TRUE/FALSE

1. Specifications for materials are compiled on a bill of materials.

    ANS: T   DIF: Easy   OBJ: 7-2

2. Specifications for materials are compiled on a purchase requisition.

    ANS: F   DIF: Easy   OBJ: 7-2

3. An operations flow document shows all processes necessary to manufacture one unit of a product.

    ANS: T   DIF: Easy   OBJ: 7-2

4. A standard cost card is prepared after manufacturing standards have been developed for direct materials, direct labor, and factory overhead.

    ANS: T   DIF: Easy   OBJ: 7-2

5. A standard cost card is prepared before developing manufacturing standards for direct materials, direct labor, and factory overhead.

    ANS: F   DIF: Easy   OBJ: 7-2

6. The total variance can provide useful information about the source of cost differences.

    ANS: F   DIF: Easy   OBJ: 7-2

7. The total variance does not provide useful information about the source of cost differences.

    ANS: T   DIF: Easy   OBJ: 7-2

8. The formula for price/rate variance is (AP - SP) x AQ

    ANS: T   DIF: Moderate   OBJ: 7-2

9. The formula for price/rate variance is (AP - SP) x SQ

    ANS: F   DIF: Moderate   OBJ: 7-2

10. The price variance reflects the difference between the quantity of inputs used and the standard quantity allowed for the output of a period.

    ANS: F   DIF: Moderate   OBJ: 7-2

11. The price variance reflects the difference between the price paid for inputs and the standard price for those inputs.

    ANS: T   DIF: Moderate   OBJ: 7-2

12. The usage variance reflects the difference between the price paid for inputs and the standard price for those inputs.

ANS: F   DIF: Moderate   OBJ: 7-2

13. The usage variance reflects the difference between the quantity of inputs used and the standard quantity allowed for the output of a period.

ANS: T   DIF: Moderate   OBJ: 7-2

14. The formula for usage variance is (AQ - SQ) * SP.

ANS: T   DIF: Moderate   OBJ: 7-2

15. The formula for usage variance is (AQ - SQ) * AP.

ANS: F   DIF: Moderate   OBJ: 7-2

16. The point of purchase model calculates the materials price variance using the quantity of materials purchased.

ANS: T   DIF: Moderate   OBJ: 7-3

17. The point of purchase model calculates the materials price variance using the quantity of materials used in production.

ANS: F   DIF: Moderate   OBJ: 7-3

18. The difference between the actual wages paid to employees and the standard wages for all hours worked is the labor rate variance.

ANS: T   DIF: Easy   OBJ: 7-3

19. The difference between the actual wages paid to employees and the standard wages for all hours worked is the labor efficiency variance.

ANS: F   DIF: Easy   OBJ: 7-3

20. The difference between the standard hours worked for a specific level of production and the actual hours worked is the labor efficiency variance.

ANS: T   DIF: Easy   OBJ: 7-3

21. The difference between the standard hours worked for a specific level of production and the actual hours worked is the labor rate variance.

ANS: F   DIF: Easy   OBJ: 7-3

22. A flexible budget is an effective tool for budgeting factory overhead.

ANS: T   DIF: Easy   OBJ: 7-3

23. The difference between actual variable overhead and budgeted variable overhead based upon actual hours is referred to as the variable overhead spending variance.

    ANS: T   DIF: Moderate   OBJ: 7-3

24. The difference between actual variable overhead and budgeted variable overhead based upon actual hours is referred to as the variable overhead efficiency variance.

    ANS: F   DIF: Moderate   OBJ: 7-3

25. The difference between budgeted variable overhead for actual hours and standard overhead is the variable overhead efficiency variance.

    ANS: T   DIF: Moderate   OBJ: 7-3

26. The difference between budgeted variable overhead for actual hours and standard overhead is the variable overhead spending variance.

    ANS: F   DIF: Moderate   OBJ: 7-3

27. The difference between actual and budgeted fixed factory overhead is referred to as a fixed overhead spending variance.

    ANS: T   DIF: Moderate   OBJ: 7-3

28. The difference between actual and budgeted fixed factory overhead is referred to as a fixed overhead volume variance.

    ANS: F   DIF: Moderate   OBJ: 7-3

29. The difference between budgeted and applied fixed factory overhead is referred to as a fixed overhead volume variance.

    ANS: T   DIF: Moderate   OBJ: 7-3

30. A fixed overhead volume variance is a controllable variance.

    ANS: F   DIF: Moderate   OBJ: 7-3

31. A fixed overhead volume variance is a noncontrollable variance.

    ANS: T   DIF: Moderate   OBJ: 7-3

32. A one-variance approach calculates only a total overhead variance

    ANS: T   DIF: Easy   OBJ: 7-3

33. A budget variance is a controllable variance.

    ANS: T   DIF: Moderate   OBJ: 7-3

34. An overhead efficiency variance is related entirely to variable overhead

ANS: T DIF: Moderate OBJ: 7-3

35. Managers have no ability to control the budget variance,

ANS: F DIF: Moderate OBJ: 7-3

36. Unfavorable variances are represented by debit balances in the overhead account.

ANS: T DIF: Moderate OBJ: 7-3

37. Unfavorable variances are represented by credit balances in the overhead account.

ANS: F DIF: Moderate OBJ: 7-3

38. Favorable variances are represented by credit balances in the overhead account.

ANS: T DIF: Moderate OBJ: 7-3

39. Favorable variances are represented by debit balances in the overhead account.

ANS: F DIF: Moderate OBJ: 7-3

40. Favorable variances are always desirable for production.

ANS: F DIF: Easy OBJ: 7-4

41. Expected standards are a valuable tool for motivation and control.

ANS: F DIF: Moderate OBJ: 7-4

42. Practical standards are the most effective standards for controlling and motivating workers.

ANS: T DIF: Moderate OBJ: 7-4

43. Ideal standards are an effective means of controlling variances and motivating workers.

ANS: F DIF: Moderate OBJ: 7-3

44. Ideal standards do not allow for normal operating delays or human limitations.

ANS: T DIF: Moderate OBJ: 7-3

45. Expected standards generally yield unfavorable variances

ANS: F DIF: Moderate OBJ: 7-4

46. Expected standards generally yield favorable variances

ANS: T DIF: Moderate OBJ: 7-4

47. Ideal standards generally yield favorable variances

ANS: F   DIF: Moderate   OBJ: 7-4

48. Ideal standards generally yield unfavorable variances

ANS: T   DIF: Moderate   OBJ: 7-4

49. Total quality management (TQM) and just-in-time (JIT) production systems are based on the premise of ideal production standards.

ANS: T   DIF: Moderate   OBJ: 7-4

50. In a totally automated organization, using theoretical capacity will generally provide the lowest fixed overhead application rate.

ANS: T   DIF: Difficult   OBJ: 7-4

51. In a totally automated organization, using theoretical capacity will generally provide the highest fixed overhead application rate.

ANS: F   DIF: Difficult   OBJ: 7-4

52. A conversion variance combines labor and overhead variances.

ANS: T   DIF: Moderate   OBJ: 7-5

53. The effect of substituting a non-standard mix of materials during the production process is referred to as a material mix variance.

ANS: T   DIF: Moderate   OBJ: 7-6

54. The effect of substituting a non-standard mix of materials during the production process is referred to as a material yield variance.

ANS: F   DIF: Moderate   OBJ: 7-6

55. When multiple labor categories are used, the financial effect of using a different mix of workers in a production process is referred to as a labor mix variance.

ANS: T   DIF: Moderate   OBJ: 7-6

56. When multiple labor categories are used, the financial effect of using a different mix of workers in a production process is referred to as a labor yield variance.

ANS: F   DIF: Moderate   OBJ: 7-6

57. When multiple labor categories are used, the monetary impact of using a higher or lower number of hours than a standard allows is referred to as a labor mix variance.

ANS: F   DIF: Moderate   OBJ: 7-6

58. When multiple labor categories are used, the monetary impact of using a higher or lower number of hours than a standard allows is referred to as a labor yield variance.

ANS: T   DIF: Moderate   OBJ: 7-6

COMPLETION

1. The difference between total actual cost incurred and total standard cost applied is referred to as _____.

   ANS: total variance

   DIF: Easy   OBJ: 7-2

2. The two components of total material/labor variance are _____ and _____.

   ANS: price/rate variance; quantity/efficiency variance

   DIF: Easy   OBJ: 7-2

3. The difference between what was paid for inputs and what should have been paid for inputs is referred to as a _____.

   ANS: price variance

   DIF: Easy   OBJ: 7-2

4. The difference between standard quantity allowed and quantity used for a unit of output is known as an _____.

   ANS:
   efficiency variance

   DIF: Easy   OBJ: 7-2

5. The difference between actual variable overhead and budgeted variable overhead based upon actual hours is referred to as the _____.

   ANS: variable overhead spending variance.

   DIF: Moderate   OBJ: 7-3

6. The difference between budgeted variable overhead for actual hours and standard overhead is the _____.

   ANS: variable overhead efficiency variance.

   DIF: Moderate   OBJ: 7-3

7. The difference between actual and budgeted fixed factory overhead is referred to as a _____.

    ANS: fixed overhead spending variance.

    DIF: Moderate   OBJ: 7-3

8. The difference between budgeted and applied fixed factory overhead is referred to as a _____.

    ANS: fixed overhead volume variance.

    DIF: Moderate   OBJ: 7-3

9. Standards that provide for no human limitations or operating delays are referred to as _____.

    ANS: ideal standards

    DIF: Moderate   OBJ: 7-4

10. Standards that are attainable with reasonable effort are referred to as _____.

    ANS: practical standards

    DIF: Moderate   OBJ: 7-4

11. Standards that reflect what is expected to occur are referred to as _____.

    ANS: expected standards

    DIF: Moderate   OBJ: 7-4

12. Standards that allow for waste and inefficiency are referred to as _____.

    ANS: practical standards

    DIF: Moderate   OBJ: 7-4

13. When multiple materials are used, the effect of substituting a non-standard mix of materials during the production process is referred to as a _____ variance.

