

Question 1 - CIA 1192 IV-21 - Manufacturing Input Variances - Materials and Labor

A manufacturer has the following direct materials standard for one of its products.

Direct materials: 3 pounds @ \$1.60/pound = \$4.80

The company records all inventory at standard cost. Data for the current period regarding the manufacturer's budgeted and actual production for the product as well as direct materials purchases and issues to production for manufacture of the product are presented as follows.

Budgeted production for the period: 8,000 units

Actual production for the period: 7,500 units

Direct materials purchases:

Pounds purchased: 25,000 pounds

Total cost: \$38,750

Direct materials issued in production: 23,000 pounds

The materials efficiency variance for the current period is

- A. \$800 unfavorable.
- B. \$1,600 favorable.
- C. \$775 unfavorable.
- D. \$3,200 favorable.

A. The quantity variance (also called the efficiency or usage variance) is calculated as: $(AQ - SQ) \times SP$ or (Actual Quantity – Standard Quantity for Actual Output) \times Standard Price. The actual quantity of material used was 23,000 lb. The standard quantity of material scheduled for actual output was 22,500 lb. (7,500 units of finished product \times 3 lb. of material needed to complete one unit of product). The standard price is \$1.60. The quantity variance is $(23,000 - 22,500) \times \$1.60 = \$800$ unfavorable. The quantity of material used for production was greater than the amount allowed for the production, which creates an unfavorable variance.

B.

The quantity variance (also called the efficiency or usage variance) is calculated as: $(AQ - SQ) \times SP$ or (Actual Quantity – Standard Quantity for Actual Output) \times Standard Price. This answer results from using the standard quantity of materials for the master budget production output of 8,000 units (8,000 \times 3 lbs. per unit, or 24,000 lbs.) instead of the standard quantity for the actual output. See the correct answer for a complete explanation.

C. The quantity variance (also called the efficiency or usage variance) is calculated as: $(AQ - SQ) \times SP$. This answer results from using the actual price of \$1.55 ($\$38,750$ total cost \div 25,000 lbs. purchased) instead of the standard price.

D. This is the difference between the actual quantity of materials used in production (23,000 lbs.) and the actual quantity of materials purchased (25,000 lbs.) times the standard price (\$1.60), which does not mean anything. See the correct answer for a complete explanation.

Question 2 - CMA 1294 3-25 - Manufacturing Input Variances - Materials and Labor

An unfavorable direct labor efficiency variance could be caused by a(n)

- A. Unfavorable variable overhead spending variance.
- B. Unfavorable materials usage variance.
- C. Unfavorable fixed overhead volume variance.
- D. Favorable variable overhead spending variance.

A. The variable overhead spending variance is calculated as follows: (Standard Application Rate – Actual Application Rate) \times Actual Quantity. There is no connection between the variable overhead spending variance and the direct

labor efficiency variance.

B.

The labor efficiency variance is calculated as follows: $(\text{Actual Hours} - \text{Standard Hours for Actual Output}) \times \text{Standard Rate}$. An unfavorable direct labor efficiency variance means that more hours were actually spent than the standard allowed for the actual output. This could happen due to an inefficiency on the part of employees, downtime, or poor quality of raw materials that required excessive rework.

The materials efficiency or usage variance is calculated as follows: $(\text{Actual Quantity} - \text{Standard Quantity for Actual Output}) \times \text{Standard Price}$. An unfavorable materials usage variance indicates that more materials were used than allowed for the actual level of output.

These two variances may be interrelated, as working on more materials than they were supposed to caused the workers to spend more time than they should have according to the standard for actual output.

C. The fixed overhead volume variance is the difference between the budgeted amount of fixed overhead and the amount of fixed overhead applied (standard rate \times standard input for the actual level of output). There is no connection between the fixed overhead volume variance and the direct labor efficiency variance.

D. The variable overhead spending variance is calculated as follows: $(\text{Actual Application Rate} - \text{Standard Application Rate}) \times \text{Actual Quantity}$. There is no connection between the variable overhead spending variance and the direct labor efficiency variance.

Question 3 - CMA 697 3-23 - Manufacturing Input Variances - Materials and Labor

The controller for Durham Skates is reviewing the production cost report for July. An analysis of direct materials costs reflects an unfavorable flexible budget variance of \$25. The plant manager believes this is excellent performance on a flexible budget for 5,000 units of direct materials. However, the production supervisor is not pleased with this result because he claims to have saved \$1,200 in materials cost on actual production using 4,900 units of direct materials. The standard materials cost is \$12 per unit. Actual materials used for the month amounted to \$60,025.

If the direct materials variance is investigated further, it will reflect a price variance of

- A. Zero.
- B. \$1,200 favorable.
- C. \$1,225 unfavorable.
- D. \$2,500 favorable.

A. The actual price is higher than the standard price, which gives us an unfavorable price variance. See the correct answer for a complete explanation.

B. The actual price is higher than the standard price, which gives us an unfavorable price variance. See the correct answer for a complete explanation.

C. The price variance is calculated as follows: $(\text{Actual Price} - \text{Standard Price}) \times \text{Actual Quantity}$. The actual materials price is \$12.25 ($\$60,025 \div 4,900$). The standard materials price is \$12.00 per unit. The actual quantity is 4,900 units of direct materials. Hence, the material price variance is $(\$12.25 - \$12.00) \times 4,900 = \$1,225$ unfavorable. The actual price is higher than the standard price, so the price variance is unfavorable.

D. The actual price is higher than the standard price, which gives us an unfavorable price variance. See the correct answer for a complete explanation.

Question 4 - CMA 1289 4-2 - Manufacturing Input Variances - Materials and Labor

An unfavorable direct labor efficiency variance could be caused by a(n)

- A. Favorable variable overhead spending variance.
- B. Favorable fixed overhead volume variance.
- C. Unfavorable material usage variance.
- D. Unfavorable variable overhead spending variance.

A. The variable overhead spending variance is the difference between the actual amount of variable overhead incurred and the standard amount of variable overhead allowed for the actual quantity of the VOH allocation base used for the actual output produced. There is no connection between this difference and the direct labor usage (efficiency) variance.

B. The fixed overhead volume variance is the difference between the budgeted amount of fixed overhead and the amount of fixed overhead applied (standard rate \times standard input for the actual level of output). There is no connection between this difference and the direct labor usage (efficiency) variance.

C.

An unfavorable direct labor efficiency variance means that more time was spent in production than budgeted. A number of reasons could cause this: poor performance of production employees, poor product design, waste, theft, poor material quality, etc.

An unfavorable material usage variance means that more material was spent to produce units of finished product. Poor material quality could cause an unfavorable material usage variance. The poor quality material could also require more time to be spent by production workers to perform their tasks. That is why an unfavorable direct labor efficiency variance could be caused by unfavorable material usage variance.

D. The variable overhead spending variance is the difference between the actual amount of variable overhead incurred and the standard amount of variable overhead allowed for the actual quantity of the VOH allocation base used for the actual output produced. There is no connection between this difference and the direct labor usage (efficiency) variance.

Question 5 - CMA Sample Q3-11 - Manufacturing Input Variances - Materials and Labor

Garland Company uses a standard cost system. The standard for each finished unit of product allows for 3 pounds of plastic at \$0.72 per pound. During December, Garland bought 4,500 pounds of plastic at \$0.75 per pound and used 4,100 pounds in the production of 1,300 finished units of product. What is the materials purchase price variance for the month of December?

- A. \$135 unfavorable.
- B. \$123 unfavorable.
- C. \$117 unfavorable.
- D. \$150 unfavorable.

A. The price variance is calculated as follows: (Actual Price – Standard Price) \times Actual Quantity. The purchase price variance is calculated using all of the units purchased, not just the units that are put into production. The purchase price variance is \$135 unfavorable [(\$0.75 – \$0.72) \times 4,500]. The actual price exceeds the standard, thus, the variance is unfavorable.

B. The price variance is calculated as follows: (Actual Price – Standard Price) \times Actual Quantity. The purchase price variance is calculated using all of the units purchased (4,500), not just the units that are put into production (4,100). See the correct answer for a complete explanation.

C. The price variance is calculated as follows: (Actual Price – Standard Price) \times Actual Quantity. The purchase price variance is calculated using all of the units purchased, not just the units that are put into production. See the correct answer for a complete explanation.

D. The price variance is calculated as follows: (Actual Price – Standard Price) \times Actual Quantity. The purchase price variance is calculated using all of the units purchased, not just the units that are put into production. See the correct

answer for a complete explanation.

Question 6 - CIA 594 III-74 - Manufacturing Input Variances - Materials and Labor

A company manufactures one product and has a standard cost system. In April the company had the following experience:

| | Direct Materials | Direct Labor |
|--|------------------|--------------|
| Actual \$/unit of input (lbs. & hrs.) | \$28 | \$18 |
| Standard price/unit of input | \$24 | \$20 |
| Standard inputs allowed per unit of output | 10 | 4 |
| Actual units of input | 190,000 | 78,000 |
| Actual units of output | 20,000 | 20,000 |

The direct labor rate variance for April is

- A. \$240,000 favorable.
- B. \$156,000 unfavorable.
- C. \$156,000 favorable.
- D. \$40,000 unfavorable.

