

Chapter Appendix 10A Predetermined Overhead Rates and Overhead Analysis in a S

Student: _____

1. In a standard costing system, underapplied or overapplied fixed manufacturing overhead is equal to the sum of the fixed manufacturing overhead budget variance and the fixed manufacturing overhead volume variance.
True False
2. In a standard costing system where the denominator activity for the predetermined overhead rate is labor-hours, overhead costs are applied to work in process on the basis of actual hours worked.
True False
3. A company has a standard cost system in which fixed and variable manufacturing overhead costs are applied to products on the basis of direct labor-hours. The company's choice of the denominator level of activity affects the Fixed component of the predetermined overhead rate.
True False
4. A company has a standard cost system in which fixed and variable manufacturing overhead costs are applied to products on the basis of direct labor-hours. The company's choice of the denominator level of activity affects the Variable component of the predetermined overhead rate.
True False
5. A company has a standard cost system in which fixed and variable manufacturing overhead costs are applied to products on the basis of direct labor-hours. The amount of overhead that the company would apply to finished production would ordinarily be the standard hours allowed for the actual units of finished output times the predetermined overhead rate per direct labor-hour.
True False
6. A volume variance and an efficiency variance are computed for fixed manufacturing overhead costs.
True False
7. The budget variance represents the difference between the actual fixed manufacturing overhead cost incurred during a period and the budgeted fixed manufacturing overhead cost.
True False
8. The fixed manufacturing overhead budget variance is not controllable by managers because fixed costs are not controllable.
True False
9. If the fixed manufacturing overhead volume variance is unfavorable, too much has been spent on fixed manufacturing overhead items.
True False
10. An unfavorable volume variance means that a firm operated at an activity level that was above the activity level planned for the period.
True False
11. The fixed manufacturing overhead volume variance will be unfavorable if production volume is less than sales volume.
True False
12. A company has a standard cost system in which fixed and variable manufacturing overhead costs are applied to products on the basis of direct labor-hours. A fixed manufacturing overhead volume variance will necessarily occur in a month in which there is a fixed manufacturing overhead budget variance.
True False

13. The terms "standard quantity allowed" or "standard hours allowed" means:
- the actual output in units multiplied by the standard output allowed.
 - the actual input in units multiplied by the standard output allowed.
 - the actual output in units multiplied by the standard input allowed.
 - the standard output in units multiplied by the standard input allowed.
14. The higher the denominator level of activity:
- the higher the cost per unit of product.
 - the lower the cost per unit of product.
 - the less likely is the occurrence of a volume variance.
 - the more profitable operations likely will be.
15. Overhead is applied to work in process in a standard costing system by:
- multiplying actual hours times the predetermined rate.
 - multiplying standard hours allowed for the output of the period times the predetermined rate.
 - multiplying actual hours times the actual rate.
 - multiplying standard hours allowed for the output of the period times the actual rate.
16. In a standard cost system, the volume variance will be unfavorable when:
- actual hours are greater than the denominator hours.
 - the standard hours allowed for the output of the period are less than the denominator hours.
 - the standard hours allowed for the output of the period are greater than the actual hours incurred.
 - actual hours are less than the denominator hours.
17. Rameriz Company erred in selecting a denominator activity and chose a much higher level than was realistic. This error would most likely result in a large:
- favorable variable overhead efficiency variance.
 - favorable fixed manufacturing overhead budget variance.
 - unfavorable overhead volume variance.
 - unfavorable fixed manufacturing overhead budget variance.
18. The economic impact of the inability to reach a target denominator level of activity would best be measured by:
- the amount of the volume variance.
 - the contribution margin lost by failing to meet the target denominator level of activity.
 - the amount of the fixed manufacturing overhead budget variance.
 - the amount of the variable overhead efficiency variance.
19. Dossier Corporation has a standard cost system in which it applies manufacturing overhead to products on the basis of standard machine-hours (MHs). The company has provided the following data for the most

Budgeted level of activity	5,100	MHs
Actual level of activity	5,000	MHs
Standard variable manufacturing overhead rate	\$6.10	per MH
Budgeted fixed manufacturing overhead cost	\$65,000	
Actual total variable manufacturing overhead	\$28,500	
Actual total fixed manufacturing overhead	\$63,000	

recent month:

What was the fixed manufacturing overhead budget variance for the month?

- \$2,000 unfavorable
- \$2,000 favorable
- \$610 unfavorable
- \$610 favorable

20. Moralez Corporation has a standard cost system in which it applies manufacturing overhead to products on the basis of standard machine-hours (MHs). The company has provided the following data for the

Budgeted level of activity	2,700	MHs
Actual level of activity	3,100	MHs
Standard variable manufacturing overhead rate	\$8.20	per MH
Budgeted fixed manufacturing overhead cost	\$71,000	
Actual total variable manufacturing overhead	\$24,800	
Actual total fixed manufacturing overhead	\$70,000	

most recent month:

What was the total of the variable overhead rate and fixed manufacturing overhead budget variances for the month?

- A. \$380 unfavorable
- B. \$1,620 favorable
- C. \$1,660 unfavorable
- D. \$3,280 unfavorable

21. Sommers Fabrication Corporation has a standard cost system in which it applies manufacturing overhead to products on the basis of standard machine-hours (MHs) at \$9.70 per MH. The company budgeted its fixed manufacturing overhead cost at \$67,000 for the month. During the month, the actual total variable manufacturing overhead was \$66,660 and the actual total fixed manufacturing overhead was \$70,000. The actual level of activity for the period was 6,600 MHs. What was the total of the variable overhead rate and fixed manufacturing overhead budget variances for the month?