    ANS: material mix

    DIF: Moderate   OBJ: 7-6

14. When multiple materials are used, the difference between the total quantity and the standard quantity of output when a nonstandard mix of materials is used is known as the

   _____

   variance.

   ANS: material yield

   DIF: Moderate   OBJ: 7-6

15. When multiple labor categories are used, the financial effect of using a different mix of workers in a production process is referred to as a _____ variance.

   ANS: labor mix

   DIF: Moderate   OBJ: 7-6

16. When multiple labor categories are used, the monetary impact of using a higher or lower number of hours than a standard allows is referred to as a _____ variance.

   ANS: labor yield

   DIF: Moderate   OBJ: 7-6

MULTIPLE CHOICE

1. A primary purpose of using a standard cost system is
   a. to make things easier for managers in the production facility.
   b. to provide a distinct measure of cost control.
   c. to minimize the cost per unit of production.
   d. b and c are correct.

   ANS: B   DIF: Easy   OBJ: 7-1

2. The standard cost card contains quantities and costs for
   a. direct material only.
   b. direct labor only.
   c. direct material and direct labor only.
   d. direct material, direct labor, and overhead.

   ANS: D   DIF: Easy   OBJ: 7-2

3. Which of the following statements regarding standard cost systems is **true**?
   a. Favorable variances are not necessarily good variances.
   b. Managers will investigate all variances from standard.
   c. The production supervisor is generally responsible for material price variances.
   d. Standard costs cannot be used for planning purposes since costs normally change in the future.

   ANS: A   DIF: Easy   OBJ: 7-2

4. In a standard cost system, Work in Process Inventory is ordinarily debited with
   a. actual costs of material and labor and a predetermined overhead cost for overhead.
   b. standard costs based on the level of input activity (such as direct labor hours worked).
   c. standard costs based on production output.
   d. actual costs of material, labor, and overhead.

   ANS: C   DIF: Easy   OBJ: 7-2

5. A standard cost system may be used in
   a. job order costing, but not process costing.
   b. process costing, but not job order costing.
   c. either job order costing or process costing.
   d. neither job order costing nor process costing.

   ANS: C   DIF: Easy   OBJ: 7-1

6. Standard costs may be used for
   a. product costing.
   b. planning.
   c. controlling.
   d. all of the above.

   ANS: D   DIF: Easy   OBJ: 7-1

7. A purpose of standard costing is to
   a. replace budgets and budgeting.
   b. simplify costing procedures.
   c. eliminate the need for actual costing for external reporting purposes.
   d. eliminate the need to account for year-end underapplied or overapplied manufacturing overhead.

   ANS: B   DIF: Easy   OBJ: 7-1

8. Standard costs
   a. are estimates of costs attainable only under the most ideal conditions.
   b. are difficult to use with a process costing system.
   c. can, if properly used, help motivate employees.
   d. require that significant unfavorable variances be investigated, but do not require that significant favorable variances be investigated.

   ANS: C   DIF: Easy   OBJ: 7-1

9. A bill of material does **not** include
   a. quantity of component inputs.
   b. price of component inputs.
   c. quality of component inputs.
   d. type of product output.

   ANS: B   DIF: Easy   OBJ: 7-2

10. An operations flow document

    a. tracks the cost and quantity of material through an operation.
    b. tracks the network of control points from receipt of a customer's order through the delivery of the finished product.
    c. specifies tasks to make a unit and the times allowed for each task.
    d. charts the shortest path by which to arrange machines for completing products.

    ANS: C   DIF: Moderate   OBJ: 7-2

11. A total variance is best defined as the difference between total
    a. actual cost and total cost applied for the standard output of the period.
    b. standard cost and total cost applied to production.
    c. actual cost and total standard cost of the actual input of the period.
    d. actual cost and total cost applied for the actual output of the period.

    ANS: D   DIF: Easy   OBJ: 7-2

12. The term *standard hours allowed* measures
    a. budgeted output at actual hours.
    b. budgeted output at standard hours.
    c. actual output at standard hours.
    d. actual output at actual hours.

    ANS: C   DIF: Easy   OBJ: 7-3

13. A large labor efficiency variance is prorated to which of the following at year-end?

	Cost of Goods Sold	WIP Inventory	FG Inventory
a.	no	no	no
b.	no	yes	yes
c.	yes	no	no
d.	yes	yes	yes

    ANS: D   DIF: Easy   OBJ: 7-3

14. Which of the following factors should **not** be considered when deciding whether to investigate a variance?
    a. magnitude of the variance
    b. trend of the variances over time
    c. likelihood that an investigation will reduce or eliminate future occurrences of the variance
    d. whether the variance is favorable or unfavorable

    ANS: D   DIF: Easy   OBJ: 7-3

15. At the end of a period, a significant material quantity variance should be
    a. closed to Cost of Goods Sold.
    b. allocated among Raw Material, Work in Process, Finished Goods, and Cost of Goods Sold.
    c. allocated among Work in Process, Finished Goods, and Cost of Goods Sold.
    d. carried forward as a balance sheet account to the next period.

    ANS: C   DIF: Easy   OBJ: 7-3

16. When computing variances from standard costs, the difference between actual and standard price multiplied by actual quantity used yields a
   a. combined price-quantity variance.
   b. price variance.
   c. quantity variance.
   d. mix variance.

   ANS: B   DIF: Easy   OBJ: 7-3

17. A company wishing to isolate variances at the point closest to the point of responsibility will determine its material price variance when
   a. material is purchased.
   b. material is issued to production.
   c. material is used in production.
   d. production is completed.

   ANS: A   DIF: Easy   OBJ: 7-3

18. The material price variance (computed at point of purchase) is
   a. the difference between the actual cost of material purchased and the standard cost of material purchased.
   b. the difference between the actual cost of material purchased and the standard cost of material used.
   c. primarily the responsibility of the production manager.
   d. both a and c.

   ANS: A   DIF: Easy   OBJ: 7-3

19. The sum of the material price variance (calculated at point of purchase) and material quantity variance equals
   a. the total cost variance.
   b. the material mix variance.
   c. the material yield variance.
   d. no meaningful number.

   ANS: D   DIF: Easy   OBJ: 7-3

20. A company would most likely have an unfavorable labor rate variance and a favorable labor efficiency variance if
   a. the mix of workers used in the production process was more experienced than the normal mix.
   b. the mix of workers used in the production process was less experienced than the normal mix.
   c. workers from another part of the plant were used due to an extra heavy production schedule.
   d. the purchasing agent acquired very high quality material that resulted in less spoilage.

   ANS: A   DIF: Easy   OBJ: 7-3

21. If actual direct labor hours (DLHs) are less than standard direct labor hours allowed and overhead is applied on a DLH basis, a(n)
    a. favorable variable overhead spending variance exists.
    b. favorable variable overhead efficiency variance exists.
    c. favorable volume variance exists.
    d. unfavorable volume variance exists.

    ANS: B   DIF: Easy   OBJ: 7-3

22. If all sub-variances are calculated for labor, which of the following **cannot** be determined?
    a. labor rate variance
    b. actual hours of labor used
    c. reason for the labor variances
    d. efficiency of the labor force

    ANS: C   DIF: Easy   OBJ: 7-3

23. The total labor variance can be subdivided into all of the following **except**
    a. rate variance.
    b. yield variance.
    c. learning curve variance.
    d. mix variance.

    ANS: C   DIF: Easy   OBJ: 7-3

24. The standard predominantly used in Western cultures for motivational purposes is a(n) _____ standard.
    a. expected annual
    b. ideal
    c. practical
    d. theoretical

    ANS: C   DIF: Easy   OBJ: 7-4

25. Which of the following standards can commonly be reached or slightly exceeded by workers in a motivated work environment?

	Ideal	Practical	Expected annual
a.	no	no	no
b.	no	yes	yes
c.	yes	yes	no
d.	no	yes	no

    ANS: B   DIF: Easy   OBJ: 7-4

26. Management would generally expect unfavorable variances if standards were based on which of the following capacity measures?

	Ideal	Practical	Expected annual
a.	yes	no	no
b.	no	no	yes
c.	no	yes	yes
d.	no	no	no

ANS: A   DIF: Easy   OBJ: 7-4

27. Which of the following capacity levels has traditionally been used to compute the fixed overhead application rate?
a. expected annual
b. normal
c. theoretical
d. prior year

ANS: A   DIF: Easy   OBJ: 7-4

28. A company has a favorable variable overhead spending variance, an unfavorable variable overhead efficiency variance, and underapplied variable overhead at the end of a period. The journal entry to record these variances and close the variable overhead control account will show which of the following?

	VOH spending variance	VOH efficiency variance	VMOH
a.	debit	credit	credit
b.	credit	debit	credit
c.	debit	credit	debit
d.	credit	debit	debit

ANS: B   DIF: Moderate   OBJ: 7-3

29. Gallagher Corporation. incurred 2,300 direct labor hours to produce 600 units of product. Each unit should take 4 direct labor hours. Gallagher Corporation applies variable overhead to production on a direct labor hour basis. The variable overhead efficiency variance
a. will be unfavorable.
b. will be favorable.
c. will depend upon the capacity measure selected to assign overhead to production.
d. is impossible to determine without additional information.

ANS: B   DIF: Moderate   OBJ: 7-3

30. A variable overhead spending variance is caused by
    a. using more or fewer actual hours than the standard hours allowed for the production achieved.
    b. paying a higher/lower average actual overhead price per unit of the activity base than the standard price allowed per unit of the activity base.
    c. larger/smaller waste and shrinkage associated with the resources involved than expected.
    d. both b and c are causes.

