$150 unfavourable
- C) \$250 unfavourable
- D) \$150 favourable
- E) \$250 favourable

Answer: E

Explanation: E)  $\$18,000 - \$17,750 = \$250 \text{ (F)}$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

11) Calculate the production-volume variance for fixed setup overhead costs.

- A) \$1,800 favourable
- B) \$1,800 unfavourable
- C) \$250 unfavourable
- D) \$250 favourable
- E) \$114 unfavourable

Answer: B

Explanation: B) Normal setup hours =  $(10,000/400) \times 6 = 150 \text{ hours}$

OH rate =  $\$18,000/150 = \$120.00 \text{ per setup hour}$

$[(9,000/400) \times 6 \times \$120] - \$18,000 = \$1,800 \text{ (U)}$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 8-3

12) Fixed and variable cost variances can \_\_\_\_\_ be applied to activity-based costing systems.

- A) occasionally
- B) always
- C) seldom
- D) most times
- E) never

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-3

13) Brown Dental Equipment uses a flexible budget for its indirect manufacturing costs. For 2016 the company anticipated that it would produce 36,000 components with 7,000 machine hours and 14,400 employee days. The costs and cost drivers were to be as follows:

	<u>Fixed</u>	<u>Variable</u>	<u>Cost driver</u>
Product handling	\$30,000	\$0.20	per unit
Inspection	8,000	4.00	per 100 unit batch
Utilities	400	2.00	per 100 unit batch
Maintenance	1,000	0.10	per machine hour
Supplies		2.50	per employee day

During the year the company processed 40,000 units, worked 15,000 employee days, and had 8,000 machine hours. The actual costs for 2016 were:

	<u>Actual costs</u>
Product handling	\$38,400
Inspection	10,000
Utilities	1,420
Maintenance	1,400
Supplies	36,800

Required:

- Prepare an overhead static budget for 2016 with variances.
- Prepare an overhead flexible budget for 2016 with variances.



Answer:

a.

Brown Dental Equipment  
Overhead Static Budget with Variances

	<u>Actual</u>	<u>Static Budget</u>	<u>Variances</u>
Product handling	\$38,400	\$37,200	\$1,200 U
Inspection	10,000	9,440	560 U
Utilities	1,420	1,120	300 U
Maintenance	1,400	1,700	300 F
Supplies	<u>36,800</u>	<u>36,000</u>	<u>800 U</u>
Total	<u>\$88,020</u>	<u>\$85,460</u>	<u>\$2,560 U</u>

b.

Brown Dental Equipment  
Overhead Flexible Budget with Variances

	<u>Actual</u>	<u>Flexible Budget</u>	<u>Variances</u>
Product handling	\$38,400	\$38,000	\$400 U
Inspection	10,000	9,600	400 U
Utilities	1,420	1,200	220 U
Maintenance	1,400	1,800	400 F
Supplies	<u>36,800</u>	<u>37,500</u>	<u>700 F</u>
Total	<u>\$88,020</u>	<u>\$88,100</u>	<u>\$80 F</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-3

14) Jael Equipment uses a flexible budget for its indirect manufacturing costs. For 2015 the company anticipated that it would produce 18,000 units with 3,500 machine-hours and 7,200 employee days. The costs and cost drivers were to be as follows:

	<u>Fixed</u>	<u>Variable</u>	<u>Cost Driver</u>
Product handling	\$30,000	\$0.40	per unit
Inspection	8,000	8.00	per 100 unit batch
Utilities	400	4.00	per 100 unit batch
Maintenance	1,000	0.20	per machine-hour
Supplies		5.00	per employee day

During the year, the company processed 20,000 units; worked 7,500 employee days; and, had 4,000 machine hours. The actual costs for 2015 were:

	<u>Actual</u>
Product handling	\$36,000
Inspection	9,000
Utilities	1,600
Maintenance	1,200
Supplies	37,500

Required:

- Prepare the static-budget using the overhead items above and then compute the static-budget variances.
- Prepare the flexible-budget using the overhead items above and then compute the flexible-budget variances.

Answer:

a.