A. This is the direct materials efficiency variance. However, the question asks for the direct labor rate variance. See the correct answer for a complete explanation.

B. The actual labor rate was less than the standard labor rate, which creates a favorable variance. See the correct answer for a complete explanation.

C. The labor rate variance is calculated as follows: (Actual Rate – Standard Rate) × Actual Hours (i.e., actual units of input). All the components of the formula are in the data given. The actual rate is \$18, and the standard rate is \$20. The actual hours are 78,000. Thus, the variance is (\$18 – \$20) × 78,000 = \$(156,000). The direct labor rate variance for April is favorable because the actual labor rate was less than the standard labor rate.

D.

The labor rate variance is calculated as follows: (Actual Rate – Standard Rate) × Actual Hours (i.e., actual units of input). An answer of \$40,000 results from using the formula (Standard Rate – Actual Rate) × Actual Units of Output.

Question 7 - CMA 1295 3-11 - Manufacturing Input Variances - Materials and Labor

In a standard cost system, the investigation of an unfavorable material usage variance should begin with the

- A. Production manager only.
- B. Production manager or the purchasing manager.
- C. Purchasing manager only.
- D. Plant controller only.

A. The purchasing department can also be involved in occurrence of this variance because the purchase of a lower quality material may lead to more wasted materials.

B. An unfavorable material usage variance means that more materials were consumed by production than had been budgeted. This can result from a number of reasons: poor production employees' performance, product design, waste, theft, and poor material quality, etc. Thus, the investigation of this variance should begin either with the production manager or the purchasing manager but should ultimately involve both.

- C. The production department can also be involved in occurrence of this variance.
- D. The plant controller is a high managerial level and this manager is not the person most responsible for an unfavorable materials usage variance.
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Question 8 - CIA 1191 IV-15 - Manufacturing Input Variances - Materials and Labor

The total budgeted direct labor cost of a company for the month was set at \$75,000 when 5,000 units were planned to be produced. The following standard cost, stated in terms of direct labor hours (DLH), was used to develop the budget for direct labor cost:

$$1.25 \text{ DLH} \times \$12.00/\text{DLH} = \$15.00/\text{unit produced}$$

The actual operating results for the month were as follows:

| | |
|----------------------------------|----------|
| Actual units produced | 5,200 |
| Actual direct labor hours worked | 6,600 |
| Actual direct labor cost | \$77,220 |

The direct labor efficiency variance for the month would be

- A. \$1,200 unfavorable.
- B. \$4,200 unfavorable.
- C. \$2,220 unfavorable.
- D. \$3,000 unfavorable.

A. The direct labor efficiency variance is calculated as follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. The standard hours for the actual output were 6,500 (1.25 DLH × 5,200 actual units produced). The standard rate is \$12. Thus, the direct labor efficiency variance is (6,600 – 6,500) × \$12/DLH = \$1,200 unfavorable. Since the actual hours were greater than the standard hours for the actual output, the variance is unfavorable.

B. The direct labor efficiency variance is calculated as follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. This incorrect answer of \$4,200 unfavorable results from using the standard hours for the initially planned output of 5,000 units or master budget figure (1.25 DLH × 5,000 = 6,250 DLH) instead of the standard hours allowed for the actual output. See the correct answer for a complete explanation.

C. This is the difference between actual costs and budgeted costs (master budget). This is not the direct labor efficiency variance. See the correct answer for a complete explanation.

D. The direct labor efficiency variance is calculated as follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. This incorrect answer results from using the standard hours for the actual output (1.25 DLH × 5,200 = 6,500 DLH) instead of the actual hours and the standard hours for the planned output (1.25 DLH × 5,000 = 6,250 DLH) instead of the standard hours for the actual output. See the correct answer for a complete explanation.

Question 9 - CMA 1293 3-24 - Manufacturing Input Variances - Materials and Labor

ChemKing uses a standard costing system in the manufacture of its single product. The 35,000 units of raw material in inventory were purchased for \$105,000, and two units of raw material are required to produce one unit of final product. In November, the company produced 12,000 units of product. The standard allowed for material was \$60,000, and there was an unfavorable quantity variance of \$2,500.

The materials price variance for the units used in November was

- A. \$12,500 unfavorable.
- B. \$2,500 unfavorable.
- C. \$6,000 unfavorable.
- D. \$12,000 unfavorable.

A.

The formula for calculating the materials price variance is $(AP - SP) \times AQ$. The actual price was $\$105,000 \div 35,000$ units, or $\$3.00$ per unit. The standard price is $\$2.50$ per unit of raw materials ($\$60,000 \div 12,000$ units $\div 2$ units of materials per unit produced). The Actual Quantity in the formula is the actual quantity of the raw materials that are used. It is not the actual quantity of product produced, nor is it the standard quantity of materials for the actual quantity produced.

So to calculate the price variance, we need to know how many units of materials were actually used in production, and the question does not tell us that. However, it does tell us that there was an unfavorable quantity variance. So to figure out how many units of materials were actually used, we first have to work out the quantity variance, which the question says is an unfavorable $\$2,500$, to solve for the AQ in that formula.

The quantity variance formula is $(AQ - SQ) \times SP$. Since the question tells us that the materials standard is two units of raw materials for each unit produced, we know that the standard quantity of materials for 12,000 units was 24,000 units. The actual quantity we do not know yet. The standard price was $\$2.50$ per unit of raw material ($\$60,000$ standard allowed $\div 12,000$ units produced $\div 2$ units of materials per unit produced). Therefore, our formula is:

$$(AQ - 24,000) \times 2.50 = 2,500$$

Solving for AQ, we get $AQ = 25,000$

Now, we can put the actual quantity of materials used into the materials price variance formula and calculate the materials price variance.

$$(AP - SP) \times AQ$$

$$(\$3.00 - \$2.50) \times 25,000 = \$12,500 \text{ Unfavorable}$$

B. \$2,500 Unfavorable is the quantity variance, which is given in the question.

C. This answer results from using the actual quantity of units produced as the AQ in the materials price variance formula, instead of the actual quantity of materials used. See the correct answer for a complete explanation.

D. This answer results from using the standard amount of materials for the actual quantity produced as the AQ in the materials price variance formula, instead of the actual quantity of materials used. See the correct answer for a complete explanation.

Question 10 - IMA 08-P2-233 - Manufacturing Input Variances - Materials and Labor

MinnOil performs oil changes and other minor maintenance services (e.g., tire pressure checks) for cars. The company advertises that all services are completed within 15 minutes for each service. On a recent Saturday, 160 cars were serviced resulting in the following labor variances: rate, \$19 unfavorable; efficiency, \$14 favorable. If MinnOil's standard labor rate is \$7 per hour, determine the actual wage rate per hour and the actual hours worked.

- A. Wage Rate \$7.45/hour, Hours Worked 42.00
- B. Wage Rate \$6.55/hour; Hours Worked 42.00
- C. Wage Rate \$6.67/hour, Hours Worked 42.71
- D. Wage Rate \$7.50/hour; Hours Worked 38.00

A. This answer results from solving the Quantity Variance formula for the variable AQ using a positive Quantity

Variance in the formula instead of a negative one. The Quantity (Efficiency) Variance is favorable. Since it is a cost, a favorable variance is represented by a negative amount. Therefore, the Quantity Variance used in the formula should be negative. See the correct answer for a complete explanation.

B. This answer results from two errors: (1) Solving the Quantity Variance formula for the variable AQ using a positive Quantity Variance in the formula instead of a negative one. The Quantity (Efficiency) Variance is favorable. Since it is a cost, a favorable variance is represented by a negative amount. Therefore, the Quantity Variance used in the formula should be negative. And (2) Solving the Price Variance formula for the variable AP using a negative Price Variance in the formula instead of a positive one. The Price (Rate) Variance is unfavorable. Since it is a cost, an unfavorable variance is represented by a positive amount. Therefore, the Price Variance used in the formula should be positive. See the correct answer for a complete explanation.

C. This answer is incorrect. Please see the correct answer for an explanation.

D.

This is an example of price and quantity variances applied to a service business. To answer this question, we must work out both the price (rate) variance and the quantity (efficiency) variance. The price variance formula is $(AP - SP) \times AQ = \text{Price Variance}$. The quantity variance formula is $(AQ - SQ) \times SP = \text{Quantity Variance}$. Since these are cost items, a negative variance is a favorable variance (actual is lower than standard) and a positive variance is an unfavorable one (actual is higher than standard).

The Standard Quantity (SQ) is the standard for the number of hours to service 160 cars. The standard is .25 hours per car multiplied by 160 cars, which is 40 hours.

The Actual Price (AP) is given as \$7 per hour.

The Price Variance is \$19 unfavorable.

The Quantity Variance is (\$14) favorable.