- A. \$2,640 unfavorable
- B. \$5,640 favorable
- C. \$2,640 favorable
- D. \$5,640 unfavorable

22. Meister Electronics Corporation has a standard cost system in which it applies manufacturing overhead to products on the basis of standard machine-hours (MHs). The company had budgeted its fixed manufacturing overhead cost at \$68,800 for the month and its level of activity at 2,000 MHs. The actual total fixed manufacturing overhead was \$73,300 for the month and the actual level of activity was 1,800 MHs. What was the fixed manufacturing overhead budget variance for the month to the nearest dollar?

- A. \$11,380 unfavorable
- B. \$4,500 unfavorable
- C. \$11,380 favorable
- D. \$4,500 favorable

23. The Ammon Company uses a standard cost system in which manufacturing overhead is applied to units on the basis of standard machine-hours. During July, the company budgeted \$350,000 in manufacturing overhead cost at a denominator activity of 25,000 machine-hours. At standard, each unit of finished product requires 5 machine-hours. The following cost and activity were recorded during

Total actual manufacturing overhead cost incurred	\$325,000
Units of product completed	4,500
Actual machine-hours worked	23,000

July:

The amount of overhead cost that the company applied to work in process for July was:

- A. \$292,500
- B. \$315,000
- C. \$322,000
- D. \$325,000

24. At the end of the year, actual manufacturing overhead costs were \$110,000 and applied manufacturing overhead costs were \$118,800. If the denominator activity for the year was 20,000 machine-hours, and if 22,000 standard machine-hours were allowed for the year's production, the predetermined overhead rate per machine-hour was:

- A. \$5.00
- B. \$5.94
- C. \$5.50
- D. \$5.40

25. Rubyor Corporation bases its predetermined overhead rate on variable manufacturing overhead cost of \$10.70 per machine-hour and fixed manufacturing overhead cost of \$821,104 per period. If the denominator level of activity is 7,300 machine-hours, the variable element in the predetermined overhead rate would be:
- \$112.48
 - \$123.18
 - \$121.66
 - \$10.70
26. Heersink Corporation bases its predetermined overhead rate on variable manufacturing overhead cost of \$10.50 per machine-hour and fixed manufacturing overhead cost of \$108,108 per period. If the denominator level of activity is 2,700 machine-hours, the fixed element in the predetermined overhead rate would be:
- \$1,050.00
 - \$40.04
 - \$10.50
 - \$50.54
27. Morisey Corporation bases its predetermined overhead rate on variable manufacturing overhead cost of \$8.60 per machine-hour and fixed manufacturing overhead cost of \$457,002 per period. If the denominator level of activity is 6,300 machine-hours, the predetermined overhead rate would be:
- \$81.14
 - \$860.00
 - \$72.54
 - \$8.60

28. Jaune Company uses a standard cost system in which it applies manufacturing overhead to units of product on the basis of standard direct labor-hours (DLHs). The following data pertain to last month's

Budgeted fixed manufacturing overhead costs	\$5,000	
Actual fixed manufacturing overhead costs	\$5,500	
Standard hours allowed for output	2,400	DLHs
Predetermined overhead rate (\$2 variable + \$3 fixed)	\$5	per DLH

operations:

The fixed manufacturing overhead budget variance is:

- \$500 U
 - \$500 F
 - \$2,200 U
 - \$1,700 U
29. Jay Company uses a standard cost system in which it applies manufacturing overhead to units of product on the basis of standard direct labor-hours (DLHs). The information below pertains to a recent month's

Denominator activity	300	DLHs
Actual activity	350	DLHs
Standard hours allowed for output	360	DLHs
Predetermined overhead rate (\$2 variable + \$3 fixed)	\$5	per DLH

activity:

The volume variance would be:

- \$300 F
- \$300 U
- \$150 F
- \$180 F

30. Coskey Corporation applies manufacturing overhead to products on the basis of standard machine-hours. Budgeted and actual overhead costs for the month appear

	Original Budget	Actual Costs
Variable overhead costs:		
Supplies	\$16,770	\$16,150
Indirect labor	19,890	18,910
Fixed overhead costs:		
Supervision	13,300	13,540
Utilities	4,100	4,100
Factory depreciation	<u>9,300</u>	<u>9,380</u>
Total overhead cost	<u>\$63,360</u>	<u>\$62,080</u>

below:

The company based its original budget on 3,900 machine-hours. The company actually worked 3,580 machine-hours during the month. The standard hours allowed for the actual output of the month totaled 3,770 machine-hours. What was the overall fixed manufacturing overhead budget variance for the month?

- A. \$1,280 favorable
 B. \$320 favorable
 C. \$320 unfavorable
 D. \$1,280 unfavorable
31. Sultzer Corporation applies manufacturing overhead to products on the basis of standard machine-hours. Budgeted and actual overhead costs for the most recent month appear

	Original Budget	Actual Costs
Fixed overhead costs:		
Supervision	\$18,900	\$19,090
Utilities	3,400	3,190
Factory depreciation	<u>9,800</u>	<u>9,660</u>
Total overhead cost	<u>\$32,100</u>	<u>\$31,940</u>

below:

The company based its original budget on 3,000 machine-hours. The company actually worked 2,730 machine-hours during the month. The standard hours allowed for the actual output of the month totaled 2,690 machine-hours. What was the overall fixed manufacturing overhead budget variance for the month?