Jael Equipment  
Overhead Static Budget with Variances

	<u>Actual</u>	<u>Static Budget</u>	<u>Variances</u>
Product handling	\$36,000	\$37,200	\$1,200 F
Inspection	9,000	9,440	440 F
Utilities	1,600	1,120	480U
Maintenance	1,200	1,700	500 F
Supplies	<u>37,500</u>	<u>36,000</u>	<u>1,500U</u>
Total	<u>\$85,300</u>	<u>\$85,460</u>	<u>\$160 F</u>

b.

Jael Equipment  
Overhead Flexible Budget with Variances

	<u>Actual</u>	<u>Flexible Budget</u>	<u>Variances</u>
Product handling	\$36,000	\$38,000	\$2,000 F
Inspection	9,000	9,600	600 F
Utilities	1,600	1,200	400U
Maintenance	1,200	1,800	600 F
Supplies	<u>37,500</u>	<u>37,500</u>	<u>0</u>
Total	<u>\$85,300</u>	<u>\$88,100</u>	<u>\$2,800 F</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 8-3

15) Casey Corporation produces a special line of basketball hoops in batches. To manufacture a batch of the basketball hoops Casey Corporation must setup the machines and moulds. Setup costs are batch-level costs because they are associated with batches rather than individual units of products. A separate Setup Department is responsible for setting up machines and moulds for different styles of basketball hoops.

Setup overhead costs consist of some costs that are variable and some costs that are fixed with respect to the number of setup hours. The following information pertains to January.

	Static-budget <u>Amounts</u>	Actual <u>Amounts</u>
Basketball hoops produced and sold	30,000	28,000
Batch size (number of units per batch)	200	250
Setup hours per batch	5	4
Variable overhead cost per setup hour	\$10	\$9
Total fixed setup overhead costs	\$22,500	\$21,000

Required:

- Calculate the efficiency variance for variable setup overhead costs.
- Calculate the rate variance for variable setup overhead costs.
- Calculate the flexible-budget variance for variable setup overhead costs.
- Calculate the rate variance for fixed setup overhead costs.
- Calculate the production-volume variance for fixed setup overhead costs.

Answer:

a.  $((28,000/250) \times 4 \times \$10) - ((28,000/200) \times 5 \times \$10) = \$2,520 \text{ (F)}$

b.  $(28,000/250) \times 4 \times (\$9 - \$10) = \$448 \text{ (F)}$

c.  $\$2,520 \text{ (F)} + \$448 \text{ (F)} = \$2,968 \text{ (F)}$

d.  $\$22,500 - \$21,000 = \$1,500 \text{ (F)}$

e. Normal setup-hours =  $(30,000/200) \times 5 = 750 \text{ hours}$

OH rate =  $\$22,500/750 = \$30 \text{ per setup-hour}$

$\$22,500 - ((28,000/200) \times 5 \times \$30) = \$1,500 \text{ (U)}$

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-3

16) Layer Corporation produces a special line of hockey sticks in batches. To manufacture a batch of the hockey sticks Layer Corporation must setup the machines and moulds. Setup costs are batch-level costs because they are associated with batches rather than individual units of products. A separate Setup Department is responsible for setting up machines and moulds for different styles of hockey sticks.

Setup overhead costs consist of some costs that are variable and some costs that are fixed with respect to the number of setup hours. The following information pertains to January.

	Static-budget <u>Amounts</u>	Actual <u>Amounts</u>
Hockey sticks produced and sold	20,000	24,000
Batch size (number of units per batch)	200	250
Setup hours per batch	3	2
Variable overhead cost per setup hour	\$12	\$11
Total fixed setup overhead costs	\$15,000	\$17,000

Required:

- Calculate the efficiency variance for variable setup overhead costs.
- Calculate the rate variance for variable setup overhead costs.
- Calculate the flexible-budget variance for variable setup overhead costs.
- Calculate the rate variance for fixed setup overhead costs.
- Calculate the production-volume variance for fixed setup overhead costs.