Whenever we have all of the values we need except one, we can set up a simple equation and solve for the missing variable. We have all of the values for the Quantity Variance formula except for AQ. So the first equation will be:

$$(AQ - 40) \times 7 = (14)$$

$$7AQ - 280 = (14)$$

$$7AQ = 266$$

AQ = 38, and this is the actual hours worked.

Now, we can take that value for AQ and use it in the Price Variance formula to solve for AP:

$$(AP - 7) \times 38 = 19$$

$$38AP - 266 = 19$$

$$38AP = 285$$

AP = 7.50, and this is the actual wage rate.

Question 11 - CIA 594 III-72 - Manufacturing Input Variances - Materials and Labor

A company manufactures one product and has a standard cost system. In April the company had the following experience:

| | Direct Materials | Direct Labor |
|--|------------------|--------------|
| Actual \$/unit of input (lbs. & hrs.) | \$28 | \$18 |
| Standard price/unit of input | \$24 | \$20 |
| Standard inputs allowed per unit of output | 10 | 4 |

| | | |
|------------------------|---------|--------|
| Actual units of input | 190,000 | 78,000 |
| Actual units of output | 20,000 | 20,000 |

The direct materials price variance for April is

- A. \$760,000 favorable.
- B. \$760,000 unfavorable.
- C. \$156,000 favorable.
- D. \$240,000 unfavorable.

A. The variance is unfavorable because the actual price (\$28) is higher than standard (\$24). See the correct answer for a complete explanation.

B. The direct materials price variance is calculated as follows: (Actual Price – Standard Price) × Actual Quantity. All the components of the formula are in the data given. The actual price is \$28. The standard price is \$24. The actual quantity is 190,000. Therefore, the direct materials price variance is $(\$28 - \$24) \times 190,000 = \$760,000$ unfavorable. Because the actual price was higher than the standard, the variance is unfavorable.

C. This is the direct labor rate variance. However, the question asks for the direct materials price variance. See the correct answer for a complete explanation.

D. This is the materials efficiency variance. However, the question asks for the materials price variance. See the correct answer for a complete explanation.

Question 12 - CMA 1290 3-5 - Manufacturing Input Variances - Materials and Labor

Franklin Glass Works' production budget for the year ended November 30 was based on 200,000 units. Each unit requires two standard hours of labor for completion. Total overhead was budgeted at \$900,000 for the year, and the fixed overhead rate was estimated to be \$3.00 per unit. Both fixed and variable overhead are assigned to the product on the basis of direct labor hours. The actual data for the year ended November 30 are presented as follows.

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

The standard hours allowed for actual production for the year ended November 30 total

- A. 396,000.
- B. 495,000.
- C. 400,000.
- D. 247,500.

A. Each unit requires two standard hours of labor for completion. The actual production in units is 198,000. Thus, the standard hours allowed for actual production for the year ended November 30 totals 396,000 (198,000 units × 2 hours per unit).

B. This answer is incorrect. See the correct answer for a complete explanation.

C. Each unit requires two standard hours of labor for completion. The actual production in units is 198,000. In the calculation we have to use the actual number of units (198,000), not the budgeted (200,000) number of units.

D. This answer is incorrect. See the correct answer for a complete explanation.

Question 13 - CMA 684 4-26 - Manufacturing Input Variances - Materials and Labor

Each unit of Product XK-46 requires three direct labor hours. Employee benefit costs are treated as direct labor costs. Data on direct labor are

- Number of direct employees: 25
- Weekly productive hours per employee: 35
- Estimated weekly wages per employee: \$245
- Employee benefits (related to weekly wages): 25%

The standard direct labor cost per unit of Product XK-46 is

- A. \$29.40.
- B. \$36.75.
- C. \$26.25.
- D. \$21.00.

A. This answer is incorrect. See the correct answer for a complete explanation.

B. There are 35 weekly productive hours per employee, not 25 as was used in this calculation.

C. The estimated weekly costs (wages plus employee benefits) per employee are \$306.25 [(\$245 + (\$245 × 25%))]. The hourly labor cost is \$8.75 (\$306.25 ÷ 35 hours per week per employee). Three direct labor hours are required to produce one unit of product XK-46. Thus, the unit labor cost is \$26.25 (\$8.75 × 3).

D. Employee benefit costs are treated as direct labor costs. We therefore need to include this amount in calculation of the standard direct labor cost per unit.

Question 14 - CMA 694 3-22 - Manufacturing Input Variances - Materials and Labor

Under a standard cost system, labor price variances are usually **not** attributable to

- A. Union contracts approved before the budgeting cycle.
- B. The assignment of different skill levels of workers than planned.
- C. The use of a single average standard rate.
- D. Labor rate predictions.

A. The labor price or rate variance is calculated as: (Actual Rate – Standard Rate) × Actual Hours. The only figure union contracts can influence is the actual labor rate. The standard rate is set by the budget at the beginning of the year. As union contracts are approved before the budgeting cycle begins, the information about potential changes in wages and salaries is already included in the budget and standards. Therefore, a union contract approved before the budgeting cycle cannot be the cause of a labor rate variance.

B. The assignment of different skill levels of workers than was planned in most cases will cause a labor price variances. The labor rate variance is calculated as: (Actual Rate – Standard Rate) × Actual Hours. When there is a difference between the rates of assigned (with lower or higher working skills) and planned workers, a labor rate variance will most likely occur.

C. If the standard labor rate was set using a single average standard rate, it may cause a labor rate variance. If the rate doesn't reflect the proportion of hours worked of each wage rate group of workers, a variance will result.

D. As with all future predictions, labor rate predictions can have inaccuracies. If the standard labor rate was set using these predicted numbers, it may cause a labor rate variance.

Question 15 - CMA 1295 3-25 - Manufacturing Input Variances - Materials and Labor

Which one of the following variances is most controllable by the production control supervisor?

- A. Material usage variance.
- B. Variable overhead spending variance.
- C. Fixed overhead budget variance.
- D. Material price variance.

A. The material usage variance is the difference between the actual material usage and the standard usage for this level of output, multiplied by the standard material price. This variance occurs during the production process and is therefore most controllable by the production control supervisor. There are a number of reasons that could cause this variance: poor production employees' performance, product design, waste, theft, and poor material quality, etc.

B.

The variable overhead spending variance is related to the difference between the actual variable overhead cost per unit (this is calculated as the actual overhead costs divided by the actual usage of the allocation base) and the standard application rate. It is the difference between the actual amount of variable overhead incurred and the standard amount of variable overhead allowed for the actual quantity of the variable overhead allocation base used for the actual output produced. The production control supervisor does not control this.

C. The fixed overhead budget variance cannot be controlled by the production control supervisor.

D. The purchasing department is the most responsible for the material price variance, not the production control supervisor.

Question 16 - CMA 695 3-24 - Manufacturing Input Variances - Materials and Labor

Blaster Inc., a manufacturer of portable radios, purchases the components from subcontractors to use to assemble into a complete radio. Each radio requires three units each of Part XBEZ52, which has a standard cost of \$1.45 per unit. During May, Blaster experienced the following with respect to Part XBEZ52.

| | Units |
|---------------------------|--------------|
| Purchases (\$18,000) | 12,000 |
| Consumed in manufacturing | 10,000 |
| Radios manufactured | 3,000 |

During May, Blaster Inc. incurred a materials efficiency variance of

- A. \$4,350 unfavorable.
- B. \$1,450 unfavorable.
- C. \$4,350 favorable.
- D. \$1,450 favorable.

A.

The materials efficiency variance is calculated as $(AQ - SQ) \times SP$. This answer results from using the quantity of units purchased in the formula instead of the quantity consumed in manufacturing.

B. The efficiency variance is calculated as $(AQ - SQ) \times SP$. The actual quantity is 10,000. The standard quantity is 9,000 (3 units of part XBEZ52 to produce one radio multiplied by 3,000 radios that were manufactured). The standard price is \$1.45 per part XBEZ52. Therefore, the materials efficiency variance is $(10,000 - 9,000) \times \$1.45 = \$1,450$ unfavorable.

C. The materials efficiency variance is unfavorable because the amount of XBEZ52 actually consumed in manufacturing was greater than the standard quantity. This answer is also incorrect because the quantity of units purchased was used in the formula instead of the quantity consumed in manufacturing.

D. The materials efficiency variance is unfavorable because the amount of XBEZ52 actually consumed in manufacturing was greater than the standard quantity.

Question 17 - CMA 687 4-18 - Manufacturing Input Variances - Materials and Labor

Baxter Corporation's master budget calls for the production of 5,000 units of product monthly. The master budget includes indirect labor of \$144,000 annually; Baxter considers indirect labor to be a variable cost. During the month of April, 4,500 units of product were produced, and indirect labor costs of \$10,100 were incurred. A performance report utilizing flexible budgeting would report a budget variance for indirect labor of

- A. \$1,900 unfavorable.
- B. \$1,900 favorable.
- C. \$700 favorable.
- D. \$700 unfavorable.

A. The variance is favorable as the actual amount of indirect labor is less than the flexible budget amount.

B. This is calculated using the budgeted amount of units of production (5,000) instead of the actual units production (4,500).