- A. \$3,317 favorable
 B. \$160 unfavorable
 C. \$3,317 unfavorable
 D. \$160 favorable
32. Heroman Corporation applies manufacturing overhead to products on the basis of standard machine-hours. The budgeted fixed manufacturing overhead cost for the most recent month was \$26,550 and the actual fixed manufacturing overhead cost for the month was \$26,570. The company based its original budget on 5,900 machine-hours. The standard hours allowed for the actual output of the month totaled 5,750 machine-hours. What was the overall fixed manufacturing overhead budget variance for the month?
- A. \$20 unfavorable
 B. \$675 favorable
 C. \$20 favorable
 D. \$675 unfavorable

33. Rostad Corporation applies manufacturing overhead to products on the basis of standard machine-hours. Budgeted and actual overhead costs for the most recent month appear

	Original Budget	Actual Costs
Variable overhead costs:		
Supplies	\$ 7,100	\$ 7,290
Indirect labor	10,650	10,000
Fixed overhead costs:		
Supervision	14,910	14,420
Utilities	14,200	14,250
Factory depreciation	<u>61,770</u>	<u>61,410</u>
Total overhead cost	<u>\$108,630</u>	<u>\$107,370</u>

below:

The company based its original budget on 7,100 machine-hours. The company actually worked 7,060 machine-hours during the month. The standard hours allowed for the actual output of the month totaled 6,990 machine-hours. What was the overall fixed manufacturing overhead volume variance for the month?

- A. \$512 favorable
- B. \$512 unfavorable
- C. \$1,408 favorable
- D. \$1,408 unfavorable

34. Behring Corporation applies manufacturing overhead to products on the basis of standard machine-hours. Budgeted and actual fixed manufacturing overhead costs for the most recent month appear

	Original Budget	Actual Costs
Fixed overhead costs:		
Supervision	\$ 3,840	\$ 3,880
Utilities	5,120	4,900
Factory depreciation	<u>18,880</u>	<u>18,440</u>
Total fixed manufacturing overhead cost	<u>\$27,840</u>	<u>\$27,220</u>

below:

The company based its original budget on 3,200 machine-hours. The company actually worked 3,170 machine-hours during the month. The standard hours allowed for the actual output of the month totaled 3,250 machine-hours. What was the overall fixed manufacturing overhead volume variance for the month?

- A. \$435 favorable
- B. \$261 unfavorable
- C. \$435 unfavorable
- D. \$261 favorable

35. Trecroci Corporation applies manufacturing overhead to products on the basis of standard machine-hours. The company bases its predetermined overhead rate on 2,500 machine-hours. The company's total budgeted fixed manufacturing overhead is \$5,750. In the most recent month, the total actual fixed manufacturing overhead was \$6,030. The company actually worked 2,600 machine-hours during the month. The standard hours allowed for the actual output of the month totaled 2,490 machine-hours. What was the overall fixed manufacturing overhead volume variance for the month?

- A. \$230 favorable
- B. \$280 unfavorable
- C. \$23 unfavorable
- D. \$230 unfavorable

36. Temores Corporation applies manufacturing overhead to products on the basis of standard machine-hours. The company's predetermined overhead rate for fixed manufacturing overhead is \$1.50 per machine-hour and the denominator level of activity is 5,600 machine-hours. In the most recent month, the total actual fixed manufacturing overhead was \$8,510 and the company actually worked 5,840 machine-hours during the month. The standard hours allowed for the actual output of the month totaled 5,980 machine-hours. What was the overall fixed manufacturing overhead volume variance for the month?

- A. \$360 favorable
- B. \$360 unfavorable
- C. \$570 favorable
- D. \$210 favorable

Franklin Glass Works uses a standard cost system in which manufacturing overhead is applied on the basis of standard direct labor-hours. Each unit requires two standard hours of direct labor for completion. The denominator activity for the year was based on budgeted production of 200,000 units. Total overhead was budgeted at \$900,000 for the year, and the fixed manufacturing overhead rate was \$1.50 per direct labor-hour. The actual data pertaining to the manufacturing overhead for the year are presented below:

Actual production	198,000	units
Actual direct labor-hours	440,000	direct labor-hours
Actual variable manufacturing overhead	\$352,000	
Actual fixed manufacturing overhead	\$575,000	

37. The standard hours allowed for actual production for the year total:
- 247,500
 - 396,000
 - 400,000
 - 495,000
38. Franklin's variable overhead efficiency variance for the year is:
- \$33,000 unfavorable
 - \$35,200 favorable
 - \$35,200 unfavorable
 - \$33,000 favorable
39. Franklin's variable overhead rate variance for the year is:
- \$20,000 unfavorable
 - \$22,000 favorable
 - \$22,000 unfavorable
 - \$20,000 favorable
40. Franklin's fixed manufacturing overhead budget variance for the year is:
- \$19,000 favorable
 - \$25,000 favorable
 - \$25,000 unfavorable
 - \$19,000 unfavorable
41. The fixed manufacturing overhead applied to Franklin's production for the year is:
- \$484,200
 - \$575,000
 - \$594,000
 - \$600,000
42. Franklin's fixed manufacturing overhead volume variance for the year is:
- \$6,000 unfavorable
 - \$19,000 favorable
 - \$25,000 favorable
 - \$55,000 unfavorable

A manufacturing company uses a standard costing system in which standard machine-hours (MHs) is the measure of activity. Data from the company's flexible budget for manufacturing overhead are given

Denominator level of activity	6,800	MHs
Overhead costs at the denominator activity level:		
Variable overhead cost	\$31,620	
Fixed overhead cost	\$95,540	

below:

The following data pertain to operations for the most recent period:

Actual hours	7,000	MHs
Standard hours allowed for the actual output	6,984	MHs
Actual total variable manufacturing overhead cost	\$30,800	
Actual total fixed manufacturing overhead cost	\$97,340	