Answer:

a.  $((24,000/200) \times 3 \times \$12) - ((24,000/250) \times 2 \times \$11) = \$2,016 \text{ (F)}$

b.  $((24,000/250) \times 2) \times (\$12 - \$11) = \$192 \text{ (F)}$

c.  $\$2,016 \text{ (F)} + \$192 \text{ (F)} = \$2,208 \text{ (F)}$

d.  $\$15,000 - \$17,000 = 2,000 \text{ (U)}$

e. Normal setup-hours =  $(20,000/200) \times 3 = 300 \text{ hours}$

OH rate =  $\$15,000/300 = \$50 \text{ per setup-hour}$

$\$15,000 - ((24,000/200) \times 3 \times \$50) = 3,000 \text{ (F)}$

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-3

8.4 Integrate the fixed and variable overhead cost variance analyses to reconcile the actual overhead incurred with overhead allocated.

1) Identifying the reasons for variances is important because it helps managers plan for corrective action.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-4

2) A fixed manufacturing overhead cost pool can never incur an efficiency variance.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-4

*Use the information below to answer the following question(s).*

Michelle Inc. uses a level 4-variance analysis of its manufacturing overhead costs, and has the following results for April.

A. Budgeted direct labour-hours per unit is used to allocate variable manufacturing overhead. Fixed overhead is allocated on a per unit basis.

B. Budgeted amounts for April are:

Direct labour-hours	0.30/unit
Variable labour-hour overhead rate	\$20.00/DLH
Fixed manufacturing overhead	\$600,000
Budgeted output (denominator level output)	30,000 units

C. Actual amounts for April are:

Variable manufacturing overhead	\$340,000
Fixed manufacturing overhead	\$590,000
Direct labour-hours	16,000 hours
Actual output	40,000 units

3) What is the Michelle Inc. variable production-volume variance?

A) \$13,500 unfavourable

B) \$6,000 unfavourable

C) \$6,000 favourable

D) \$0

E) There is never a variable production-volume variance.

Answer: E

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-4

4) What is the Michelle Inc. fixed manufacturing overhead rate variance?

A) \$10,000 favourable

B) \$10,000 unfavourable

C) \$13,500 unfavourable

D) \$13,500 favourable

E) \$14,625 favourable

Answer: A

Explanation: A)  $\$590,000 - \$600,000 = \$10,000$  favourable

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-4

5) What are the fixed manufacturing overhead efficiency and production-volume variances, respectively?

- A) 0; \$200,000 favourable
- B) 0; \$200,000 unfavourable
- C) \$50,500 favourable; \$199,998 unfavourable
- D) \$50,500 unfavourable; \$199,998 favourable
- E) There is no efficiency variance; \$200,000 favourable.

Answer: E

Explanation: E)  $(30,000 - 40,000) \times 20 = \$200,000$  favourable

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-4

6) What is the Michelle Inc. variable manufacturing overhead rate variance?

- A) \$30,000 unfavourable
- B) \$28,500 favourable
- C) \$20,000 unfavourable
- D) \$16,000 favourable
- E) \$16,000 unfavourable

Answer: C

Explanation: C)  $(\$21.25 - \$20.00) \times 16,000 \text{ DLH} = \$20,000$  unfavourable

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-4

7) What is the variable manufacturing overhead efficiency variance?

- A) \$80,000 favourable
- B) \$80,000 unfavourable
- C) \$101,200 favourable
- D) \$101,200 unfavourable
- E) \$181,200 favourable

Answer: B

Explanation: B)  $(16,000 \text{ DLH} - (40,000 \text{ units} \times 0.3 \text{ DLH/unit})) \times \$20 = \$80,000$  unfavourable

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-4

8) If Michelle Inc. uses a two-variance analysis format then what will be the reported variances?

- A) flexible-budget variance \$100,000 U; Production-volume variance \$200,000 U
- B) efficiency variance \$80,000 U; production-volume variance \$200,000 F
- C) rate variance \$10,000 U; efficiency variance \$120,000 F
- D) rate variance \$10,000 U; efficiency variance \$80,000 U
- E) flexible-budget variance \$90,000 U; production-volume variance \$200,000 F

Answer: E

Diff: 2 Type: MC

Skill: Apply

Objective: LO 8-4

9) Ever-Sharp Lawnmowers Ltd. controls variable manufacturing overhead costs with assembly-line hours as the denominator. Fixed manufacturing overhead costs are applied on a unit-of-output basis. Each lawnmower is allowed 10 assembly-line hours and standard variable manufacturing overhead totals \$650 per unit. Budgeted fixed manufacturing overhead totals \$29,400 for 420 lawnmowers. During July 4,200 assembly-line hours were incurred and 400 lawnmowers were produced. Actual manufacturing overhead costs for July were \$260,400 for variable expenses and \$32,300 for fixed expenses.