C. Since indirect labor is treated as a variable cost, the unit labor cost is \$2.40 ($\$144,000 \div (5,000 \times 12)$). The flexible budget amount of variable overhead (indirect labor) therefore equals \$10,800 ($\$2.40 \times 4,500$). The flexible budget variance is equal to the actual amount of variable overhead minus the flexible budget amount of variable overhead. This gives us a favorable variance of \$700 ($\$10,100 - \$10,800$).

D. The variance is favorable as the actual amount of indirect labor is less than flexible budget amount.

Question 18 - CIA 1192 IV-20 - Manufacturing Input Variances - Materials and Labor

A manufacturer has the following direct materials standard for one of its products.

Direct materials: 3 pounds @ \$1.60/pound = \$4.80

The company records all inventory at standard cost. Data for the current period regarding the manufacturer's budgeted and actual production for the product as well as direct materials purchases and issues to production for manufacture of the product are presented as follows.

Budgeted production for the period: 8,000 units

Actual production for the period: 7,500 units

Direct materials purchases:

Pounds purchased: 25,000 pounds

Total cost: \$38,750

Direct materials issued in production: 23,000 pounds

The direct materials purchase price variance for the current period is

- A. \$1,150 favorable.
- B. \$1,200 favorable.
- C. \$1,125 favorable.
- D. \$1,250 favorable.

A. This is the material price variance, not the purchase price variance. To calculate the purchase price variance we need to use the purchased quantity of material (25,000), not the quantity consumed by production (23,000).

B. This result is calculated using the standard quantity of materials, 24,000 pounds (3 lb. per unit of finished product and 8,000 units budgeted for the production). However, to calculate the purchase price variance, we need to use the purchased quantity of material (25,000 pounds). See the correct answer for a complete explanation.

C. This result is calculated using the quantity of materials allowed for the production, 22,500 pounds (3 lb. Per unit of finished product \times 7,500 units produced). However, to calculate the purchase price variance, we need to use the **purchased** quantity of material (25,000 pounds). See the correct answer for a complete explanation.

D. The purchase price variance is calculated as follows: $(AP - SP) \times AQ$, where AQ is the actual quantity purchased. The actual price for the pound of material is \$1.55 ($\$38,750 \div 25,000$). The standard price is \$1.60. The quantity purchased is 25,000. The direct materials purchase price variance is $(\$1.55 - \$1.60) \times 25,000 = \$1,250$ favorable. The variance is favorable because the actual price the materials were purchased for is less than the standard price.

Question 19 - CMA 1291 3-4 - Manufacturing Input Variances - Materials and Labor

Arrow Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Arrow has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|------------------------------|---------------------------|--------------------------|
| Direct materials | 8 pounds | \$1.80 per pound | \$14.40 |
| Direct labor | .25 hours | \$8.00 per hour | <u>2.00</u> |
| | | | \$16.40 |

During November, Arrow purchased 160,000 pounds of direct materials at a total cost of \$304,000. The total factory wages for November were \$42,000, 90% of which were for direct labor. Arrow manufactured 19,000 units of product during November using 142,500 pounds of direct materials and 5,000 direct labor hours.

The direct labor usage (efficiency) variance for November is

- A. \$2,200 favorable.
- B. \$2,000 favorable.
- C. \$2,000 unfavorable.
- D. \$1,800 unfavorable.

A. The labor efficiency variance is unfavorable as the actual hours used were greater than the hours allowed for the actual production. See the correct answer for a complete explanation.

B. The labor efficiency variance is unfavorable as the actual hours used were greater than the hours allowed for the actual production. See the correct answer for a complete explanation.

C. The labor efficiency variance is a quantity variance, calculated as follows: $(\text{Actual Hours} - \text{Standard Hours for Actual Output}) \times \text{Standard Rate}$. A total of 5,000 direct labor hours were actually used in production. We know that 19,000 units of product were manufactured during the period. The standard direct labor hours allowed for production of one unit is .25 hours. Therefore, the standard direct labor hours allowed for the production of the period is $19,000 \times .25 = 4,750$ hours. The standard rate is \$8. Therefore, the direct labor efficiency variance is $(5,000 - 4,750) \times \$8 = \$2,000$ unfavorable. Because the actual hours used were greater than the standard hours allowed for the actual output, the variance is positive and unfavorable.

D. The labor efficiency variance is $(\text{Actual Hours} - \text{Standard Hours for the Actual Output}) \times \text{Standard Rate}$. See the correct answer for a complete explanation.

Question 20 - CMA 1295 3-8 - Manufacturing Input Variances - Materials and Labor

The efficiency variance for either labor or materials can be divided into

- A. Yield variance and mix variance.
- B. Yield variance and price variance.
- C. Volume variance and mix variance.
- D. Spending variance and yield variance.

A. The total material quantity (efficiency) and labor efficiency variances can be broken down into two subvariances: the mix and the yield variances. The mix variance is the part of the quantity variance that results because the mix of material actually used was different from the mix that was supposed to have been used. (For example, including more corn and less wheat in the cereal than the standard called for). The yield variance results from the difference between the total quantity of the inputs that were actually used to produce the actual output and the total standard quantity that should have been used to produce the actual output.

B. The total material quantity (efficiency) and labor efficiency variances can be broken down into the two subvariances, but the price variance is not one of them.

C. The total material quantity (efficiency) and labor efficiency variances can be broken down into the two subvariances, but the volume variance is not one of them.

D. The total material quantity (efficiency) and labor efficiency variances can be broken down into the two subvariances, but the spending variance is not one of them.

Question 21 - CIA 597 3-18 - Manufacturing Input Variances - Materials and Labor

A company reported a significant material efficiency variance for the month of January. All of the following are possible explanations for this variance except:

- A. Cutbacks in preventive maintenance.
- B. Processing a large number of rush orders.
- C. Producing more units than planned for in the master budget.
- D. An inadequately trained and supervised labor force.

A. Poorly functioning machines will have more material waste and spoilage.

B. Rush orders disrupt the manufacturing process by interfering with normal work routines, practices, and procedures. These disruptions will adversely affect each of the manufacturing processes, including the efficient use of material, labor, and overhead.

C. Producing more units than planned in the master budget will not affect the efficiency of the materials used for each unit.

D. An inadequately trained and supervised labor force will have more material waste and spoilage than an adequately trained and supervised labor force.

Question 22 - CIA 594 III-73 - Manufacturing Input Variances - Materials and Labor

A company manufactures one product and has a standard cost system. In April the company had the following experience:

| | Direct Materials | Direct Labor |
|--|------------------|--------------|
| Actual \$/unit of input (lbs. & hrs.) | \$28 | \$18 |
| Standard price/unit of input | \$24 | \$20 |
| Standard inputs allowed per unit of output | 10 | 4 |

| | | |
|------------------------|---------|--------|
| Actual units of input | 190,000 | 78,000 |
| Actual units of output | 20,000 | 20,000 |

The direct materials efficiency variance for April is

- A. \$156,000 favorable.
- B. \$760,000 unfavorable.
- C. \$240,000 unfavorable.
- D. \$240,000 favorable.

A. This is the direct labor rate variance. The question asks for the direct materials efficiency variance. See the correct answer for a complete explanation.

B. This is the direct materials price variance. However, the question asks for the direct materials efficiency variance. See the correct answer for a complete explanation.

C. The direct materials efficiency variance is favorable because the actual quantity used in production is less than the standard quantity allowed for the actual output. See the correct answer for a complete explanation.

D. The quantity variance (also called the efficiency or usage variance) is calculated as: (Actual Quantity – Standard Quantity for Actual Output) × Standard Price. The actual quantity is 190,000. The standard quantity allowed for the output of 20,000 units of product is 200,000 lb. (20,000 × 10 lb. standard quantity of material per unit of finished product). The standard price is \$24. The direct materials efficiency variance is (190,000 – 200,000) × \$24 = \$(240,000) favorable. The variance is favorable because the actual quantity used in production is less than the standard quantity allowed for the actual output.

Question 23 - CMA 692 3-18 - Manufacturing Input Variances - Materials and Labor

Jackson Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Jackson has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|----------------------|-------------------|------------------|
| Direct materials | 5 pounds | \$3.60/pound | \$18.00 |
| Direct labor | 1.25 hours | 12.00/hour | <u>15.00</u> |
| | | | \$33.00 |

During May, Jackson purchased 125,000 pounds of direct materials at a total cost of \$475,000. The total factory wages for May were \$364,000, 90% of which were for direct labor. Jackson manufactured 22,000 units of product during May using 108,000 pounds of direct materials and 28,000 direct labor hours.

The purchase price variance for the direct materials acquired by Jackson Industries during May is

- A. \$28,000 favorable.
- B. \$21,600 unfavorable.
- C. \$21,600 favorable.
- D. \$25,000 unfavorable.

A.

The variance is unfavorable because the actual price – \$3.80 per pound ($\$475,000 \div 125,000$) – was greater than the standard price of \$3.60 per pound.