43. What is the predetermined overhead rate to the nearest cent?
- \$18.17 per MH
 - \$18.31 per MH
 - \$18.70 per MH
 - \$18.84 per MH
44. How much overhead was applied to products during the period to the nearest dollar?
- \$128,140
 - \$130,601
 - \$130,900
 - \$127,160
45. What was the variable overhead rate variance for the period to the nearest dollar?
- \$1,750 U
 - \$820 F
 - \$1,750 F
 - \$820 U
46. What was the variable overhead efficiency variance for the period to the nearest dollar?
- \$1,746 U
 - \$70 U
 - \$820 F
 - \$74 U
47. What was the fixed manufacturing overhead budget variance for the period to the nearest dollar?
- \$1,800 U
 - \$222 F
 - \$1,010 U
 - \$785 U
48. What was the fixed manufacturing overhead volume variance for the period to the nearest dollar?
- \$2,565 F
 - \$2,810 F
 - \$225 U
 - \$2,585 F

The Chase Company uses a standard cost system in which manufacturing overhead costs are applied to products on the basis of standard machine-hours. For November, the company's flexible budget for manufacturing overhead showed the following total budgeted costs at the denominator activity level of

Variable overhead costs (total):	
Maintenance	\$36,000
Utilities	\$20,000
Fixed overhead costs (total):	
Supervision	\$24,000
Depreciation	\$16,000

40,000 machine-hours:

During November 42,000 machine-hours were used to complete 13,200 units of product with the

Variable overhead costs (total):	
Maintenance	\$43,420
Utilities	\$32,510
Fixed overhead costs (total):	
Supervision	\$26,970
Depreciation	\$16,000

following actual overhead costs:

The standard time allowed to complete one unit of product is 3.6 machine-hours.

49. The total predetermined overhead rate per machine-hour for November was:
- \$1.75
 - \$2.40
 - \$2.97
 - \$1.40

50. The total amount of overhead cost applied to Work in Process during November was:
- A. \$47,520
 - B. \$66,528
 - C. \$106,528
 - D. \$114,048
51. The variable overhead efficiency variance for utilities cost for November was:
- A. \$2,760 favorable
 - B. \$3,760 unfavorable
 - C. \$3,760 favorable
 - D. \$1,000 favorable
52. The variable overhead rate variance for maintenance cost for November was:
- A. \$7,420 unfavorable
 - B. \$2,400 favorable
 - C. \$9,820 unfavorable
 - D. \$5,620 unfavorable
53. The fixed manufacturing overhead budget variance for November was:
- A. \$2,970 unfavorable
 - B. \$4,550 favorable
 - C. \$7,520 favorable
 - D. \$22,900 unfavorable

The Phelps Company applies overhead costs to products on the basis of standard direct labor-hours. The standard cost card shows that 5 direct labor-hours are required per unit of product. Phelps Company had

	Actual	Budgeted
Units produced	22,000	20,000
Direct labor-hours	105,000	100,000
Variable overhead costs	\$91,000	\$80,000
Fixed overhead costs	\$52,000	\$50,000

the following budgeted and actual data for March:

The budgeted direct labor-hours is used as the denominator activity for the month.

54. The variable overhead rate variance for March is:
- A. \$7,000 unfavorable
 - B. \$9,000 unfavorable
 - C. \$13,000 unfavorable
 - D. \$11,000 unfavorable
55. The variable overhead efficiency variance for March is:
- A. \$8,000 favorable
 - B. \$4,000 favorable
 - C. \$8,000 unfavorable
 - D. \$4,000 unfavorable
56. The fixed manufacturing overhead budget variance for March is:
- A. \$2,000 favorable
 - B. \$500 favorable
 - C. \$2,000 unfavorable
 - D. \$2,500 favorable
57. The fixed manufacturing overhead volume variance for March is:
- A. \$1,000 favorable
 - B. \$5,000 favorable
 - C. \$2,500 unfavorable
 - D. \$5,000 unfavorable

The Dodge Company makes and sells a single product and uses a standard cost system in which manufacturing overhead costs are applied to units of product on the basis of standard direct labor-hours. The standard cost card shows that 5 direct labor-hours are required per unit of product. The Dodge Company had the following budgeted and actual data for the year:

	Actual	Budgeted
Units produced	33,000	30,000
Direct labor-hours	157,500	150,000
Variable overhead costs	\$136,500	\$120,000
Fixed overhead costs	\$78,000	\$75,000

The budgeted direct labor-hours is used as the denominator activity for the month.

58. The variable overhead rate variance was:
- \$4,500 U
 - \$10,500 U
 - \$13,500 U
 - \$16,500 U
59. The variable overhead efficiency variance was:
- \$6,000 U
 - \$6,000 F
 - \$12,000 U
 - \$12,000 F
60. The fixed manufacturing overhead budget variance was:
- \$750 F
 - \$3,750 F
 - \$7,500 F
 - \$3,000 U
61. The fixed manufacturing overhead volume variance as:
- \$7,500 F
 - \$1,500 F
 - \$3,750 U
 - \$7,500 U

Able Control Company, which manufactures electrical switches, uses a standard cost system in which manufacturing overhead costs are applied to units of product on the basis of standard direct labor-hours (DLHs). The standard overhead costs are shown below:

Variable overhead (5 DLHs @ \$8.00 per DLH)	\$40
Fixed overhead (5 DLHs @ \$12.00* per DLH)	\$60

*Based on 300,000 DLHs per month.