Required:

- Compute a 4-variance analysis for the month of July.
- Compute a 3-variance analysis for the month of July.
- Compute a 2-variance analysis for the month of July.

Answer:

- 4-variance analysis

Variable overhead rate variance =  $\$260,400 - (4,200 \times \$65) = \$12,600$  favourable  
 $\$650/10 \text{ hours} = \$65$

Variable overhead efficiency variance =  $\$65 \times (4,200 - (400 \times 10)) = \$13,000$  unfavourable

Fixed overhead rate variance =  $\$32,300 - \$29,400 = \$2,900$  unfavourable

Fixed overhead production-volume variance =  $\$29,400 - (400 \times 10 \times \$7) = \$1,400$  unfavourable  
 $\$29,400/(420 \text{ units} \times 10 \text{ hours}) = \$7$

- 3-variance analysis

Rate variance =  $\$12,600$  favourable +  $\$2,900$  unfavourable =  $\$9,700$  favourable

Efficiency variance =  $\$13,000$  unfavourable

Production volume variance =  $\$1,400$  unfavourable

- 2-variance analysis

Flexible budget variance =  $\$12,600 \text{ F} + \$2,900 \text{ U} + \$13,000 \text{ U} = \$3,300$  unfavourable

Production volume variance =  $\$1,400$  unfavourable

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-4



10) Different management levels in Bates Inc. require varying degrees of managerial accounting information. Because of the need to comply with the managers' requests, four different variances for manufacturing overhead are computed each month. The information for the September overhead expenditures is as follows:

Budgeted output units	3,200 units
Budgeted fixed manufacturing overhead	\$20,000
Budgeted variable manufacturing overhead	\$5.00 per direct labour hour
Budgeted direct manufacturing labour hours	2 hours per unit
Fixed manufacturing costs incurred	\$26,000
Direct manufacturing labour hours used	7,200
Variable manufacturing costs incurred	\$35,600
Actual units manufactured	3,400

Required:

- Compute a 4-variance analysis for the plant controller.
- Compute a 3-variance analysis for the plant manager.
- Compute a 2-variance analysis for the corporate controller.
- Compute the flexible-budget variance for the manufacturing vice-president.

Answer:

a. 4-variance analysis:

Variable overhead rate variance =  $\$35,600 - (7,200 \times \$5) = \$400$  favourable

Variable overhead efficiency variance =  $\$5 \times (7,200 - 6,800) = \$2,000$  unfavourable  
3,400 units  $\times$  2 hours

Fixed overhead rate variance =  $\$26,000 - \$20,000 = \$6,000$  unfavourable

Fixed overhead production-volume variance =  $\$20,000 - (3,400 \times 2 \times \$3.125) = \$1,250$  favourable  
 $\$20,000 / (3,200 \text{ units} \times 2 \text{ hours}) = \$3.125$

b. 3-variance analysis:

Rate variance =  $\$400$  favourable +  $\$6,000$  unfavourable =  $\$5,600$  unfavourable

Efficiency variance =  $\$2,000$  unfavourable

Production volume variance =  $\$1,250$  favourable

c. 2-variance analysis:

Flexible budget variance =  $\$400$  F +  $\$2,000$  U +  $\$6,000$  U =  $\$7,600$  unfavourable

Production volume variance =  $\$1,250$  favourable

d. 1-variance analysis:

	<u>Actual</u>	<u>Flexible Budget</u>	<u>Variances</u>
Fixed overhead	\$26,000	\$21,250	\$4,750 U
Variable overhead	35,600	34,000	<u>1,600 U</u>
Flexible budget variance			\$6,350 U

$\$3.125 \times 3,400 \times 2 = \$21,250$

$3,400 \times 2 \times \$5 = \$34,000$

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-4

11) The chapter shows that variance analysis of overhead costs can be presented in 4-, 3-, 2-, and 1-variance analysis. Explain what each of the variances presented under each method shows about overhead costs.