B. The formula for the price variance is $(AP - SP) \times AQ$. The actual price is \$3.80 per pound. ($\$475,000 \div 125,000$). The standard price is \$3.60 per pound. This answer results from using the quantity consumed by production (108,000 lb.) as the Actual Quantity (AQ) in the formula. However, the question asks for the **purchase** price variance. Therefore, we need to use the actual quantity purchased in the formula (125,000 lb.), not the quantity

consumed by production.

C. The formula for the price variance is $(AP - SP) \times AQ$. The actual price is \$3.80 per pound. $(\$475,000 \div 125,000)$. The standard price is \$3.60 per pound. This answer results from using the quantity consumed by production (108,000 lb.) as the Actual Quantity (AQ) in the formula. However, the question asks for the **purchase** price variance. Therefore, we need to use the actual quantity purchased in the formula (125,000 lb.), not the quantity consumed by production. Furthermore, the variance is positive. A positive variance is unfavorable for a cost item because it means the actual cost was greater than the planned cost.

D. The price variance is $(AP - SP) \times AQ$. The actual price is \$3.80 per pound $(\$475,000 \div 125,000)$. The standard price is \$3.60 per pound. The actual quantity purchased is 125,000 pounds. Note that we use the actual quantity purchased in the formula because we need to determine the purchase price variance. The purchase price variance is $(\$3.80 - \$3.60) \times 125,000 = \$25,000$ unfavorable. Since the actual purchase price was higher than the standard price, the variance is positive. A positive variance is unfavorable for a cost item because it means the actual cost was greater than the planned cost.

Question 24 - CMA 1294 3-24 - Manufacturing Input Variances - Materials and Labor

Tower Company planned to produce 3,000 units of its single product, Titactium, during November. The standard specifications for one unit of Titactium include 6 pounds of materials at \$.30 per pound. Actual production in November was 3,100 units of Titactium. The accountant computed a favorable materials purchase price variance of \$380 and an unfavorable materials quantity variance of \$120. Based on these variances, one could conclude that

- A. The actual usage of materials was less than the standard allowed.
- B. The actual cost of materials was less than the standard cost.
- C. More materials were purchased than were used.
- D. More materials were used than were purchased.

A. An unfavorable materials quantity variance of \$120 indicates that more materials were used than the standard allowed, not less.

B.

A favorable materials purchase price variance of \$380 indicates that the actual price was less than the standard price. We also can prove it by using the price variance formula to calculate the actual price. The price variance is calculated as follows: $(\text{Actual Price} - \text{Standard Price}) \times \text{Actual Quantity}$. The standard specifications for one unit of Titactium include 6 pounds of materials at \$.30 per pound. Actual production was 3,100 units of Titactium.

$$((AP * 6) - (.30 \times 6)) \times 3,100 = (380)$$

$$(6AP - 1.80) \times 3,100 = (380)$$

$$18,600AP - 5,580 = (380)$$

$$18,600AP = 5,200$$

$$AP = \$.28$$

The standard price was \$.30, so the actual price of \$.28 was lower than the standard price.

C. A difference between the quantity of materials purchased and used has nothing to do with a favorable materials purchase price variance of \$380 and an unfavorable materials quantity variance of \$120. The materials efficiency variance is the difference between the actual quantity of material used and the standard quantity of material allowed for the actual output, multiplied by the standard price. The materials purchase price variance uses the actual quantity of materials **purchased** instead of the quantity of materials **used**.

D. A difference between the quantity of materials purchased and used has nothing to do with a favorable materials purchase price variance of \$380 and an unfavorable materials quantity variance of \$120. The materials efficiency variance is the difference between the actual quantity of material used and the standard quantity of materials allowed multiplied by the standard price. The materials purchase price variance uses the actual quantity of materials **purchased** instead of the quantity of materials **used**.

Question 25 - CMA 696 3-23 - Manufacturing Input Variances - Materials and Labor

Ardmore Enterprises uses a standard cost system in its small appliance division. The standard cost of manufacturing one unit of Zeb is as follows:

| | |
|--|-----------|
| Materials - 60 pounds at \$1.50 per pound | \$ 90 |
| Labor - 3 hours at \$12 per hour | 36 |
| Factory overhead - 3 hours at \$8 per hour | <u>24</u> |
| Total standard cost per unit | \$150 |

The budgeted variable factory overhead rate is \$3 per labor hour, and the budgeted fixed factory overhead is \$27,000 per month. During May, Ardmore produced 1,650 units of Zeb compared with a normal capacity of 1,800 units. The actual cost per unit was as follows:

| | |
|--|--------------|
| Materials (purchased and used) - 58 pounds at \$1.65 per pound | \$ 95.70 |
| Labor - 3.1 hours at \$12 per hour | 37.20 |
| Factory overhead - \$39,930 per 1,650 units | <u>24.20</u> |
| Total actual cost per unit | \$157.10 |

The materials price variance for May is

- A. \$14,355 unfavorable.
- B. \$14,355 favorable.
- C. \$14,850 favorable.
- D. \$14,850 unfavorable.

A. The price variance is calculated as follows: (Actual Price – Standard Price) × Actual Quantity. The actual price was \$1.65 per pound and the standard price was \$1.50 per pound. The actual quantity used was 95,700 pounds (1,650 units produced × 58 pounds per unit). Putting these numbers into the formula, we get (\$1.65 – \$1.50) × 95,700 = \$14,355 unfavorable.

B. The variance is unfavorable, as the actual price per pound of material was greater than the standard price. See the correct answer for a complete explanation.

C. The variance is unfavorable as the actual price per pound of material was greater than the standard price. In addition, this answer is incorrect because the standard quantity was used in the variance formula instead of the actual quantity. See the correct answer for a complete explanation.

D. The price variance is calculated as follows: (Actual Price – Standard Price) × Actual Quantity. This incorrect answer results from using the standard quantity instead of the actual quantity. See the correct answer for a complete explanation.

Question 26 - CMA 1293 3-23 - Manufacturing Input Variances - Materials and Labor

ChemKing uses a standard costing system in the manufacture of its single product. The 35,000 units of raw material in inventory were purchased for \$105,000, and two units of raw material are required to produce one unit of final product. In November, the company produced 12,000 units of product. The standard allowed for material was \$60,000, and there was an unfavorable quantity variance of \$2,500.

The units of material used to produce November output totaled

- A. 23,000 units.
- B. 12,000 units.
- C. 12,500 units.
- D. 25,000 units.

A. This answer is based on the assumption that the materials quantity variance was favorable. It was, in fact, unfavorable.

B. 12,000 is a number of units of finished product produced.

C. This answer is based on the assumption that only one unit of raw material is required to produce one unit of finished product. In fact, two units of raw material are required.

D.

In this question, we need to solve the materials quantity variance formula for AQ. The variance formula is $(AQ - SQ) \times SP$. SQ can be calculated because the company produced 12,000 units, and two units of raw materials are required for each unit of output. Therefore, the standard quantity was 24,000 units. The standard price per unit of raw material can also be calculated, because the standard cost allowed for the actual output was \$60,000. Since the standard quantity was 24,000 units, the standard price was $\$60,000 \div 24,000$, or \$2.50. We are given the quantity variance as \$2,500 unfavorable. Therefore, the formula is:

$$(AQ - 24,000) \times \$2.50 = \$2,500.$$

$$2.5AQ - 60,000 = 2,500$$

$$2.5AQ = 62,500$$

$$AQ = 25,000$$

We also could have solved this in the following manner: because each unit cost \$2.50 and ChemKing was \$2,500 over budget, the company must have used 1,000 units too many.

Question 27 - CIA 582 IV-22 - Manufacturing Input Variances - Materials and Labor

Which of the following is **least** likely to cause an unfavorable materials quantity (usage) variance?

- A. Scheduling of substantial overtime.
- B. Machinery that has not been maintained properly.
- C. Materials that do not meet specifications.
- D. Labor that possesses skills equal to those required by the standards.

A. An unfavorable materials quantity (usage) variance means that more materials were consumed by production than was scheduled by the standard. This can happen due to the number of reasons: poor worker performance, spoilage, shrinkage, theft, design of the product, poor quality of materials, machine downtime, etc. Substantial overtime may affect the performance of workers and be the cause of a materials efficiency variance.

B. An unfavorable materials quantity (usage) variance means that more materials were consumed by production than was scheduled by the standard. This can happen due to the number of reasons: poor worker performance, spoilage, shrinkage, theft, design of the product, poor quality of materials, machine downtime, etc. Thus, machinery that has not been maintained properly may be the cause of a materials efficiency variance.

C. An unfavorable materials quantity (usage) variance means that more materials were consumed by production than was scheduled by the standard. This can happen due to the number of reasons: poor worker performance, spoilage, shrinkage, theft, design of the product, poor quality of materials, machine downtime, etc. Thus, materials that do not meet specifications may be the cause of a materials efficiency variance.

D. An unfavorable materials quantity (usage) variance means that more materials were consumed by production than was scheduled by the standard. This can happen due to the number of reasons: poor worker performance, spoilage, shrinkage, theft, design of the product, poor quality of materials, machine downtime, etc. Labor with skills equal to those required by the standards is most likely not a cause of a materials efficiency variance, because worker performance should be adequate.