The following information is available for the month of October:

- Plans called for the production of 60,000 switches.
 - 56,000 switches were actually produced.
 - 275,000 direct labor-hours were worked at a total cost of \$2,550,000.
 - Actual variable manufacturing overhead costs were \$2,340,000.
 - Actual fixed manufacturing overhead costs were \$3,750,000.
62. The fixed manufacturing overhead budget variance for October was:
- \$48,000 Unfavorable
 - \$150,000 Unfavorable
 - \$300,000 Favorable
 - \$390,000 Unfavorable
63. The variable overhead rate variance for October was:
- \$60,000 Favorable
 - \$110,000 Unfavorable
 - \$100,000 Unfavorable
 - \$140,000 Unfavorable

64. The variable overhead efficiency variance for October was:
- A. \$40,000 Favorable
 - B. \$60,000 Favorable
 - C. \$160,000 Unfavorable
 - D. \$210,000 Unfavorable

The Malcolm Company uses a standard cost system in which manufacturing overhead costs are applied to products on the basis of standard direct labor-hours (DLHs). The standards call for 3 hours of direct labor per unit produced. The following data pertain to the company's manufacturing overhead for the month of

	Actual fixed manufacturing overhead cost incurred	\$28,450	
	Denominator activity	8,400	DLHs
	Number of units produced	2,900	units
July:	Budget variance	\$3,250	Unfavorable

65. The Fixed component of the predetermined overhead rate for June is:
- A. \$3.11
 - B. \$3.39
 - C. \$3.77
 - D. \$3.00
66. The volume variance for July is:
- A. \$1,131 F
 - B. \$900 F
 - C. \$1,131 U
 - D. \$900 U

The Hawkins Company uses a standard costing system in which manufacturing overhead is applied on the basis of standard direct labor-hours (DLHs). During February, the company actually used 9,200 direct labor-hours and made 2,900 units of finished product. The standard cost card for one unit of product includes the following:

Variable factory overhead: 3 DLHs @ \$4.75 per DLH

Fixed factory overhead: 3 DLHs @ \$3.00 per DLH

For February, the company incurred \$28,450 in fixed manufacturing overhead costs and recorded a \$900 favorable volume variance.

67. The amount of fixed manufacturing overhead cost contained in the company's budget for February is:
- A. \$27,000
 - B. \$27,550
 - C. \$25,200
 - D. \$29,350
68. The denominator activity level in direct labor-hours used by Hawkins in setting the predetermined overhead rate for February is:
- A. 9,300 hours
 - B. 8,400 hours
 - C. 9,000 hours
 - D. 8,700 hours

The Steff Company has the following flexible budget (in condensed form) for manufacturing

	Direct Labor-Hours (DLHs)	
	10,000	20,000
Total variable manufacturing overhead costs	\$11,500	\$23,000
Total fixed manufacturing overhead costs	\$30,000	\$30,000

overhead:

The following data concerning production pertain to last year's operations:

•	The company used a denominator activity of 15,000 direct labor-hours to compute the predetermined overhead rate.
•	The company made 6,850 units of product and worked 14,200 actual hours during the year.
•	Actual variable manufacturing overhead was \$15,904 and actual fixed manufacturing overhead was \$30,850 for the year.
•	The standard direct labor time is two hours per unit of product.

69. The variable element of the predetermined overhead rate was (per DLH):

- A. \$4.15
- B. \$3.00
- C. \$2.00
- D. \$1.15

70. The fixed element of the predetermined overhead rate was (per DLH):

- A. \$4.15
- B. \$3.00
- C. \$2.00
- D. \$1.15

71. The fixed manufacturing overhead cost applied to work in process was:

- A. \$27,400
- B. \$30,000
- C. \$30,850
- D. \$13,700

72. The fixed manufacturing overhead budget variance was:

- A. \$3,450 unfavorable
- B. \$3,450 favorable
- C. \$850 unfavorable
- D. \$1,200 favorable

73. The volume variance was:

- A. \$2,000 favorable
- B. \$2,600 unfavorable
- C. \$1,000 favorable
- D. \$800 favorable

A furniture manufacturer has a standard costing system based on standard direct labor-hours (DLHs) as the measure of activity. Data from the company's flexible budget for manufacturing overhead are given

Denominator level of activity	6,800	DLHs
Overhead costs at the denominator activity level:		
Variable overhead cost	\$23,460	
Fixed overhead cost	\$66,300	

below:

The following data pertain to operations for the most recent period:

Actual hours	6,700	DLHs
Standard hours allowed for the actual output	6,545	DLHs
Actual total variable manufacturing overhead cost	\$24,455	
Actual total fixed manufacturing overhead cost	\$68,100	

74. What is the predetermined overhead rate to the nearest cent?
 A. \$13.40
 B. \$13.61
 C. \$13.81
 D. \$13.20
75. How much overhead was applied to products during the period to the nearest dollar?
 A. \$86,394
 B. \$88,440
 C. \$89,760
 D. \$92,555
76. What was the fixed manufacturing overhead budget variance for the period to the nearest dollar?
 A. \$4,286 F
 B. \$1,800 U
 C. \$2,775 F
 D. \$1,575 F
77. What was the fixed manufacturing overhead volume variance for the period to the nearest dollar?
 A. \$2,486 U
 B. \$1,511 U
 C. \$975 U
 D. \$2,653 U

A manufacturer of playground equipment uses a standard costing system in which standard machine-hours (MHs) is the measure of activity. Data from the company's flexible budget for manufacturing

Denominator level of activity	7,800	MHs
Fixed overhead cost	\$86,190	

overhead are given below:

The following data pertain to operations for the most recent period:

Actual hours	7,700	MHs
Standard hours allowed for the actual output	7,744	MHs
Actual total fixed manufacturing overhead cost	\$84,690	

78. What is the predetermined fixed manufacturing overhead rate to the nearest cent?
 A. \$11.05 per MH
 B. \$11.19 per MH
 C. \$11.00 per MH
 D. \$10.86 per MH
79. How much fixed manufacturing overhead was applied to products during the period to the nearest dollar?
 A. \$85,571
 B. \$84,690
 C. \$86,190
 D. \$85,085
80. What was the fixed manufacturing overhead budget variance for the period to the nearest dollar?
 A. \$881 U
 B. \$484 U
 C. \$395 U
 D. \$1,500 F
81. What was the fixed manufacturing overhead volume variance for the period to the nearest dollar?
 A. \$486 F
 B. \$1,105 U
 C. \$619 U
 D. \$612 U