Answer: Under the 4-variance analysis, there is a rate variance shown for the variable manufacturing overhead, a rate variance for the fixed overhead component, an efficiency variance for the variable overhead, and a production-volume variance for the fixed overhead. When the firm uses a 3-variance approach, the fixed and variable rate variances are combined into a single variance, while the variable overhead efficiency is still shown separately and the fixed overhead production-volume variance is singled out. In the 2-variance method, the fixed and variable rate variances are combined into one amount along with the variable efficiency, and then the fixed production-volume is shown as a separate variance. The 1-variance method shows the difference between the actual costs incurred and the flexible-budget amount for the output level achieved.

Diff: 3 Type: ES

Skill: Remember

Objective: LO 8-4

12) Explain why sales-volume variance could be helpful to managers.

Answer: The sales-volume variance is useful because it helps managers understand the significant changes in contribution margin, which will occur as a result of selling fewer (or more) units than called for by the budgeted level. It assumes that the fixed costs remain at the budgeted level and can be helpful to managers as they perform sensitivity analysis to see the effects of potential changes in sales volume (up or down). Based on this type of information, they could potentially make more informed decisions on pricing and other strategies.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 8-4

## 8.5 Analyze non-manufacturing variances.

1) Variance analysis of variable nonmanufacturing as well as variable manufacturing costs is used for pricing decisions and for decisions about which products to emphasize.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-5

2) For planning and control purposes, actual energy usage per machine hour compared with budgeted energy usage per machine hour, is a valid financial performance measure.

Answer: FALSE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-5

3) Managers have found that non-financial measures provide useful information for their planning and control decisions.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 8-5

4) Both financial and nonfinancial performance measures are key inputs when evaluating the performance of managers.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 8-5

5) Non-financial performance measures

A) vary from industry to industry.

B) include variable cost but not fixed cost variances.

C) include both variable and fixed cost variances.

D) are used for performance evaluation, but not for planning and control.

E) deal with personnel matters.

Answer: A

Diff: 1 Type: MC

Skill: Understand

Objective: LO 8-5

6) Financial measures of performance include

A) operating income.

B) market share.

C) on-time delivery performance.

D) customer acquisition rate.

E) order time to completion.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 8-5

7) Delivering value to the customer requires executing activities important to the value proposition.

Many of the activities cannot be evaluated by financial measures of performance. List five non-financial measures of performance applicable to the hospitality industry.

Answer: customer satisfaction with regard to hotel location; room availability and reservations; check-in; room security; quietness; cleanliness; amenities; restaurant and bar services; spa services; entertainment; concierge services and so forth.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-5

8) All-Green Company has traditionally used only financial accounting for its decision making purposes. The president recently attended a seminar for small-business executives where the importance of managerial accounting was stressed as a way to improve operating decisions. The president was very interested in the use of managerial accounting as a way of planning the company's manufacturing overhead. It seems that the managers have always been at odds over how to best control the overhead accounts.

Required:

Explain how the planning of variable and fixed manufacturing overhead can improve the company's decision making process.

Answer: Effective planning of variable overhead costs involves the undertaking of only those variable activities that add value to the process. It also includes the planning of the cost drivers of the activities so that they can be utilized most efficiently.

Planning of fixed overhead costs likewise includes only those activities that add value. A critical aspect of fixed cost planning is selecting the appropriate level of operations. The selection of the denominator is important for determining the fixed rates that will be charged during the year.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-1, 2, 4, 5

9) Mediquip International is a manufacturing firm that has many assembly lines, numerous heavy duty machines and highly skilled machine operators. It has used very complex variance analysis in planning and controlling its operations during the last few years. Everything always appeared to be satisfactory until an economic recession tightened the competition and cost control became critical to the company's success. The operating managers believe that the traditional managerial accounting variance measures do not provide all the information they need during times of economic difficulties.

Required:

Discuss what additional information could be provided to the managers.

Answer: Non-financial performance measures could be added to the analysis. Examples of information which could be provided the managers include: 1) rates of labour hours to machine hours; 2) assembly line hours per unit of output, 3) percentage of scrap to finished units, and 4) units needing rework.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 8-5