Question 28 - CMA 692 3-17 - Manufacturing Input Variances - Materials and Labor

An organization that specializes in reviewing and editing technical magazine articles sets the following standards for evaluating the performance of the professional staff:

- Annual budgeted fixed costs for normal capacity level of 10,000 articles reviewed and edited: \$600,000
- Standard professional hours per 10 articles: 200 hours
- Flexible budget of standard labor costs to process 10,000 articles: \$10,000,000

The following data apply to the 9,500 articles that were actually reviewed and edited during the current year:

- Total hours used by professional staff: 192,000 hours
- Flexible costs: \$9,120,000
- Total cost: 9,738,000

The labor efficiency variance for the year is

- A. \$100,000 unfavorable.
- B. \$500,000 favorable.
- C. \$238,000 unfavorable.
- D. \$380,000 favorable.

A. The labor efficiency variance is calculated as follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. Actual hours are given as 192,000. The standard hours for the actual output are 190,000 (20 hours per one article × 9,500 articles that were actually reviewed and edited). The standard rate is \$1,000 per article (\$10,000,000 ÷ 10,000) and \$50 per labor hour (\$1,000 ÷ 20). Putting all of this into the formula, the labor efficiency variance is (192,000 – 190,000) × \$50 = \$100,000 unfavorable.

B.

The labor efficiency variance is calculated as follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. There are two mistakes in this variance calculation.

One, the standard hours for the actual output was used in place of the actual hours. And two, the number of hours in the fixed budget was used in place of the standard hours for the actual output. See the correct answer for a complete explanation.

C. This is the difference between the standard labor costs and total actual costs, which does not mean anything.

D. This answer is incorrect. See the correct answer for a complete explanation.

Question 29 - CMA 1294 3-29 - Manufacturing Input Variances - Materials and Labor

Water Control Inc. manufactures water pumps and uses a standard cost system. The standard factory overhead costs per water pump are based on direct labor hours and are as follows:

Variable overhead (4 hours at \$8/hour) - \$32

Fixed overhead (4 hours at \$5*/hour) - \$20

Total overhead cost per unit - \$52

* Based on a capacity of 100,000 direct labor hours per month.

The following additional information is available for the month of November:

22,000 pumps were produced although 25,000 had been scheduled for production.
94,000 direct labor hours were worked at a total cost of \$940,000.
The standard direct labor rate is \$9 per hour.
The standard direct labor time per unit is 4 hours.
Variable overhead costs were \$740,000.
Fixed overhead costs were \$540,000.

The direct labor price variance for November was

- A. \$148,000 unfavorable.
- B. \$60,000 favorable.
- C. \$54,000 unfavorable.
- D. \$94,000 unfavorable.

- A. This is the total direct labor variance. See the correct answer for a complete explanation.
- B. This answer is incorrect. See the correct answer for a complete explanation.
- C. This is the direct labor efficiency variance. See the correct answer for a complete explanation.

D. The labor rate (price) variance is calculated as: (Actual Rate – Standard Rate) × Actual Hours. The actual rate is \$10 (\$940,000 ÷ 94,000), the standard rate is \$9, and 94,000 hours were actually worked during the period. So, the labor price variance was (\$10 – \$9) × 94,000 = \$94,000 unfavorable. The variance was unfavorable because the actual rate was greater than the standard rate, and this is a cost item.

Question 30 - CIA 1189 IV-18 - Manufacturing Input Variances - Materials and Labor

One of the items produced by a manufacturer of lawn and garden tools is a chain saw. The direct labor standard for assembling and testing a chain saw is 2.5 hours at \$8 per hour. Budgeted production for October was 1,200 units. Actual production during the month was 1,000 units, and direct labor cost was \$27,840 for 3,200 hours. Using a two-variance system, what is the direct labor efficiency variance?

- A. \$5,600 unfavorable.
- B. \$5,600 favorable.
- C. \$6,090 favorable.
- D. \$2,240 unfavorable.

A. The labor efficiency variance is calculated as: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. Actual hours are 3,200. The standard hours allowed for actual output are 2,500 hr. (2.5 hours per unit × 1000 units actually produced). The standard rate is \$8. Therefore, the direct labor efficiency variance is: (3,200 – 2,500) × \$8 = \$5,600 unfavorable. The hours spent on production were greater than the hours allowed for the actual level of production, which gave us an unfavorable labor efficiency variance.

- B. The hours spent on production were greater than the hours allowed for the actual level of production, which creates an unfavorable labor efficiency variance.
 - C. The labor efficiency variance is calculated as: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. This answer results from using the actual rate instead of the standard rate. In addition, the variance is unfavorable because the actual hours used were greater than the standard hours for the actual output.
 - D. This is the labor rate variance. The question asks for the labor efficiency variance. See the correct answer for a complete explanation.
-

Question 31 - CMA 1289 4-4 - Manufacturing Input Variances - Materials and Labor

A favorable material price variance coupled with an unfavorable material usage variance would most likely result from

- A. Labor mix problems.
- B. The purchase and use of lower than standard quality material.
- C. The purchase and use of higher than standard quality material.
- D. Labor efficiency problems.

A. An unfavorable material usage variance could be caused by labor mix problems. However, a favorable material price variance does not relate to such problems.

B. A favorable material price variance means that the price of materials consumed by production was lower than budgeted. An unfavorable material usage variance means that the quantity of materials used by production was greater than the standard quantity. Both variances could be caused by the purchase and use of lower than standard quality material.

C. A favorable material price variance means that the price of materials consumed by production was lower than budgeted. However, an unfavorable material usage variance means that the quantity of materials used in production was greater than the standard quantity.

D. An unfavorable material usage variance could be caused by labor efficiency problems. However, a favorable material price variance does not relate to such problems.

Question 32 - CMA 692 3-19 - Manufacturing Input Variances - Materials and Labor

Jackson Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Jackson has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|------------------------------|---------------------------|--------------------------|
| Direct materials | 5 pounds | \$3.60/pound | \$18.00 |
| Direct labor | 1.25 hours | \$12.00/hour | <u>15.00</u> |
| | | | \$33.00 |

During May, Jackson purchased 125,000 pounds of direct materials at a total cost of \$475,000. The total factory wages for May were \$364,000, 90% of which were for direct labor. Jackson manufactured 22,000 units of product during May using 108,000 pounds of direct materials and 28,000 direct labor hours.

The direct materials usage (quantity) variance for May is

- A. \$7,600 favorable.
- B. \$7,200 unfavorable.
- C. \$7,200 favorable.
- D. \$5,850 unfavorable.

A. The material usage variance is calculated as: $(\text{Actual Quantity} - \text{Standard Quantity for Actual Output}) \times \text{Standard Price}$. This answer results from using the actual price paid for the materials during the period, not the standard price.

B. Since the actual quantity used is less than the standard quantity budgeted for the current level of production, the variance is favorable. See the correct answer for a complete explanation.

C. The material usage variance is calculated as: $(\text{Actual Quantity} - \text{Standard Quantity for Actual Output}) \times \text{Standard Price}$. The actual quantity is 108,000 pounds. The standard quantity allowed for the actual output is 110,000 pounds (5 pounds of direct materials per unit of product times 22,000 units produced). The standard price is \$3.60 per pound. The material usage variance is $(108,000 - 110,000) \times \$3.60 = \$(7,200)$ favorable. The variance is favorable because the actual quantity used is less than the standard quantity for

the actual output, and this is a cost variance.

D. Since the actual quantity used is less than the standard quantity budgeted for the current level of production, the variance is favorable. See the correct answer for a complete explanation.

Question 33 - CMA 1293 3-22 - Manufacturing Input Variances - Materials and Labor

ChemKing uses a standard costing system in the manufacture of its single product. The 35,000 units of raw material in inventory were purchased for \$105,000, and two units of raw material are required to produce one unit of final product. In November, the company produced 12,000 units of product. The standard allowed for material was \$60,000, and there was an unfavorable quantity variance of \$2,500.

ChemKing's standard price for one unit of material is

- A. \$3.00.
- B. \$2.00.
- C. \$2.50.
- D. \$5.00.

A. This is the actual price of raw materials ($\$105,000 \div 35,000 = \3), not the standard price. See the correct answer for a complete explanation.

B. This answer is incorrect. See the correct answer for a complete explanation.

C. The standard price is calculated using budgeted amounts. ChemKing expected to make 12,000 units, which would require 24,000 units of raw material. Since the budgeted cost of these raw material units was \$60,000, the standard cost per unit is \$2.50 ($\$60,000 \div 24,000$).

D. This is the standard direct materials cost per unit of product. However, the question asks for the standard cost per unit of direct material. See the correct answer for a complete explanation.