    ANS: D   DIF: Moderate   OBJ: 7-3

31. Which of the following are considered controllable variances?

VOH spending	Total overhead budget	Volume
a. yes	yes	yes
b. no	no	yes
c. no	yes	no
d. yes	yes	no

    ANS: D   DIF: Moderate   OBJ: 7-3

32. A company may set predetermined overhead rates based on normal, expected annual, or theoretical capacity. At the end of a period, the fixed overhead spending variance would
    a. be the same regardless of the capacity level selected.
    b. be the largest if theoretical capacity had been selected.
    c. be the smallest if theoretical capacity had been selected.
    d. not occur if actual capacity were the same as the capacity level selected.

    ANS: A   DIF: Easy   OBJ: 7-3

33. The variance **least** significant for purposes of controlling costs is the
    a. material quantity variance.
    b. variable overhead efficiency variance.
    c. fixed overhead spending variance.
    d. fixed overhead volume variance.

    ANS: D   DIF: Easy   OBJ: 7-3

34. Fixed overhead costs are
    a. best controlled on a unit-by-unit basis of products produced.
    b. mostly incurred to provide the capacity to produce and are best controlled on a total basis at the time they are originally negotiated.
    c. constant on a per-unit basis at all different activity levels within the relevant range.
    d. best controlled as to spending during the production process.

    ANS: B   DIF: Moderate   OBJ: 7-3

35. The variance **most** useful in evaluating plant utilization is the
    a. variable overhead spending variance.
    b. fixed overhead spending variance.
    c. variable overhead efficiency variance.
    d. fixed overhead volume variance.

    ANS: D   DIF: Easy   OBJ: 7-3

36. A favorable fixed overhead volume variance occurs if
    a. there is a favorable labor efficiency variance.
    b. there is a favorable labor rate variance.
    c. production is less than planned.
    d. production is greater than planned.

    ANS: D   DIF: Easy   OBJ: 7-3

37. The fixed overhead application rate is a function of a predetermined activity level. If standard hours allowed for good output equal the predetermined activity level for a given period, the volume variance will be
    a. zero.
    b. favorable.
    c. unfavorable.
    d. either favorable or unfavorable, depending on the budgeted overhead.

    ANS: A   DIF: Easy   OBJ: 7-3

38. Actual fixed overhead minus budgeted fixed overhead equals the
    a. fixed overhead volume variance.
    b. fixed overhead spending variance.
    c. noncontrollable variance.
    d. controllable variance.

    ANS: B   DIF: Easy   OBJ: 7-3

39. Total actual overhead minus total budgeted overhead at the actual input production level equals the
    a. variable overhead spending variance.
    b. total overhead efficiency variance.
    c. total overhead spending variance.
    d. total overhead volume variance.

    ANS: C   DIF: Easy   OBJ: 7-3

40. A favorable fixed overhead spending variance indicates that
    a. budgeted fixed overhead is less than actual fixed overhead.
    b. budgeted fixed overhead is greater than applied fixed overhead.
    c. applied fixed overhead is greater than budgeted fixed overhead.
    d. actual fixed overhead is less than budgeted fixed overhead.

    ANS: D   DIF: Easy   OBJ: 7-3

41. An unfavorable fixed overhead volume variance is most often caused by
    a. actual fixed overhead incurred exceeding budgeted fixed overhead.
    b. an over-application of fixed overhead to production.
    c. an increase in the level of the finished inventory.
    d. normal capacity exceeding actual production levels.

    ANS: D   DIF: Easy   OBJ: 7-3

42. In a standard cost system, when production is greater than the estimated unit or denominator level of activity, there will be a(n)
    a. unfavorable capacity variance.
    b. favorable material and labor usage variance.
    c. favorable volume variance.
    d. unfavorable manufacturing overhead variance.

    ANS: C   DIF: Easy   OBJ: 7-3

43. In analyzing manufacturing overhead variances, the volume variance is the difference between the
    a. amount shown in the flexible budget and the amount shown in the debit side of the overhead control account.
    b. predetermined overhead application rate and the flexible budget application rate times actual hours worked.
    c. budget allowance based on standard hours allowed for actual production for the period and the amount budgeted to be applied during the period.
    d. actual amount spent for overhead items during the period and the overhead amount applied to production during the period.

    ANS: C   DIF: Moderate   OBJ: 7-3

44. Variance analysis for overhead normally focuses on
    a. efficiency variances for machinery and indirect production costs.
    b. volume variances for fixed overhead costs.
    c. the controllable variance as a lump-sum amount.
    d. the difference between budgeted and applied variable overhead.

    ANS: A   DIF: Moderate   OBJ: 7-3

45. The efficiency variance computed on a three-variance approach is
    a. equal to the variable overhead efficiency variance computed on the four-variance approach.
    b. equal to the variable overhead spending variance plus the variable overhead efficiency variance computed on the four-variance approach.
    c. computed as the difference between applied variable overhead and actual variable overhead.
    d. computed as actual variable overhead minus the flexible budget for variable overhead based on actual hours worked.

    ANS: A   DIF: Easy   OBJ: 7-3

46. The use of separate variable and fixed overhead rates is better than a combined rate because such a system
    a. is less expensive to operate and maintain.
    b. does not result in underapplied or overapplied overhead.
    c. is more effective in assigning overhead costs to products.
    d. is easier to develop.

    ANS: C   DIF: Moderate   OBJ: 7-3

47. Under the two-variance approach, the volume variance is computed by subtracting _____ based on standard input allowed for the production achieved from budgeted overhead.
    a. applied overhead
    b. actual overhead
    c. budgeted fixed overhead plus actual variable overhead
    d. budgeted variable overhead

    ANS: A   DIF: Easy   OBJ: 7-3

48. The overhead variance calculated as total budgeted overhead at the actual input production level minus total budgeted overhead at the standard hours allowed for actual output is the
    a. efficiency variance.
    b. spending variance.
    c. volume variance.
    d. budget variance.

    ANS: A   DIF: Easy   OBJ: 7-3

49. Analyzing overhead variances will **not** help in
    a. controlling costs.
    b. evaluating performance.
    c. determining why variances occurred.
    d. planning costs for future production cycles.

    ANS: C   DIF: Easy   OBJ: 7-3

50. In a just-in-time inventory system,
    a. practical standards become ideal standards.
    b. ideal standards become expected standards.
    c. variances will not occur because of the zero-defects basis of JIT.
    d. standard costing cannot be used.

    ANS: B   DIF: Moderate   OBJ: 7-4

51. A company using very tight (high) standards in a standard cost system should expect that
    a. no incentive bonus will be paid.
    b. most variances will be unfavorable.
    c. employees will be strongly motivated to attain the standards.
    d. costs will be controlled better than if lower standards were used.

    ANS: B   DIF: Easy   OBJ: 7-4

Marley Company

The following July information is for Marley Company:

Standards:
Material   3.0 feet per unit @ $4.20 per foot
Labor   2.5 hours per unit @ $7.50 per hour

Actual:
Production   2,750 units produced during the month
Material   8,700 feet used; 9,000 feet purchased @ $4.50 per foot
Labor   7,000 direct labor hours @ $7.90 per hour

(Round all answers to the nearest dollar.)

52. Refer to Marley Company. What is the material price variance (calculated at point of purchase)?
    a. $2,700 U
    b. $2,700 F
    c. $2,610 F
    d. $2,610 U

ANS: A

Material Price Variance = (AP - SP) * AQ
= ($4.50 - $4.20) * 9,000 feet purchased
= $2,700 U

DIF: Easy   OBJ: 7-3

53. Refer to Marley Company. What is the material quantity variance?
    a. $3,105 F
    b. $1,050 F
    c. $3,105 U
    d. $1,890 U

ANS: D

Material Quantity Variance = (AQ - SQ) * SP
= (8,700 - (2,750 * 3)) * $4.20
= $1,890 U

DIF: Moderate   OBJ: 7-3

54. Refer to Marley Company. What is the labor rate variance?
    a. $3,480 U
    b. $3,480 F
    c. $2,800 U
    d. $2,800 F

    ANS: C

Labor Rate Variance = (AP - SP) * AQ
= ($7.90 - $7.50) * 7,000 hr used
= $2,800 U

    DIF: Easy   OBJ: 7-3

55. Refer to Marley Company. What is the labor efficiency variance?
    a. $1,875 U
    b. $938 U
    c. $1,875 U
    d. $1,125 U

    ANS: B

Labor Efficiency Variance = (AQ - SQ) * SP
= (7,000 hr - (2.5 hr/unit * 2,750 units)) * $7.50
= $938 U (rounded)

    DIF: Moderate   OBJ: 7-3

    McCoy Company

    McCoy Company has the following information available for October when 3,500 units were produced (round answers to the nearest dollar).