The Chase Company has a standard cost system in which manufacturing overhead is applied on the basis of standard direct labor-hours (DLHs). The company recorded the following activity and cost data relating to manufacturing overhead for October:

Activity:		
Number of units completed	31,200	units
Standard direct labor-hours per unit	1.6	DLHs
Denominator activity	54,000	DLHs
Cost:		
Actual fixed manufacturing overhead costs incurred	\$51,300	
Volume variance	\$3,468	Unfavorable
Fixed component of the predetermined overhead rate	\$0.85	per DLH

82. The amount of fixed manufacturing overhead cost that was estimated for September was:
- \$45,900
 - \$54,768
 - \$49,920
 - \$47,703
83. The amount of fixed manufacturing overhead cost applied to work in process during September was:
- \$47,832
 - \$26,520
 - \$42,432
 - \$43,605
84. The fixed manufacturing overhead budget variance for September was:
- \$2,700 favorable
 - \$2,700 unfavorable
 - \$5,400 favorable
 - \$5,400 unfavorable

A manufacturer of industrial equipment has a standard costing system based on standard direct labor-hours (DLHs) as the measure of activity. Data from the company's flexible budget for manufacturing

Denominator level of activity	2,500	DLHs
Overhead costs at the denominator activity level:		
Variable overhead cost	\$8,500	
Fixed overhead cost	\$34,625	

overhead are given below:

The following data pertain to operations for the most recent period:

Actual hours	2,600	DLHs
Standard hours allowed for the actual output	2,592	DLHs
Actual total variable manufacturing overhead cost	\$9,100	
Actual total fixed manufacturing overhead cost	\$35,025	

85. What is the predetermined overhead rate to the nearest cent?
- \$16.97
 - \$17.25
 - \$16.59
 - \$17.65
86. How much overhead was applied to products during the period to the nearest dollar?
- \$44,712
 - \$44,125
 - \$43,125
 - \$44,850

Favreau Corporation estimates that its variable manufacturing overhead is \$6.10 per machine-hour and its fixed manufacturing overhead is \$352,590 per period.

87. If the denominator level of activity is 6,900 machine-hours, the variable element in the predetermined overhead rate would be:
- A. \$6.10
 - B. \$51.10
 - C. \$57.20
 - D. \$56.47
88. If the denominator level of activity is 6,900 machine-hours, the fixed element in the predetermined overhead rate would be:
- A. \$610.00
 - B. \$6.10
 - C. \$57.20
 - D. \$51.10
89. If the denominator level of activity is 7,000 machine-hours, the predetermined overhead rate would be:
- A. \$50.37
 - B. \$56.47
 - C. \$610.00
 - D. \$6.10

Seroka Corporation estimates that its variable manufacturing overhead is \$6.90 per machine-hour and its fixed manufacturing overhead is \$745,290 per period.

90. If the denominator level of activity is 9,000 machine-hours, the variable element in the predetermined overhead rate would be:
- A. \$88.80
 - B. \$82.81
 - C. \$89.71
 - D. \$6.90
91. If the denominator level of activity is 9,000 machine-hours, the fixed element in the predetermined overhead rate would be:
- A. \$6.90
 - B. \$89.71
 - C. \$690.00
 - D. \$82.81
92. If the denominator level of activity is 9,100 machine-hours, the predetermined overhead rate would be:
- A. \$88.80
 - B. \$690.00
 - C. \$6.90
 - D. \$81.90

An outdoor barbecue grill manufacturer has a standard costing system based on standard direct labor-hours (DLHs) as the measure of activity. Data from the company's flexible budget for manufacturing

Denominator level of activity	2,800	DLHs
Fixed overhead cost	\$25,200	

overhead are given below:

The following data pertain to operations for the most recent period:

Actual hours	2,900	DLHs
Standard hours allowed for the actual output	2,880	DLHs
Actual total fixed manufacturing overhead cost	\$23,350	

93. What was the fixed manufacturing overhead budget variance for the period to the nearest dollar?
- A. \$2,750 U
 - B. \$2,570 U
 - C. \$1,850 F
 - D. \$161 F

94. What was the fixed manufacturing overhead volume variance for the period to the nearest dollar?
- A. \$900 F
 - B. \$649 F
 - C. \$180 U
 - D. \$720 F

Buell Corporation has provided the following data for June.

Denominator level of activity	4,200	machine-hours
Budgeted fixed manufacturing overhead costs	\$151,620	
Fixed component of the predetermined overhead rate	\$36.10	per machine-hour
Actual level of activity	4,300	machine-hours
Standard machine-hours allowed for the actual output	4,500	machine-hours
Actual fixed manufacturing overhead costs	\$157,360	

95. The budget variance for June is:
- A. \$5,740 F
 - B. \$3,610 F
 - C. \$3,610 U
 - D. \$5,740 U
96. The volume variance for June is:
- A. \$10,830 F
 - B. \$10,830 U
 - C. \$3,610 U
 - D. \$3,610 F

The following data for April has been provided by Mittler Corporation.