Question 34 - CMA 696 3-22 - Manufacturing Input Variances - Materials and Labor

Ardmore Enterprises uses a standard cost system in its small appliance division. The standard cost of manufacturing one unit of Zeb is as follows:

| | |
|--|-----------|
| Materials - 60 pounds at \$1.50 per pound | \$ 90 |
| Labor - 3 hours at \$12 per hour | 36 |
| Factory overhead - 3 hours at \$8 per hour | <u>24</u> |
| Total standard cost per unit | \$150 |

The budgeted variable factory overhead rate is \$3 per labor hour, and the budgeted fixed factory overhead is \$27,000 per month. During May, Ardmore produced 1,650 units of Zeb compared with a normal capacity of 1,800 units. The actual cost per unit was as follows:

| | |
|--|--------------|
| Materials (purchased and used) - 58 pounds at \$1.65 per pound | \$ 95.70 |
| Labor - 3.1 hours at \$12 per hour | 37.20 |
| Factory overhead - \$39,930 per 1,650 units | <u>24.20</u> |
| Total actual cost per unit | \$157.10 |

The total materials quantity variance for May is

- A. \$14,355 unfavorable.
- B. \$4,950 favorable.

- C. \$4,950 unfavorable.
- D. \$14,355 favorable.

A. This is the material price variance. See the correct answer for a complete explanation.

B. The quantity variance (also called the efficiency or usage variance) is calculated as: (Actual Quantity – Standard Quantity for Actual Output) × Standard Price. The actual quantity of material used was 58 lb. per unit of finished product or 95,700 units in total (1,650 × 58 lb.). The standard quantity to produce 1,650 units equals 99,000 units (1,650 × 60 lb.). The standard price is \$1.50. Therefore, the quantity variance is (95,700 – 99,000) × \$1.50 = \$(4,950) favorable. The actual quantity used was less than the standard quantity for the actual output, which means that the variance is favorable.

C. The quantity variance is favorable because the quantity of material actually used was less than the standard quantity for the actual output. See the correct answer for a complete explanation.

D. The actual quantity of material used (95,700) was less than the standard quantity (99,000). This means that variance is favorable. See the correct answer for a complete explanation.

Question 35 - CMA 692 3-21 - Manufacturing Input Variances - Materials and Labor

Jackson Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Jackson has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|-------------------|----------------|---------------|
| Direct materials | 5 pounds | \$3.60/pound | \$18.00 |
| Direct labor | 1.25 hours | \$12.00/hour | <u>15.00</u> |
| | | | \$33.00 |

During May, Jackson purchased 125,000 pounds of direct materials at a total cost of \$475,000. The total factory wages for May were \$364,000, 90% of which were for direct labor. Jackson manufactured 22,000 units of product during May using 108,000 pounds of direct materials and 28,000 direct labor hours.

The direct labor usage (efficiency) variance for May is

- A. \$5,850 favorable.
- B. \$5,850 unfavorable.
- C. \$6,000 favorable.
- D. \$6,000 unfavorable.

A. The actual hours exceed the standard amount, which means the variance is unfavorable. See the correct answer for a complete explanation.

B. The labor efficiency variance is calculated as: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. This answer results from multiplying by the actual rate (\$11.70) instead of the standard rate.

C. The actual hours exceed the standard amount, which means the variance is unfavorable. See the correct answer for a complete explanation.

D. The direct labor efficiency variance is calculated as: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. Actual hours is 28,000. The standard hours allowed for the actual level of output is 27,500 hours (1.25 hours per unit × 22,000 units produced). The standard labor rate is \$12. Therefore, the direct labor efficiency variance is (28,000 – 27,500) × \$12 = \$6,000 unfavorable. The variance is unfavorable because the actual hours exceed the standard hours, and this is a cost variance.

Question 36 - CMA 1291 3-1 - Manufacturing Input Variances - Materials and Labor

Arrow Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Arrow has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|------------------------------|---------------------------|--------------------------|
| Direct materials | 8 pounds | \$1.80 per pound | \$14.40 |
| Direct labor | .25 hours | \$8.00 per hour | <u>2.00</u> |
| | | | \$16.40 |

During November, Arrow purchased 160,000 pounds of direct materials at a total cost of \$304,000. The total factory wages for November were \$42,000, 90% of which were for direct labor. Arrow manufactured 19,000 units of product during November using 142,500 pounds of direct materials and 5,000 direct labor hours.

The direct materials purchase price variance for November is

- A. \$14,250 unfavorable.
- B. \$16,000 unfavorable.
- C. \$14,250 favorable.
- D. \$16,000 favorable.

A. In the calculation of the materials **purchase** price variance we use the amount of materials **purchased** (160,000), not the amount consumed by production (142,500). See the correct answer for a complete explanation.

B.

The price variance is calculated as follows: $(AP - SP) \times AQ$. The actual price is \$1.90 per pound ($\$304,000 \div 160,000$). The standard price is \$1.80 per pound. Since the question asks for the direct materials purchase price variance, we use the amount of materials actually purchased (160,000 pounds) instead of the amount actually consumed by production (142,500 pounds) as the actual quantity. Thus, the purchase price variance is $(\$1.90 - \$1.80) \times 160,000 = \$16,000$ unfavorable. The variance is unfavorable because the actual price was greater than the standard price.

C.

The price variance is calculated as follows: $(AP - SP) * AQ$. This answer is incorrect for two reasons. (1) In the calculation of the materials **purchase** price variance, we use the amount of materials **purchased**, not consumed by production. This answer uses the amount consumed. (2) The actual price is greater than the standard price, so the variance is unfavorable. See the correct answer for a complete explanation.

D. The variance is unfavorable because the actual price is higher than the standard price. See the correct answer for a complete explanation.

Question 37 - CMA 1294 3-30 - Manufacturing Input Variances - Materials and Labor

Water Control Inc. manufactures water pumps and uses a standard cost system. The standard factory overhead costs per water pump are based on direct labor hours and are as follows:

- Variable overhead (4 hours at \$8/hour) - \$32
- Fixed overhead (4 hours at \$5*/hour) - \$20
- Total overhead cost per unit - \$52
- * Based on a capacity of 100,000 direct labor hours per month.

The following additional information is available for the month of November:

22,000 pumps were produced although 25,000 had been scheduled for production.
94,000 direct labor hours were worked at a total cost of \$940,000.

The standard direct labor rate is \$9 per hour.
 The standard direct labor time per unit is 4 hours.
 Variable overhead costs were \$740,000.
 Fixed overhead costs were \$540,000.

The direct labor efficiency variance for November was

- A. \$120,000 favorable.
- B. \$108,000 favorable.
- C. \$54,000 unfavorable.
- D. \$60,000 favorable.

A.

The labor efficiency variance is calculated follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. There are three mistakes made to get this answer.

First, the actual labor rate (\$10) is used instead of the standard rate of \$9. Second, the standard hours (88,000) is used instead of actual hours (94,000). Third, the capacity hours (100,000) is used instead of standard hours (88,000). See the correct answer for a complete explanation.

B. This is the difference between the capacity hours (100,000) and the standard hours (88,000), multiplied by the standard rate. However, in the direct labor efficiency variance, we need to use actual hours (94,000) instead of capacity hours (100,000). Furthermore, the actual hours used was greater than the standard hours for the actual output, and so the variance is unfavorable. See the correct answer for a complete explanation.

C. The labor efficiency variance is calculated follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. The actual hours worked are 94,000, and the standard hours for the actual output are 88,000 (4 hours per unit multiplied by 22,000 units produced). The standard labor hourly rate is \$9. The labor efficiency variance is (94,000 – 88,000) × \$9 = 54,000 unfavorable. The variance is unfavorable (positive) because the actual hours were greater than the standard hours for the actual output, and this is a cost variance.

D.

The labor efficiency variance is calculated follows: (Actual Hours – Standard Hours for Actual Output) × Standard Rate. There were two mistakes made to get this result.

First the actual labor rate (\$10) is used instead of the standard rate of \$9. Second, the capacity hours (100,000) is used instead of standard hours for the actual output (88,000). See the correct answer for a complete explanation.

Question 38 - CMA 692 3-20 - Manufacturing Input Variances - Materials and Labor

Jackson Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Jackson has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|------------------------------|---------------------------|--------------------------|
| Direct materials | 5 pounds | \$3.60/pound | \$18.00 |
| Direct labor | 1.25 hours | \$12.00/hour | <u>15.00</u> |
| | | | \$33.00 |

During May, Jackson purchased 125,000 pounds of direct materials at a total cost of \$475,000. The total factory wages for May were \$364,000, 90% of which were for direct labor. Jackson manufactured 22,000 units of product during May using 108,000 pounds of direct materials and 28,000 direct labor hours. The direct labor price (rate) variance for May is

- A. \$8,400 favorable.
- B. \$7,200 unfavorable.
- C. \$8,400 unfavorable.
- D. \$6,000 unfavorable.

A. The labor price/rate variance is calculated as: (Actual Rate – Standard Rate) × Actual Hours. The actual total direct labor cost is \$327,600 (\$364,000 × 90%), and the actual labor rate is \$11.70 (\$327,600 ÷ 28,000 hours used). The standard labor rate is \$12. The actual hours used is 28,000. Therefore, the labor rate variance is (\$11.70 – \$12.00) × 28,000 = (\$8,400) favorable. Since the actual labor rate of \$11.70 is lower than the standard labor rate of \$12, the variance is favorable.