    Standards:
    Material   3.5 pounds per unit @ $4.50 per pound
    Labor   5.0 hours per unit @ $10.25 per hour

    Actual:
    Material purchased   12,300 pounds @ $4.25
    Material used   11,750 pounds
    17,300 direct labor hours @ $10.20 per hour

56. Refer to McCoy Company. What is the labor rate variance?
    a. $875 F
    b. $865 F
    c. $865 U
    d. $875 U

    ANS: B

Labor Rate Variance = (AP - SP) * AQ
= ($10.20 - $10.25) * 17,300 hrs.
= $865 F

    DIF: Easy   OBJ: 7-3

57. Refer to McCoy Company. What is the labor efficiency variance?
   a. $2,050 F
   b. $2,050 U
   c. $2,040 U
   d. $2,040 F

   ANS: A

   Labor efficiency variance = (AQ - SQ)* SP
   =(17,300 hrs -(3,500 units * 5.0 hr/unit)) * $10.25/hr
   = $2,050 F

   DIF: Easy   OBJ: 7-3

58. Refer to McCoy Company. What is the material price variance (based on quantity purchased)?
   a. $3,075 U
   b. $2,938 U
   c. $2,938 F
   d. $3,075 F

   ANS: D

   Material price variance = (AP - SP) * AQ
   = ($4.25 - $4.50) * 12,300
   = $3,075 F

   DIF: Easy   OBJ: 7-3

59. Refer to McCoy Company. What is the material quantity variance?
   a. $2,250 F
   b. $2,250 U
   c. $225 F
   d. $2,475 U

   ANS: A

   Material quantity variance = (AQ - SQ) * SP
   = (11,750 - (3,500 units * 3.5 hr/unit)) * $4.25
   = $2,250 F

   DIF: Easy   OBJ: 7-3

60. Refer to McCoy Company. Assume that the company computes the material price variance on the basis of material issued to production. What is the total material variance?
   a. $2,850 U
   b. $5,188 U
   c. $5,188 F
   d. $2,850 F

   ANS: C

   Total Variance = (11,750 * $4.25) - (3,500 * 3.5 * $4.50)
   = $49,937.00 - $55,125.00
   = $5188 F

   DIF: Moderate   OBJ: 7-3

Scott Manufacturing

The following March information is available for Scott Manufacturing Company when it produced 2,100 units:

Standard:
Material   2 pounds per unit @ $5.80 per pound
Labor   3 direct labor hours per unit @ $10.00 per hour

Actual:
Material   4,250 pounds purchased and used @ $5.65 per pound
Labor   6,300 direct labor hours at $9.75 per hour

61. Refer to Scott Manufacturing. What is the material price variance?
    a. $637.50 U
    b. $637.50 F
    c. $630.00 U
    d. $630.00 F

    ANS: B

Material price variance = (AP - SP) * AQ
= ($5.65 - $5.80) * 4,250 lbs
= $637.50 F

    DIF: Easy   OBJ: 7-3

62. Refer to Scott Manufacturing. What is the material quantity variance?
    a. $275 F
    b. $290 F
    c. $290 U
    d. $275 U

    ANS: C

Material quantity variance = (AQ - SQ) * SP
= (4,250 - (2 lbs/unit * 2,100 units))* $5.80/unit
= $290 U

    DIF: Easy   OBJ: 7-3

63. Refer to Scott Manufacturing. What is the labor rate variance?
    a. $1,575 U
    b. $1,575 F
    c. $1,594 U
    d. $0

    ANS: B

Labor Rate Variance = (AP - SP) * AQ
=($9.75 - $10.00) * 6,300 hrs
= $1,575 F

    DIF: Easy   OBJ: 7-3

64. Refer to Scott Manufacturing. What is the labor efficiency variance?
    a. $731.25 F
    b. $731.25 U
    c. $750.00 F
    d. none of the answers are correct

    ANS: D

Labor efficiency variance = (AQ - SQ) * SP
= (6,300 - (2,100 units * 3 hrs/unit) * $10.00
= $0

    DIF: Easy   OBJ: 7-3

    Forrest Company

    Forrest Company uses a standard cost system for its production process and applies overhead based on direct labor hours. The following information is available for August when Forrest made 4,500 units:

    Standard:

DLH per unit	2.50
Variable overhead per DLH	$1.75
Fixed overhead per DLH	$3.10
Budgeted variable overhead	$21,875
Budgeted fixed overhead	$38,750

    Actual:

Direct labor hours	10,000
Variable overhead	$26,250
Fixed overhead	$38,000

65. Refer to Forrest Company. Using the one-variance approach, what is the total overhead variance?
    a. $6,062.50 U
    b. $3,625.00 U
    c. $9,687.50 U
    d. $6,562.50 U

    ANS: C

Total Variance = Actual Overhead - Applied Overhead
= $(26,250 + 38,000) - ($(1.75 + 3.10) * 2.50 hrs/unit * 4,500 units)
= $64,250.00 - $54,462.50
= $9,687.50U

    DIF: Easy   OBJ: 7-3

66. Refer to Forrest Company. Using the two-variance approach, what is the controllable variance?
    a. $5,812.50 U
    b. $5,812.50 F
    c. $4,375.00 U
    d. $4,375.00 F

    ANS: A

    Controllable Variance = Actual Overhead - Budgeted Overhead Based on Standard Quantity
    = $64,250.00 - $((4,500 units * 2.5 DLH/unit * $1.75) + 38,750)
    = $(64,250 - $58,437.50)
    = $5,812.50 U

    DIF: Easy   OBJ: 7-3

67. Refer to Forrest Company. Using the two-variance approach, what is the noncontrollable variance?
    a. $3,125.00 F
    b. $3,875.00 U
    c. $3,875.00 F
    d. $6,062.50 U

    ANS: B

    Uncontrollable Variance = Budgeted Overhead Based on SQ - Applied Overhead
    = $(58,437.50 - 54,562.50)
    = $3,875.00 U

    DIF: Easy   OBJ: 7-3

68. Refer to Forrest Company. Using the three-variance approach, what is the spending variance?
    a. $4,375 U
    b. $3,625 F
    c. $8,000 U
    d. $15,750 U

    ANS: C

    OH Spending Variance = Actual OH - Budgeted OH based upon Inputs Used
    = $64,250 - ((10,000 hrs * $1.75) + $38,750)
    = $(64,250 - 56,250)
    = $8,000.00 U

    DIF: Moderate   OBJ: 7-3

69. Refer to Forrest Company. Using the three-variance approach, what is the efficiency variance?

   a. $9,937.50 F
   b. $2,187.50 F
   c. $2,187.50 U
   d. $2,937.50 F

   ANS: B

OH Efficiency Variance = Budgeted OH based on Actual - Budgeted OH based on Standard
$\qquad$ = ((10,000 * \$1.75)+ \$38,750) - ((4,500 * 2.50 * \$1.75) + \$38,750)
$\qquad$ = \$(56,250.00 - 58,437.50)
$\qquad$ = \$2,187.50 F

   DIF: Moderate   OBJ: 7-3

70. Refer to Forrest Company. Using the three-variance approach, what is the volume variance?
   a. $3,125.00 F
   b. $3,875.00 F
   c. $3,875.00 U
   d. $6,062.50 U

   ANS: C

Volume Variance = Budget Based on Standard Quantity - Overhead Applied
$\qquad$ = \$(58,437.50 - 54,562.00)
$\qquad$ = \$3,875.00 U

   DIF: Moderate   OBJ: 7-3

71. Refer to Forrest Company. Using the four-variance approach, what is the variable overhead spending variance?
   a. $4,375.00 U
   b. $4,375.00 F
   c. $8,750.00 U
   d. $6,562.50 U

   ANS: C

Variable Overhead Spending Variance = Actual VOH - Budgeted VOH/Actual Quantity
$\qquad$ = \$26,250.00 - (10,000 * \$1.75/VOH hr)
$\qquad$ = \$(26,250.00 - 17,500.00)
$\qquad$ = \$8,750.00 U

   DIF: Moderate   OBJ: 7-3

72. Refer to Forrest Company. Using the four-variance approach, what is the variable overhead efficiency variance?
    a. $2,187.50 U
    b. $9,937.50 F
    c. $2,187.50 F
    d. $2,937.50 F

    ANS: C

VOH Efficiency Variance = Budgeted VOH based on Actual - Budgeted VOH/Standard Qty
= ((10,000 * $1.75/hr) - ((4,500 * 2.50hrs/unit * $1.75/hr))
= $(17,500.00 - 19,687.50)
= $2,187.50 F

    DIF: Moderate   OBJ: 7-3

73. Refer to Forrest Company. Using the four-variance approach, what is the fixed overhead spending variance?
    a. $7,000 U
    b. $3,125 F
    c. $750 U
    d. $750 F

    ANS: D

Fixed OH Spending Variance = Actual Fixed OH - Applied Fixed OH
= $(38,000 - 38,750)
= $750 F

    DIF: Easy   OBJ: 7-3

74. Refer to Forrest Company. Using the four-variance approach, what is the volume variance?
    a. $3,125 F
    b. $3,875 F
    c. $6,063 U
    d. $3,875 U

    ANS: D

Volume Variance = Budget Based on Standard Quantity - Overhead Applied
= $(58,437.50 - 54,562.00)
= $3,875.00 U

    DIF: Moderate   OBJ: 7-3

Rainbow Company

Rainbow Company uses a standard cost system for its production process. Rainbow Company applies overhead based on direct labor hours. The following information is available for July:

Standard:

Direct labor hours per unit	2.20
Variable overhead per hour	$2.50
Fixed overhead per hour	
(based on 11,990 DLHs)	$3.00

Actual:

Units produced	4,400
Direct labor hours	8,800
Variable overhead	$29,950
Fixed overhead	$42,300

75. Refer to Rainbow Company Using the four-variance approach, what is the variable overhead spending variance?
    a. $7,950 U
    b. $25 F
    c. $7,975 U
    d. $10,590 U

ANS: A

Variable OH Spending Variance = Actual VOH - Budgeted VOH/Actual
= $(29,950 - 22,000)
= $7,950

DIF: Moderate   OBJ: 7-3

76. Refer to Rainbow Company Using the four-variance approach, what is the variable overhead efficiency variance?
    a. $9,570 F
    b. $9,570 U
    c. $2,200 F
    d. $2,200 U

ANS: C

VOH Efficiency Variance = Budgeted OH/Actual - Budgeted OH/Standard
= (8,800 DLH * $2.50/DLH) - (4400 units*2.20 DLH/unit * $2.50)
= $(22,000 - 24,200)
= $2,200 F

DIF: Moderate   OBJ: 7-3

77. Refer to Rainbow Company Using the four-variance approach, what is the fixed overhead spending variance?
    a. $15,900 U
    b. $6,330 U
    c. $6,930 U
    d. $935 F