Denominator level of activity	8,800	machine-hours
Budgeted fixed manufacturing overhead costs	\$178,640	
Actual level of activity	9,200	machine-hours
Standard machine-hours allowed for the actual output	9,300	machine-hours
Actual fixed manufacturing overhead costs	\$172,980	

97. The budget variance for April is:
- A. \$5,660 U
 - B. \$8,120 F
 - C. \$8,120 U
 - D. \$5,660 F
98. The volume variance for April is:
- A. \$10,150 U
 - B. \$8,120 U
 - C. \$8,120 F
 - D. \$10,150 F

99. The Clayton Company uses a standard cost system in which manufacturing overhead costs are applied to units of the company's single product on the basis of standard direct labor-hours (DLHs). The standard

Standard Cost Card-per unit of product	
Direct Materials, 4 yards at \$3.50 per yard	\$14
Direct Labor, 1.5 DLHs at \$8 per DLH	12
Variable Overhead, 1.5 DLHs at \$2 per DLH	3
Fixed Overhead, 1.5 DLHs at \$6 per DLH	<u>9</u>
Standard cost per unit	<u>\$38</u>

cost card for the product follows:

The following data pertain to last year's

•	The company manufactured 18,000 units of product during the year. A total of 70,200 yards of material was purchased during the year at a cost of \$3.75 per yard. All of this material was used to manufacture the 18,000 units.
•	The company worked 29,250 direct labor-hours during the year at a cost of \$7.80 per hour.
•	The denominator activity level was 22,500 direct labor-hours.
•	Budgeted fixed manufacturing overhead costs were \$135,000 while actual manufacturing overhead costs were \$133,200.
•	Actual variable overhead costs were \$61,425.

activities:

Required:

- Compute the direct materials price and quantity variances for the year.
- Compute the direct labor rate and efficiency variances for the year.
- Compute the variable overhead rate and efficiency variances for the year.
- Compute the fixed manufacturing overhead budget and volume variances for the year.

100. Mountain Manufacturing uses a standard cost system in which manufacturing overhead is applied to units of product on the basis of standard machine-hours. At standard, each unit of product requires one machine-hour to complete. The standard variable overhead is \$1.75 per machine-hour and Budgeted Fixed Manufacturing Costs are \$300,000 per year. The denominator level of activity is 150,000 machine-hours, or 150,000 units. Actual data for the year were as

Actual variable overhead cost	\$211,680
Actual fixed manufacturing overhead cost	\$315,000
Actual machine-hours	126,000
Units produced	120,000

follows:

Required:

- What are the predetermined variable and fixed manufacturing overhead rates for the year?
- Compute the variable overhead rate and efficiency variances for the year.
- Compute the fixed manufacturing overhead budget and volume variances for the year.

101. Walkenhorst Corporation's manufacturing overhead includes \$7.80 per machine-hour for supplies; \$7.30 per machine-hour for indirect labor; \$21,210 per period for salaries; and \$19,950 per period for depreciation.
 Required:
 Determine the predetermined overhead rate if the denominator level of activity is 1,500 machine-hours.
 Show your work!

102. Krouse Corporation's manufacturing overhead includes \$14.70 per machine-hour for variable manufacturing overhead and \$191,580 per period for fixed manufacturing overhead.
 Required:
 Determine the predetermined overhead rate for the denominator level of activity of 3,100 machine-hours.

103. Bahr Corporation has provided the following data for

Denominator level of activity	5,500	machine-hours
Budgeted fixed manufacturing overhead costs	\$91,850	
Fixed component of the predetermined overhead rate	\$16.70	per machine-hour
Actual level of activity	5,600	machine-hours
Standard machine-hours allowed for the actual output	5,600	machine-hours
Actual fixed manufacturing overhead costs	\$88,750	

February.

Required:

- Compute the budget variance for February. Show your work!
- Compute the volume variance for February. Show your work!

104. Hereford Corporation has provided the following data for

Denominator level of activity	4,400	machine-hours
Budgeted fixed manufacturing overhead costs	\$107,360	
Standard machine-hours allowed for the actual output	4,200	machine-hours
Actual fixed manufacturing overhead costs	\$104,470	

February.

Required:

- a. Compute the budget variance for February. Show your work!
- b. Compute the volume variance for February. Show your work!

105. Dull Corporation applies overhead to products based on machine-hours. The denominator level of activity is 8,600 machine-hours. The budgeted fixed manufacturing overhead costs are \$286,380. In October, the actual fixed manufacturing overhead costs were \$274,330 and the standard machine-hours allowed for the actual output were 8,400 machine-hours.

Required:

- a. Compute the budget variance for October. Show your work!
- b. Compute the volume variance for October. Show your work!

Chapter Appendix 10A Predetermined Overhead Rates and Overhead Analysis in a S **Key**

1. TRUE
2. FALSE
3. TRUE
4. FALSE
5. TRUE
6. FALSE
7. TRUE
8. FALSE
9. FALSE
10. FALSE
11. FALSE
12. FALSE
13. C
14. B
15. B
16. B
17. C
18. B
19. B
20. B
21. D
22. B
23. B
24. D
25. D
26. B
27. A
28. A
29. D
30. C
31. D
32. A
33. D
34. A
35. C

36. C
37. B
38. A
39. C
40. B
41. C
42. A
43. C
44. B
45. C
46. D
47. A
48. D
49. B
50. D
51. A
52. D
53. A
54. A
55. B
56. C
57. B
58. B
59. B
60. D
61. A
62. B
63. D
64. A
65. D
66. B
67. C
68. B
69. D
70. C
71. A
72. C
73. B

74. D
75. A
76. B
77. A
78. A
79. A
80. D
81. C
82. A
83. C
84. D
85. B
86. A
87. A
88. D
89. B
90. D
91. D
92. A
93. C
94. D
95. D
96. A
97. D
98. D

$$= \$135,000 - \$162,000 = \$27,000 \text{ F}$$

$$= \$135,000 - (27,000 \text{ hours} \times \$6 \text{ per hour})$$

Volume variance = Budgeted fixed overhead cost - Fixed overhead applied to work in process

$$= \$133,200 - \$135,000 = \$1,800 \text{ F}$$

Budget variance = Actual fixed overhead - Budgeted fixed overhead cost

d. Fixed manufacturing overhead variances

$$= \$58,500 - \$54,000 = \$4,500 \text{ U}$$

$$= (29,250 \text{ hours} - 27,000 \text{ hours}) \$2.00 \text{ per hour}$$

Variable overhead efficiency variance = (AH - SH) SR

$$= \$61,425 - \$58,500 = \$2,925 \text{ U}$$

$$= \$61,425 - (29,250 \text{ hours} \times \$2.00 \text{ per hour})$$

Variable overhead rate variance = (AH × AR) - (AH × SR)