    ANS: B

Fixed OH Spending Variance = Actual OH - Standard Fixed OH
= $42,300 - (11,990 DLH's * $3.00/DLH)
= $(42,300 - 35,970)
= $6,330 U

    DIF: Moderate   OBJ: 7-3

78. Refer to Rainbow Company Using the four-variance approach, what is the volume variance?
    a. $6,930 U
    b. $13,260 U
    c. $0
    d. $2,640 F

    ANS: A

Volume Variance = Budgeted OH/Standard Quantity - Standard Overhead Applied
=(4,400 units * $2.50/hr*2.20 hrs/unit + $35,970)- (4,400 units*$5.50/hr*2.20 DLH/unit)
= $60,170 - $53,240
= $6,930 U

    DIF: Moderate   OBJ: 7-3

79. Refer to Rainbow Company Using the three-variance approach, what is the spending variance?
    a. $23,850 U
    b. $23,850 F
    c. $14,280 F
    d. $14,280 U

    ANS: D

Spending Variance = Actual Overhead - Budget OH/Actual Use
= $72,250 - ((8,800 hrs * $2.50/hr) + $35,970)
= $(72,250 - 57,970)
= $14,280 U

    DIF: Moderate   OBJ: 7-3

80. Refer to Rainbow Company Using the three-variance approach, what is the efficiency variance?
    a. $11,770 F
    b. $2,200 F
    c. $7,975 U
    d. $5,775 U

    ANS: B

    Efficiency Variance = Budget OH/Actual Use - Budgeted OH/Standard Quantity - Standard
    Overhead Applied
    = ((8,800 hrs * $2.50/hr) + $35,970)-(4,400 units * $2.50/hr*2.20 hrs/unit + $35,970)
    = $(57,970 - 60,170)
    = $2,200 F

    DIF: Moderate   OBJ: 7-3

81. Refer to Rainbow Company Using the three-variance approach, what is the volume variance?
    a. $13,260 U
    b. $2,640 F
    c. $6,930 U
    d. $0

    ANS: C

    Volume Variance = Budgeted OH/Standard Quantity - Standard Overhead Applied
    =(4,400 units * $2.50/hr*2.20 hrs/unit + $35,970)- (4,400 units*$5.50/hr*2.20 DLH/unit)
    = $60,170 - $53,240
    = $6,930 U

    DIF: Moderate   OBJ: 7-3

82. Refer to Rainbow Company Using the two-variance approach, what is the controllable variance?
    a. $21,650 U
    b. $16,480 U
    c. $5,775 U
    d. $12,080 U

    ANS: D

    Controllable Variance = Actual Overhead - Budgeted Overhead Based on Standard Quantity
                          = $72,250.00 - (4,400 units * $2.50/hr*2.20 hrs/unit + $35,970)
                          = $(72,250- 60,170)
                          = $12,080 U

    DIF: Moderate   OBJ: 7-3

83. Refer to Rainbow Company Using the two-variance approach, what is the noncontrollable variance?
   a. $26,040 F
   b. $0
   c. $6,930 U
   d. $13,260 U

   ANS: C

Noncontrollable Variance = Budgeted OH/Standard Quantity - Standard Overhead Applied
=(4,400 units * $2.50/hr*2.20 hrs/unit + $35,970)- (4,400 units*$5.50/hr*2.20 DLH/unit)
= $60,170 - $53,240
= $6,930 U

   DIF: Moderate   OBJ: 7-3

84. Refer to Rainbow Company Using the one-variance approach, what is the total variance?
   a. $19,010 U
   b. $6,305 U
   c. $12,705 U
   d. $4,730 U

   ANS: A

Total Variance = Actual Overhead - Applied Overhead
=$72,250 - (4,400 * 2.20 *($2.50 + $3.00))
=$72,250 - $53,240
=$19,010 U

   DIF: Moderate   OBJ: 7-3

85. Actual fixed overhead is $33,300 (12,000 machine hours) and fixed overhead was estimated at $34,000 when the predetermined rate of $3.00 per machine hour was set. If 11,500 standard hours were allowed for actual production, applied fixed overhead is
   a. $33,300.
   b. $34,000.
   c. $34,500.
   d. not determinable without knowing the actual number of units produced.

   ANS: C
11,500 hrs. * $3.00/hr. = $34,500

   DIF: Easy   OBJ: 7-3

86. One unit requires 2 direct labor hours to produce. Standard variable overhead per unit is $1.25 and standard fixed overhead per unit is $1.75. If 330 units were produced this month, what total amount of overhead is applied to the units produced?
   a. $990
   b. $1,980
   c. $660
   d. cannot be determined without knowing the actual hours worked

   ANS: A

   | 330 units * ($1.25 + $1.75) = $990 |

   DIF: Easy   OBJ: 7-3

87. Western Company uses a standard cost accounting system. The following overhead costs and production data are available for August:

Standard fixed OH rate per DLH	$1
Standard variable OH rate per DLH	$4
Budgeted monthly DLHs	40,000
Actual DLHs worked	39,500
Standard DLHs allowed for actual production	39,000
Overall OH variance-favorable	$2,000

   The total applied manufacturing overhead for August should be
   a. $195,000.
   b. $197,000.
   c. $197,500.
   d. $199,500.

   ANS: A
   | 39,000 DL hrs * $5.00/hr = $195,000 |

   DIF: Easy   OBJ: 7-3

88. Paramount Company uses a standard cost system and prepared the following budget at normal capacity for January:

Direct labor hours	24,000
Variable OH	$48,000
Fixed OH	$108,000
Total OH per DLH	$6.50

Actual data for January were as follows:

Direct labor hours worked	22,000
Total OH	$147,000
Standard DLHs allowed for capacity attained	21,000

Using the two-way analysis of overhead variances, what is the controllable variance for January?
a. $3,000 F
b. $5,000 F
c. $9,000 F
d. $10,500 U

ANS: A

Controllable Variance = Actual Overhead - Budget Based on SQ for Actual Output
= $147,000 - ((21,000 * $2.00/hr) + $108,000)
= $(147,000 - 150,000)
= $3,000 F

DIF: Moderate   OBJ: 7-3

89. The following information is available from the Fitzgerald Company:

Actual OH	$15,000
Fixed OH expenses, actual	$7,200
Fixed OH expenses, budgeted	$7,000
Actual hours	3,500
Standard hours	3,800
Variable OH rate per DLH	$2.50

Assuming that Fitzgerald uses a three-way analysis of overhead variances, what is the overhead spending variance?
a. $750 F
b. $750 U
c. $950 F
d. $1,500 U

ANS: A

Spending Variance = Actual Overhead - Budgeted Overhead/Actual Hours
= $15,000 - ((3,500 * $2.50) + $7,000)
= $(15,000 - 15,750)
= $750 F

DIF: Moderate   OBJ: 7-3

90. Hagman Company uses a two-way analysis of overhead variances. Selected data for the April production activity are as follows:

Actual variable OH incurred	$196,000
Variable OH rate per MH	$6
Standard MHs allowed	33,000
Actual MHs	32,000

Assuming that budgeted fixed overhead costs are equal to actual fixed costs, the controllable variance for April is
a. $2,000 F.
b. $4,000 U.
c. $4,000 F.
d. $6,000 F.

ANS: A

Controllable Variance = Actual OH - Budgeted OH based on Standard Qty
= $196,000 - (33,000 * $6/hr)
= $2,000 F

DIF: Moderate   OBJ: 7-3

91. Oxygen Company uses a standard cost system. Overhead cost information for October is as follows:

Total actual overhead incurred	$12,600
Fixed overhead budgeted	$3,300
Total standard overhead rate per MH	$4
Variable overhead rate per MH	$3
Standard MHs allowed for actual production	3,500

What is the total overhead variance?
a. $1,200 F
b. $1,200 U
c. $1,400 F
d. $1,400 U

ANS: C

Total Overhead Variance = Actual Overhead - Standard Overhead
= $(12,600 - (3,500 MH * $4/MH))
= $(12,600 - 14,000)
= $1,400 F

DIF: Easy   OBJ: 7-3

Uniform Company

Uniform Company has developed standard overhead costs based on a capacity of 180,000 machine hours as follows:

Standard costs per unit:

Variable portion	2 hours @ $3 =	$ 6
Fixed portion	2 hours @ $5 =	10
		$16

During April, 85,000 units were scheduled for production, but only 80,000 units were actually produced. The following data relate to April:

Actual machine hours used were 165,000.
Actual overhead incurred totaled $1,378,000 ($518,000 variable plus $860,000 fixed).
All inventories are carried at standard cost.

92. Refer to Uniform Company. The variable overhead spending variance for April was
    a. $15,000 U.
    b. $23,000 U.
    c. $38,000 F.
    d. $38,000 U.

    ANS: B

Variable OH Spending Variance = Actual VOH - Budgeted FOH/Actual Input
                              = $518,000 - (165,000 DLH * $3/hr)
                              = $(518,000 - 495,000)
                              = $23,000 U

    DIF: Moderate   OBJ: 7-3

93. Refer to Uniform Company. The variable overhead efficiency variance for April was
    a. $15,000 U.
    b. $23,000 U.
    c. $38,000 F.
    d. $38,000 U.

    ANS: A

Variable OH Efficiency Variance = Budgeted VOH/Actual - Budgeted VOH/Standard
                              = $495,000 - (80,000 units * 2 hrs/unit * $3)
                              = $(495,000 - 480,000)
                              = $15,000 U

    DIF: Moderate   OBJ: 7-3

94. Refer to Uniform Company. The fixed overhead spending variance for April was
    a. $40,000 U.
    b. $40,000 F.
    c. $60,000 F.
    d. $60,000 U.