c. Variable overhead variances:

$$= (2,250 \text{ hours}) \$8.00 \text{ per hour} = \$18,000 \text{ U}$$

$$= (29,250 \text{ hours} - 27,000 \text{ hours}) \$8.00 \text{ per hour}$$

Labor efficiency variance = (AH - SH) SR

$$\text{SQ} = 18,000 \text{ units} \times 1.5 \text{ hours per unit} = 27,000 \text{ hours}$$

$$= 29,250 \text{ hours} (-\$0.20 \text{ per hour}) = \$5,850 \text{ F}$$

$$= 29,250 \text{ hours} (\$7.80 \text{ per hour} - \$8.00 \text{ per hour})$$

Labor rate variance = AH(AR - SR)

b. Direct labor rate and efficiency variances:

$$= (-1,800 \text{ yards}) \$3.50 \text{ per yard} = \$6,300 \text{ F}$$

$$= (70,200 \text{ yards} - 72,000 \text{ yards}) \$3.50 \text{ per yard}$$

Materials quantity variance = (AQ - SQ) SP

$$\text{SQ} = 18,000 \text{ units} \times 4 \text{ yards per unit} = 72,000 \text{ yards}$$

$$= \$263,250 - \$245,700 = \$17,550 \text{ U}$$

$$= 70,200 \text{ yards} (\$3.75 \text{ per yard} - \$3.50 \text{ per yard})$$

Materials price variance = AQ (AP - SP)

99. a. Direct materials price and quantity variances:

$= \$300,000 - \$240,000 = \$60,000 \text{ U}$
 $= \$2.00 \text{ per hour (150,000 hours - 120,000 hours)}$
 Volume variance = Budgeted fixed overhead cost - Fixed overhead applied to work in process
 $= \$315,000 - \$300,000 = \$15,000 \text{ U}$
 c. Budget variance = Actual fixed overhead - Budgeted fixed overhead cost
 $= \$220,500 - \$210,000 = \$10,500 \text{ U}$
 $= (126,000 \text{ hours} - 120,000 \text{ hours}) \1.75 per hour
 Variable overhead efficiency variance = (AH - SH) SR
 $= \$211,680 - \$220,500 = \$8,820 \text{ F}$
 $= 126,000 (\$1.68 \text{ per hour} - \$1.75 \text{ per hour})$
 Variable overhead rate variance = AH (AR - SR)
 b. AR = $\$211,680 \div 126,000 \text{ hours} = \1.68 per hour
 Predetermined fixed overhead rate = $\$300,000 \div 150,000 \text{ MHs} = \2.00 per MH
 100. a. Predetermined variable overhead rate = $\$1.75 \text{ per MH (given)}$

Predetermined overhead rate = Estimated total manufacturing overhead cost \div Estimated total amount of the allocation base = $\$63,810 \div 1,500$ machine-hours = $\$42.54 \text{ per machine-hour}$

101. Estimated total manufacturing overhead cost = $(\$7.80 + \$7.30) \times 1,500 + (\$21,210 + \$19,950) = \$63,810$

102. Predetermined overhead rate = Estimated total manufacturing overhead \div Denominator level of activity = $(\$14.70 \times 3,100 + \$191,580) \div 3,100$ machine-hours = $\$237,150 \div 3,100$ machine-hours = $\$76.50 \text{ per machine-hour}$

b. Volume variance = Fixed component of the predetermined overhead rate \times (Denominator hours - Standard hours allowed) = $\$16.70 \text{ per hour} \times (5,500 \text{ hours} - 5,600 \text{ hours}) = \$1,670 \text{ F}$

103. a. Budget variance = Actual fixed manufacturing overhead - Budgeted fixed manufacturing overhead = $\$88,750 - \$91,850 = \$3,100 \text{ F}$

Volume variance = Fixed component of the predetermined overhead rate \times (Denominator hours - Standard hours allowed) = $\$24.40 \times (4,400 - 4,200) = \$4,880 \text{ U}$

b. Fixed component of the predetermined overhead rate = $\$107,360 \div 4,400$ machine-hours = $\$24.40 \text{ per machine-hour}$

104. a. Budget variance = Actual fixed manufacturing overhead cost - Budgeted fixed manufacturing overhead cost = $\$104,470 - \$107,360 = \$2,890 \text{ F}$

Volume variance = Fixed component of the predetermined overhead rate \times (Denominator hours - Standard hours allowed) = $\$33.30 \times (8,600 - 8,400) = \$6,660 \text{ U}$

b. Fixed component of the predetermined overhead rate = $\$286,380 \div 8,600$ machine-hours = $\$33.30 \text{ per machine-hour}$

105. a. Budget variance = Actual fixed manufacturing overhead cost - Budgeted fixed manufacturing overhead cost = $\$274,330 - \$286,380 = \$12,050 \text{ F}$

Chapter Appendix 10A Predetermined Overhead Rates and Overhead Analysis in a S Summary

<u>Category</u>	<u># of Questions</u>
AACSB: Analytic	87
AACSB: Reflective Thinking	18
AICPA BB: Critical Thinking	105
AICPA FN: Measurement	105
Blooms: Application	87
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Learning Objective: 10A-01 Compute the direct materials quantity and price variances and explain their significance	1
Learning Objective: 10A-02 Compute the direct labor efficiency and rate variances and explain their significance	1
Learning Objective: 10A-03 Compute the variable manufacturing overhead efficiency and rate variances and explain their significance	18
Learning Objective: 10A-04 Compute and interpret the fixed overhead volume and budget variances	92
Level: Easy	28
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Source: CMA, adapted	9