    ANS: B

Fixed Overhead Spending Variance = Actual Fixed OH - Budgeted Fixed OH
= $(860,000 - (180,000 MH * $5/hr)
= $(860,000 - $900,000)
= $40,000 F

    DIF: Moderate   OBJ: 7-3

95. Refer to Uniform Company. The fixed overhead volume variance for April was
    a. $60,000 U.
    b. $60,000 F.
    c. $100,000 F.
    d. $100,000 U.

    ANS: D

Fixed FOH Volume Variance = Budgeted Fixed FOH - Applied FOH
= $(900,000 - 800,000)
= $100,000 U

    DIF: Moderate   OBJ: 7-3

Ultra Shine Company

Ultra Shine Company manufactures a cleaning solvent. The company employs both skilled and unskilled workers. To produce one 55-gallon drum of solvent requires Materials A and B as well as skilled labor and unskilled labor. The standard and actual material and labor information is presented below:

Standard:
Material A: 30.25 gallons @ $1.25 per gallon
Material B: 24.75 gallons @ $2.00 per gallon

Skilled Labor: 4 hours @ $12 per hour
Unskilled Labor: 2 hours @ $ 7 per hour

Actual:
Material A: 10,716 gallons purchased and used @ $1.50 per gallon
Material B: 17,484 gallons purchased and used @ $1.90 per gallon

Skilled labor hours: 1,950 @ $11.90 per hour
Unskilled labor hours: 1,300 @ $7.15 per hour
During the current month Ultra Shine Company manufactured 500 55-gallon drums.

Round all answers to the nearest whole dollar.

96. Refer to Ultra Shine Company. What is the total material price variance?
    a. $877 F
    b. $877 U
    c. $931 U
    d. $931 F

    ANS: C

Total Material Price Variance = Actual Mix,Qty,Price - Actual Mix,Quantity,Std Price
= $(49,294 - 48,363)
= $931 U

    DIF: Moderate   OBJ: 7-6

97. Refer to Ultra Shine Company. What is the total material mix variance?
    a. $3,596 F
    b. $3,596 U
    c. $4,864 F
    d. $4,864 U

    ANS: B

Total Material Mix Variance = Actual Mix,Qty, Std Price - Std Mix, Price,Actual Qty
= $(48,363 - 44,767)
= $3,596 U

    DIF: Difficult   OBJ: 7-6

98. Refer to Ultra Shine Company. What is the total material yield variance?
    a. $1,111 U
    b. $1,111 F
    c. $2,670 U
    d. $2,670 F

    ANS: A

Material Yield Variance = Std Mix, Std Price,Actual Qty - Std Mix, Qty, Price
= $(44,767 - $43,656)
= $1,111 U

    DIF: Difficult   OBJ: 7-6

99. Refer to Ultra Shine Company. What is the labor rate variance?
    a. $0
    b. $1,083 U
    c. $2,583 U
    d. $1,083 F

    ANS: A

Labor Rate Variance = Actual Mix, Qty,Price - Actual Mix,Qty,Std Price
= $(32,500 - 32,500)
= $0

    DIF: Moderate   OBJ: 7-6

100. Refer to Ultra Shine Company. What is the labor mix variance?
   a. $1,083 U
   b. $2,588 U
   c. $1,083 F
   d. $2,588 F

   ANS: C

Labor Mix Variance = Actual Mix,Qty, Std Price - Std Mix, Actual Qty, Std Price
= $(32,500 - 33,583)
= $1,083 F

   DIF: Difficult   OBJ: 7-6

101. Refer to Ultra Shine Company. What is the labor yield variance?
   a. $2,583 U
   b. $2,583 F
   c. $1,138 F
   d. $1,138 U

   ANS: A

Labor Yield Variance = Std Mix, Act Qty, Std Price - Std Mix, Qty, Price
= $(33,583 - $31,000)
= $2,583 U

   DIF: Difficult   OBJ: 7-6

102. The sum of the material mix and material yield variances equals
   a. the material purchase price variance.
   b. the material quantity variance.
   c. the total material variance.
   d. none of the above.

   ANS: B   DIF: Easy   OBJ: 7-6

103. The sum of the labor mix and labor yield variances equals
   a. the labor efficiency variance.
   b. the total labor variance.
   c. the labor rate variance.
   d. nothing because these two variances cannot be added since they use different costs.

   ANS: A   DIF: Easy   OBJ: 7-6

SHORT ANSWER

1. List and discuss briefly the three standards of attainability.

    ANS:
    Expected standards reflect what is actually expected to occur in the future period. This standard takes into consideration waste and inefficiencies and makes allowances for them.

    Practical standards can be reached or exceeded most of the time with reasonable effort. This standard allows for normal, unavoidable time problems or delays.

    Ideal standards provide for no inefficiencies of any type. This standard does not allow for normal operating delays or human limitations.

    DIF: Moderate   OBJ: 7-4

2. Discuss briefly the type of information contained on (a) a bill of materials and (b) an operations flow document.

    ANS:
    (a) A bill of materials contains the identification of components, a description of components, and the quantity of each material required for a product. (b) An operations flow document contains an identification number, descriptions of the tasks to be performed, the departments doing the work, and standard number of hours and/or minutes to perform each task.

    DIF: Moderate   OBJ: 7-2

3. Define the following terms: standard cost system, total variance, material price variance, and labor efficiency variance.

    ANS:
    A standard cost system records both standard costs and actual costs in the accounting records. This process allows for better cost control because actual costs can be easily compared to standard costs.

    A total variance is the difference between actual input cost for material or labor and the standard cost for material or labor for the output produced.

    The material price variance is the difference between the actual price paid for material and the standard price of the material times the actual quantity used or purchased.

    The labor efficiency variance compares the number of hours actually worked with the standard hours allowed for the production achieved and values this difference at the standard labor rate.

    DIF: Moderate   OBJ: 7-3

4. Discuss how establishing standards benefits the following management functions: performance evaluation and decision making.

ANS:
Performance evaluation is enhanced by the use of standard costs because it allows management to pinpoint deviations from standard costs and points out variances. The variances are analyzed and individual responsibility can be assessed for the variances, depending on the nature of the causes.

The availability of standard cost information facilitates many decisions. These costs can be used in budgeting, cost estimates for jobs, and determining contributions made by various product lines; and, thus, can be used to decide whether to add new lines or drop old lines.

DIF: Moderate   OBJ: 7-4

5. Discuss why standards may need to be changed after they have been in effect for some period of time.

ANS:
Standards may need to be changed from time to time because of changing economic conditions, availability of materials, quality of materials, and labor rates or skill levels. Standards should be reviewed periodically to assure management that current standards are being established and used.

DIF: Moderate   OBJ: 7-4

6. Discuss how variable and fixed overhead application rates are calculated.

ANS:
The variable overhead application rate is calculated by dividing total budgeted variable overhead by its related level of activity. Any level of activity within the relevant range may be selected since VOH cost per unit is constant throughout the relevant range. The fixed overhead application rate is calculated by dividing total budgeted fixed overhead by the specific capacity level expected for the period.

DIF: Moderate   OBJ: 7-2

7. Why are fixed overhead variances considered noncontrollable?

ANS:
Management has limited ability to control fixed overhead costs in the short run because these costs are incurred to provide the capacity to produce. Fixed costs can be controllable to a limited extent at the point of commitment; therefore, the FOH spending variance can be considered, in part, controllable.

On the other hand, the volume variance arises solely because management has selected a specific level of activity on which to calculate the FOH application rate. If actual activity differs at all from this selected base, a volume variance will occur. Production levels are controllable to a very limited extent in the production area. Production is more often related to ability to sell and demand; thus, these levels are not controllable by the production manager.

DIF: Moderate   OBJ: 7-3

8. Provide the correct term for each of the following definitions:

   a. a cost that fluctuates with large changes in level of activity
   b. a range of activity over which costs behave as predicted
   c. the capacity level at which a firm believes it will operate at during the coming production cycle
   d. the difference between actual variable overhead and budgeted variable overhead based on inputs
   e. the difference between total actual overhead and total applied overhead
   f. the difference between total budgeted overhead based on inputs and applied overhead
   g. the difference between total actual overhead and total budgeted overhead based on output
   h. the difference between actual fixed overhead and budgeted fixed overhead

   ANS:

   a. step fixed cost
   b. relevant range
   c. expected annual capacity
   d. variable overhead spending variance
   e. total overhead variance
   f. volume variance
   g. efficiency variance
   h. fixed overhead spending variance

   DIF: Moderate   OBJ: 7-2

PROBLEM

Fitzhugh Company

Fitzhugh Company has the following information available for the current year:

Standard:
Material   3.5 feet per unit @ $2.60 per foot
Labor   5 direct labor hours @ $8.50 per unit

Actual:
Material   95,625 feet used (100,000 feet purchased @ $2.50 per foot)
Labor   122,400 direct labor hours incurred per unit @ $8.35 per hour
              25,500 units were produced

1. Refer to Fitzhugh Company. Compute the material purchase price and quantity variances.

ANS:

Material price variance:

100,000 × $2.50 =	$250,000	
100,000 × $2.60 =	260,000	
	$ 10,000	F

Material quantity variance:

95,625 × $2.60 =	$248,625	
89,250 × $2.60 =	232,050	
	$ 16,575	U

DIF: Moderate   OBJ: 7-3

2. Refer to Fitzhugh Company. Compute the labor rate and efficiency variances.

ANS:

Labor rate variance:

122,400 × $8.35 =	$1,022,040	
122,400 × $8.50 =	1,040,400	
	$ 18,360	F

Labor efficiency variance:

122,400 × $8.50 =	$1,040,400	
127,500 × $8.50 =	1,083,750	
	$ 43,350	F

DIF: Moderate   OBJ: 7-3

Taylor Company

Taylor Company applies overhead based on direct labor hours and has the following available for November:

Standard:

Direct labor hours per unit	5
Variable overhead per DLH	$.75
Fixed overhead per DLH	
(based on 8,900 DLHs)	$1.90

Actual:

Units produced	1,800
Direct labor hours	8,900
Variable overhead	$6,400
Fixed overhead	$17,500

3. Refer to Taylor Company. Compute all the appropriate variances using the two-variance approach.

ANS:

Actual ($6,400 + $17,500)	$23,900	
Budget Variance:		**$240 U**
BFOH (8,900 × $1.90)	$16,910	
VOH (1,800 × 5 × $.75)	6,750 $23,660	
Volume Variance:		**$190 F**
Applied OH:		
(1,800 × 5 × $2.65)	$23,850	

DIF: Moderate   OBJ: 7-3

4. Refer to Taylor Company. Compute all the appropriate variances using the four-variance approach.

ANS:

Actual VOH	$6,400	
Variable Spending Variance:		**$275 F**
Flex. Bud. Based on Actual		
Input Hours (8,900 × $.75)	$6,675	
Variable Efficiency Variance:		**$75 F**
Applied VOH		
(1,800 × 5 × $.75)	$6,750	
Actual FOH	$17,500	
FOH Spending Variance:		**$590 U**
BUDGETED FOH	$16,910	
FOH Volume Variance:		**$190 F**
Applied FOH		
(1,800 × 5 × $1.90)	$17,100	

DIF: Moderate   OBJ: 7-3

5. Refer to Taylor Company. Compute all the appropriate variances using the three-variance approach.

ANS:

Actual	$23,900		
Spending Variance:			**$315 U**
Flexible Budget Based on Actual Input			
BFOH	$16,910		
VOH (8,900 × $.75)	6,675	$23,585	
Efficiency Variance:			**$75 F**
Flexible Budget Based on Standard DLHs			
BFOH	$16,910		
VOH (1,800 × 5 × $.75)	6,750	$23,660	
Volume Variance:			**$190 F**
Applied OH:			
(1,800 × 5 × $2.65)	$23,850		

DIF: Moderate   OBJ: 7-3

6. The Michigan Company has made the following information available for its production facility for the month of June. Fixed overhead was estimated at 19,000 machine hours for the production cycle. Actual machine hours for the period were 18,900, which generated 3,900 units.

Material purchased (80,000 pieces)	$314,000	
Material quantity variance	$6,400	U
Machine hours used (18,900 hours)		
VOH spending variance	$50	U
Actual fixed overhead	$60,000	
Actual labor cost	$40,120	
Actual labor hours	5,900	

Michigan's standard costs are as follows:

Direct material	20 pieces @ $4 per piece
Direct labor	1.5 hours @ $6 per hour
Variable overhead	
(applied on a machine hour basis)	4.8 hours @ $2.50 per hour
Fixed overhead	
(applied on a machine hour basis)	4.8 hours @ $3 per hour

Determine the following items:
a. material purchase price variance
b. standard quantity allowed for material
c. total standard cost of material allowed
d. actual quantity of material used
e. labor rate variance
f. standard hours allowed for labor
g. total standard cost of labor allowed
h. labor efficiency variance
i. actual variable overhead incurred
j. standard machine hours allowed
k. variable overhead efficiency variance
l. budgeted fixed overhead
m. applied fixed overhead
n. fixed overhead spending variance
o. volume variance
p. total overhead variance

ANS:

a. actual material cost $314,000
    actual pieces at standard cost (80,000 × $4)   320,000
    material purchase price variance $ 6,000   F

b. 3,900 units × 20 pieces per unit = 78,000 standard quantity allowed

c. total standard cost of material (78,000 × $4) $312,000

d. standard cost of actual material used
    $312,000 + $6,400 U quantity variance $318,400
    $318,400 ÷ $4 = 79,600 actual pieces used

e. actual labor cost $ 40,120
    5,900 actual DLHs × $6   35,400
    labor rate variance $ 4,720   U

f. 3,900 units × 1.5 standard hours per unit   5,850   SHA

g. 5,850 SHA × $6 $ 35,100

h. actual hours × standard rate (from e) $ 35,400
    standard cost of labor allowed (from g)   35,100
    labor efficiency variance $ 300   U

i. actual machine hours × standard VOH rate (18,900 × $2.50) $ 47,250
    VOH spending variance   50   U
    actual VOH $ 47,300

j. 3,900 units × 4.8 standard hours per unit = 18,720 MH allowed

k. standard hours allowed (from j) × standard VOH rate
       (18,720 × $2.50) $ 46,800

290

actual machine hours × standard rate (from i)
   (18,900 × $2.50)   47,250
variable overhead efficiency variance $ 450   U

l.   19,000 machine hours × $3 $ 57,000

m.   3,900 units × 4.8 hours per unit × $3.00 $ 56,160

n.   actual fixed overhead $ 60,000
      budgeted fixed overhead (from l)   57,000
      fixed overhead spending variance $ 3,000   U

o.   budgeted fixed overhead (from l) $ 57,000
      applied fixed overhead (from m)   56,160
      volume variance $ 840   U

p.   total actual overhead $107,300
      [$60,000 + $47,300 (from i)]
       total applied overhead (18,720 SHA × $5.50)   102,960
      Total overhead variance $ 4,340   U

DIF: Difficult   OBJ: 7-3

Whitestone Company

The following information is available for Whitestone Company for the current year:

Standard:
Material X: 3.0 pounds per unit @ $4.20 per pound
Material Y: 4.5 pounds per unit @ $3.30 per pound
Class S labor: 3 hours per unit @ $10.50 per hour
Class US labor: 7 hours per unit @ $8.00 per hour

Actual:
Material X: 3.6 pounds per unit @ $4.00 per pound (purchased and used)
Material Y: 4.4 pounds per unit @ $3.25 per pound (purchased and used)
Class S labor: 3.8 hours per unit @ $10.60 per hour
Class US labor: 5.7 hours per unit @ $7.80 per hour
Whitestone Company produced a total of 45,750 units.

7. Refer to Whitestone Company. Compute the material price, mix, and yield variances (round to the nearest dollar).

ANS:

Standard: X   3.0/7.5 = 40%
              Y   4.5/7.5 = 60%

Actual:
X   3.6 × 45,750 × $4.00 = $ 658,800
Y   4.4 × 45,750 × $3.25 =   654,225
                              $1,313,025
                                       $43,005 F price

Actual × Standard Prices:

X   3.6 × 45,750 × $4.20 = $ 691,740

Y   4.4 × 45,750 × $3.30 =   664,290

                                         $1,356,030

                                               $16,470 U mix

Standard Qty. × Actual Mix × Standard Prices:

X   40% × 366,000* × $4.20 = $ 614,880

Y   60% × 366,000 × $3.30 =   724,680

                                         $1,339,560 $83,722 U yield

Standard × Standard:

X   40% × 343,125** × $4.20 = $ 576,450

Y   60% × 343,125 × $3.30 =   679,388

                                         $1,255,838

*(45,750 × 8 = 366,000)

**(45,750 × 7.5 = 343,125)

DIF: Difficult   OBJ: 7-6

8. Refer to Whitestone Company. Compute the labor rate, mix, and yield variances (round to the nearest dollar).

ANS:

Standard:	S	3/10 = 30%	Actual:	S		3.8/9.5 = 40%
	US	7/10 = 70%		US		5.7/9.5 = 60%

Actual × Actual Prices:

S	3.8 × 45,750 × $10.60 =	$1,842,810
US	5.7 × 45,750 × $7.80 =	2,034,045
		$3,876,855

$34,770 F rate

Actual × Standard Prices:

S	3.8 × 45,750 × $10.50 =	$1,825,425
US	5.7 × 45,750 × $ 8.00 =	2,086,200
		$3,911,625

$108,656 U mix

Standard Qty. × Actual Mix × Standard Prices:

S	30% × 434,625* × $10.50 =	$1,369,069
US	70% × 434,625 × $ 8.00 =	2,433,900
		$3,802,969

$200,156 F yield

Standard × Standard:

S	30% × 457,500** × $10.50 =	$1,441,125
US	70% × 457,500 × $ 8.00 =	2,562,000
		$4,003,125

*(45,750 × 9.5 = 434,625)
**(45,750 × 10 = 457,500)

DIF: Difficult   OBJ: 7-6

9. Peoria Corporation produces a product using the following standard proportions and costs of material:

	Pounds	Cost Per Pound	Amount
Material A	50	$5.00	$250.00
Material B	40	6.00	240.00
Material C	60	3.00	180.00
	150	4.4667	$670.00
Standard shrinkage (33 1/3%)	50		
Net weight and cost	100	6.70	$670.00

A recent production run yielding 100 output pounds required an input of:

	Amount	Cost Per Pound
Material A	40	$5.15

Material B	50	6.00
Material C	65	2.80

Required: Material price, mix, and yield variances.

ANS:
MATERIAL PRICE VARIANCE

MATERIAL A	($5.15 - 5.00) × 40 =	$ 6	U
MATERIAL B	($6.00 - 6.00) × 50 =	0	
MATERIAL C	($2.80 - 3.00) × 65 =	13	F
		$ 7	F

$$\begin{pmatrix} ACT\ Q \\ ACT\ MIX \\ STD\ P \end{pmatrix} \qquad \begin{pmatrix} ACT\ Q \\ STD\ MIX \\ STD\ P \end{pmatrix} \qquad \begin{pmatrix} STD\ Q \\ STD\ MIX \\ STD\ P \end{pmatrix}$$

MIX VARIANCE		YIELD VARIANCE	
A 40 × $5 = $200	51 2/3 × $5 = $258.33	50 × $5 = $250	
B 50 × $6 = $300	41 1/3 × $6 = $248.00	40 × $6 = $240	
C 65 × $3 = $195	62 × $3 = $186.00	60 × $3 = $180	
$695	$692.33	$670	

$2.67 UNF	$22.33 UNF

DIF: Moderate   OBJ: 7-6

10. Sparkle Company began business early in January using a standard costing for its single product. With standard capacity set at 10,000 standard productive hours per month, the following standard cost sheet was set up for one unit of product:

Direct material-5 pieces @ $2.00		$10.00
Direct labor (variable)-1 sph @ $3.00		3.00
Manufacturing overhead:		
Fixed-1 sph @ $3.00	$3.00	
Variable-1 sph @ $2.00	2.00	5.00

Fixed costs are incurred evenly throughout the year. The following unfavorable variances from standard costs were recorded during the first month of operations:

Material price	$ 0
Material usage	4,000
Labor rate	800
Labor efficiency	300
Overhead volume	6,000
Overhead budget (2 variance analysis)	1,000

Required: Determine the following: (a) fixed overhead budgeted for a year; (b) the number of units completed during January assuming no work in process at January 31; (c) debits made to the Work in Process account for direct material, direct labor, and manufacturing overhead; (d) number of pieces of material issued during January; (e) total of direct labor payroll recorded for January; (f) total of manufacturing overhead recorded in January.

ANS:

a. $3 \times 10,000 \times 12 = \$360,000$
    $6,000/\$3 = 2,000$ under $10,000 - 2,000 = 8,000$ units

b.

c. DM $= 8,000 \times \$10 = \$80,000$, DL $= 8,000 \times \$3 = \$24,000$,
    MOH $= 8,000 \times \$5 = \$40,000$

d. STD Q $= 40,000$ (X - 40,000) $\times \$2 = \$4,000$ unit, X $= 42,000$ pieces issued

e. $24,000 + \$800 + \$300 = \$25,100$

f. $40,000 + \$6,000 + \$1,000 = \$47,000$

DIF: Moderate   OBJ: 7-3

11. A firm producing one product has a budgeted overhead of $100,000, of which $20,000 is variable. The budgeted direct labor is 10,000 hours.

    Required: Fill in the blanks.

    a.

Production	Flexible Budget	Applied	Volume Variance
120%	_____	_____	_____
100%	_____	_____	_____
80%	_____	_____	_____
60%	_____	_____	_____

    b. What is the budget variance at the 80 percent level if the actual overhead incurred is $87,000?

    ANS:

    TOTAL COST EQUATION = $80,000 FIX + $\dfrac{20,000}{10,000}$ ($2) variable
    per unit

    a. A $= \$80,000 + (12,000 \times \$2) = \$104,000$
        B $= \$80,000 + (10,000 \times \$2) = \$100,000$
        C $= \$80,000 + (\ 8,000 \times \$2) = \$ \ 96,000$
        D $= \$80,000 + (\ 6,000 \times \$2) = \$ \ 92,000$

        APPLICATION RATE $=$ $\underline{\$100,000}$

$$10,000 \quad \text{UNITS} = \$10/\text{unit}$$

b.   BUDGET VARIANCE = ACTUAL FOH - BUDGETED FOH
$9,000 FAV = $87,000 - $96,000

DIF: Moderate   OBJ: 7-3

12. Bugs NoMore Company manufactures a product effective in controlling beetles. The company uses a standard cost system and a flexible budget. Standard cost of a gallon is as follows:

Direct material:
  2 quarts of A $14
  4 quarts of B   16
    Total direct material $30

Direct labor:
  2 hours   16
Manufacturing overhead   12
Total $58

The flexible budget system provides for $50,000 of fixed overhead at normal capacity of 10,000 direct labor hours. Variable overhead is projected at $1 per direct labor hour.

Actual results for the period indicated the following:

Production:	5,000 gallons	
Direct material:		
A	12,000 quarts purchased at a cost of $7.20/quart; 10,500 quarts used	
B	20,000 quarts purchased at a cost of $3.90/quart; 19,800 quarts used	
Direct labor:	9,800 hours worked at a cost of $79,380	
Overhead:	Fixed	$48,100
	Variable	21,000
	Total overhead	$69,100

Required:

1.   What is the application rate per direct labor hour, the total overhead cost equation, the standard quantity for each material, and the standard hours?
2.   Compute the following variances:
  a.   Total material price variance
  b.   Total material quantity variance
  c.   Labor rate variance
  d.   Labor efficiency variance
  e.   MOH volume variance
  f.   MOH efficiency variance
  g.   MOH spending variance, both fixed and variable

ANS:

1.   App rate = $6/DLH
   TOHC = $50,000 + $1/DLH
   Std O (A)   5,000 × 2 = 10,000
       (B)   5,000 × 4 = 20,000
   Std Hrs.   5,000 × 2 = 10,000

2. a. 1. ($7.20 - $7.00) × 12,000 = $2,400 U
         2. ($3.90 - $4.00) × 20,000 =   2,000 F
                                           $ 400 U

      b. 1. (10,500 - 10,000) × $7.00 = $3,500 U
         2. (19,800 - 20,000) × $4.00 =   800 F
                                            $2,700 U

      c. $79,380 - (9,800 × $8) = $980 U

      d. (9,800 - 10,000) × $8 = $1600 F

      e. (10,000 - 10,000) × $5 = 0

      f. (9,800 - 10,000) × $1 = $200 F

      g. Fix Spd $48,100 - $50,000 = $1,900 F
          Var Spd $21,000 - (9,800 × $1) = $11,200 U

   DIF: Moderate   OBJ: 7-3

13. Thompson Company operates a factory. One of its departments has three kinds of employees on its direct labor payroll, classified as pay grades A, B, and C. The employees work in 10-person crews in the following proportions:

Pay Grade	No. of Workers in Standard Crew	Standard Hourly Wage Rate	Standard Cost per Crew Hour
A	6	$4	$24
B	3	6	18
C	1	8	8
Total	10		$50

The work crews can't work short-handed. To keep a unit operating when one of the regular crew members is absent, the head of the department first tries to reassign one of the department's other workers from indirect labor operations.

If no one in the department is able to step in, plant management will pull maintenance department workers off their regular work, if possible, and assign them temporarily to the department. These maintenance workers are all classified as Grade D employees, with a standard wage rate of $10 an hour.

The following data relate to the operations of the department during the month of May:

1. Actual work time, 1,000 crew hours.

2. Actual direct labor hours:
    Grade A, 5,400 hours.
    Grade B, 3,200 hours.
    Grade C, 1,300 hours.
    Grade D,   100 hours.

3. Standard crew hours for actual output, 980.

Required: Compute labor rate, mix, and yield variances.

ANS:

$$\begin{pmatrix} \text{ACT HRS} \\ \text{ACT MIX} \\ \text{STD RATE} \end{pmatrix} \qquad \begin{pmatrix} \text{ACT HRS} \\ \text{STD MIX} \\ \text{STD RATE} \end{pmatrix} \qquad \begin{pmatrix} \text{STD HRS} \\ \text{STD MIX} \\ \text{STD RATE} \end{pmatrix}$$

	MIX VARIANCE		YIELD VARIANCE			
A	5,400 × $4 =	$21,600	6,000 × $4 =	$24,000	5,880 × $4 =	$23,520
B	3,200 × $6 =	19,200	3,000 × $6 =	18,000	2,940 × $6 =	17,640
C	1,300 × $8 =	10,400	1,000 × $8 =	8,000	980 × $8 =	7,840
D	100 × $10 =	1,000		$50,000		$49,000
		$52,200				

MIX VARIANCE   = $2,200 UNF
YIELD VARIANCE   = $1,000 UNF
RATE VARIANCE   = $ 800 UNF   ($53,000 - $52,200)

DIF: Moderate   OBJ: 7-6

14. Dulock Company manufactures a certain product by mixing three kinds of materials in large batches. The blendmaster has the responsibility for maintaining the quality of the product, and this often requires altering the proportions of the various ingredients. Standard costs are used to provide material control information. The standard material inputs per batch are:

	Quantity (pounds)	Price (per pound)	Standard Cost of Material
Material A	420	$0.06	$25.20
Material B	70	0.12	8.40
Material C	10	0.25	2.50
Total batch	500		$36.10

The finished product is packed in 50-pound boxes; the standard material cost of each box is, therefore, $3.61.

During January, the following materials were put in process:

Material A	181,000	lbs.
Material B	33,000	
Material C	6,000	
Total	220,000	lbs.

Inventories in process totaled 5,000 pounds at the beginning of the month and 8,000 pounds at the end of the month. It is assumed that these inventories consisted of materials in their standard proportions. Finished output during January amounted to 4,100 boxes.

Required: Compute the total material quantity variance for the month and break it down into mix and yield components.

ANS:
Material Quantity Variance:

A	(181,000 - 172,200) × $0.06 =	$	528	UNF
B	(33,000 - 28,700) × $0.12 =		516	UNF
C	(6,000 - 4,100) × $0.25 =		475	UNF
			$1,519	

$$\begin{pmatrix} ACT\,Q \\ ACT\,MIX \\ STD\,P \end{pmatrix} \quad \begin{pmatrix} ACT\,Q \\ STD\,MIX \\ STD\,P \end{pmatrix} \quad \begin{pmatrix} STD\,Q \\ STD\,MIX \\ STD\,P \end{pmatrix}$$

A	181,000 × $0.06 =	$10,860	184,800 × $0.06 =	$11,076	172,200 × $0.06 =	$10,332
B	33,000 × $0.12 =	3,960	30,800 × $0.12 =	3,696	28,700 × $0.12 =	3,444
C	6,000 × $0.25 =	1,500	4,400 × $0.25 =	1,100	4,100 × $0.25 =	1,025
		$16,320		$15,872		$14,801

MIX VARIANCE =	$	436 UNF
YIELD VARIANCE =	$1,083	UNF
Total	$1,519	UNF

DIF: Moderate   OBJ: 7-6