B. Since the actual labor rate of \$11.70 is lower than the standard labor rate of \$12, the variance is favorable. See the correct answer for a complete explanation.

C. Since the actual labor rate of \$11.70 is lower than the standard labor rate of \$12, the variance is favorable. See the correct answer for a complete explanation.

D. This result is the direct labor efficiency variance, but this question asks for the direct labor rate variance. See the correct answer for a complete explanation.

Question 39 - CIA 596 III-90 - Manufacturing Input Variances - Materials and Labor

A manufacturing cell's partial productivity can be measured using data on

- A. Inventory turnover.
- B. Inventory shrinkage.
- C. Scrap.
- D. Direct materials usage.

A. Inventory turnover measures how many times inventory on hand is completely sold and replaced during a period. This is a measure not only of production but also purchasing.

B.

Shrinkage occurs when inventory is lost through deterioration, obsolescence, theft, damage or waste. It does not reflect on manufacturing productivity.

C. A partial productivity measure is usually a ratio of output to the quantity of a single input (material, labor, capital). Scrap cannot be used to measure a manufacturing cell's partial productivity, because it is not an output nor is it an input.

D.

A partial productivity measure is usually a ratio of output to the quantity of a single input (material, labor, capital). This ratio measures the productivity of that one input to the production process. Examples of partial productivity measures are number of units produced per pound of direct material, or per direct labor hour. Direct material usage is a partial productivity measure of a manufacturing cell because direct material is one input.

Question 40 - CMA 1291 3-2 - Manufacturing Input Variances - Materials and Labor

Arrow Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Arrow has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|----------------------|-------------------|------------------|
| Direct materials | 8 pounds | \$1.80 per pound | \$14.40 |
| Direct labor | .25 hours | \$8.00 per hour | <u>2.00</u> |
| | | | \$16.40 |

During November, Arrow purchased 160,000 pounds of direct materials at a total cost of \$304,000. The total factory wages for November were \$42,000, 90% of which were for direct labor. Arrow manufactured 19,000 units of product during November using 142,500 pounds of direct materials and 5,000 direct labor hours.

The direct materials usage (quantity) variance for November is

- A. \$1,100 favorable.
- B. \$14,400 unfavorable.
- C. \$17,100 unfavorable.
- D. \$17,100 favorable.

A. This answer is incorrect. See the correct answer for a complete explanation.

B. This answer results from using the quantity of direct materials purchased instead of the quantity of direct materials used in production. See the correct answer for a complete explanation.

C. The material quantity variance is favorable because the amount used in production was less than the standard amount for the production. See the correct answer for a complete explanation.

D. The material quantity variance (also called the efficiency or usage variance) is the difference between the actual material usage and the standard usage for this level of output, multiplied by the standard price; or $(AQ - SQ) \times SP$. The actual amount used was 142,500 pounds. The standard quantity is 8 pounds per unit, so the standard quantity to produce 19,000 units is $19,000 \times 8$, or 152,000 pounds. The standard price is \$1.80. So the material quantity variance is $(142,500 - 152,000) \times \$1.80 = \$(17,100)$ favorable. The variance is negative, which is favorable for a cost variance, because the actual quantity used was less than the standard quantity allowed for the actual output.

Question 41 - CIA 1189 IV-17 - Manufacturing Input Variances - Materials and Labor

One of the items produced by a manufacturer of lawn and garden tools is a chain saw. The direct labor standard for assembling and testing a chain saw is 2.5 hours at \$8 per hour. Budgeted production for October was 1,200 units. Actual production during the month was 1,000 units, and direct labor cost was \$27,840 for 3,200 hours. Using a two-variance system, what was the direct labor price (rate) variance for October?

- A. \$2,240 unfavorable.
- B. \$3,840 favorable.
- C. \$5,600 unfavorable.
- D. \$2,240 favorable.

A. The labor rate variance is calculated as follows: $(\text{Actual Rate} - \text{Standard Rate}) \times \text{Actual Hours}$. The actual labor rate was \$8.70 ($\$27,840 \div 3,200$). The standard labor rate was \$8. The actual hours is 3,200. The labor rate variance is $(\$8.70 - \$8.00) \times 3,200$ unfavorable. The actual labor rate was greater than the standard labor rate, so the variance is unfavorable.

B. This is the difference of actual labor cost of \$27,840 and the standard labor cost for the scheduled level of production of \$24,000 ($\$8 \times 2.5 \text{ hours} \times 1,200 \text{ units}$). Furthermore, the actual labor rate was greater than the standard labor rate, so the variance is unfavorable. See the correct answer for a complete explanation.

C. This is the direct labor efficiency variance. The question asks for the direct labor rate variance. See the correct answer for a complete explanation.

D. The actual labor rate was greater than the standard labor rate, so the variance is unfavorable.

Question 42 - CIA 1191 IV-16 - Manufacturing Input Variances - Materials and Labor

A company producing a single product employs the following direct material cost standard for each unit of output:

3 pounds of material x \$4/pound = \$12/output unit

Data regarding the operations for the current month are as follows:

| | |
|--|---------------|
| Planned production | 26,000 units |
| Actual production | 23,000 units |
| Actual purchases of direct materials (75,000 pounds) | \$297,000 |
| Direct materials used in Production | 70,000 pounds |

What would be the amount of the direct materials purchase price variance and direct materials quantity variance that the company would recognize for the month?

Purchase Price Variance / Quantity Variance

- A. \$3,120 favorable / \$32,000 favorable
- B. \$2,800 favorable / \$4,000 unfavorable
- C. \$3,000 favorable / \$24,000 unfavorable
- D. \$3,000 favorable / \$4,000 unfavorable

A. This answer is incorrect. See the correct answer for a complete explanation.

B. The purchase price variance is incorrect because it is calculated using the quantity used in production instead of the quantity purchased. When a question asks for the purchase price variance, the actual quantity to use is the quantity purchased. See the correct answer for a complete explanation.

C. The quantity variance is incorrect. See the correct answer for a complete explanation.

D.

The purchase price variance is calculated as follows: (Actual Price – Standard Price) × Actual Quantity. Since the purchase price variance is required, the quantity to use for the actual quantity is the number of units purchased, not the units that were put into production. The actual price is \$3.96 per pound (\$297,000 ÷ 75,000). The standard price is \$4.00 per pound. The actual quantity purchased is 75,000 pounds. The purchase price variance is (\$3.96 – \$4.00) × 75,000 = \$(3,000) favorable.

The quantity variance is calculated as follows: (Actual Quantity – Standard Quantity for Actual Output) × Standard Price. The actual quantity is 70,000. The standard quantity for the actual level of output is 69,000 pounds (3 lb.x 23,000 units). The standard price is \$4. Hence, the quantity variance is (70,000 – 69,000) × \$4 = \$4,000 unfavorable.

Question 43 - CIA 590 IV-15 - Manufacturing Input Variances - Materials and Labor

A manager prepared the following table by which to analyze labor costs for the month:

| | | |
|-----------------------------|-------------------------------|---------------------------------|
| Actual Hours at Actual Rate | Actual Hours at Standard Rate | Standard Hours at Standard Rate |
| \$10,000 | \$9,800 | \$8,820 |

What variance was \$980?

- A. Labor rate variance.

- B. Labor spending variance.
- C. Labor efficiency variance.
- D. Volume variance.

A.

To solve this question, we need to calculate all the suggested variances possible from this set of data. It's better to start with most simple ones. The labor rate variance is: $(\text{Actual Rate} - \text{Standard Rate}) \times \text{Actual Hours}$ or $(\text{Actual Rate} \times \text{Actual Hours}) - (\text{Standard Rate} \times \text{Actual Hours})$.

The actual rate times the actual hours is \$10,000. The standard rate times the actual hours is \$9,800. The difference is \$200 unfavorable. This is not the result we are looking for.

B.

There is no such thing as a labor spending variance. Labor variances are either labor efficiency variances or labor rate variances.

The **variable overhead** spending variance is related to variable overhead and is the difference between the actual application rate and the standard application rate multiplied by the actual quantity of the application base (level of activity). This can also be calculated as the actual variable overhead incurred - (the actual usage of the application base x the standard variable overhead rate). This cannot be determined using the given set of data.

C.

To solve this question, we need to calculate all the suggested variances possible from this set of data. It's better to start with most simple ones. The labor efficiency variance is: $(\text{Actual Hours} - \text{Standard Hours for Actual Output}) \times \text{Standard Rate}$, or $(\text{Actual Hours} \times \text{Standard Rate}) - (\text{Standard Hours for Actual Output} \times \text{Standard Rate})$.

The actual hours times the standard rate is \$9,800. The standard hours times the standard rate is \$8,820. The difference is \$980 unfavorable.

D. The volume variance is related to the fixed overhead and is the difference between the budgeted amount of fixed overhead and the amount of fixed overhead applied (standard rate x standard input for the actual level of output). The volume variance cannot be determined using the given set of data.

Question 44 - CMA 695 3-23 - Manufacturing Input Variances - Materials and Labor

Blaster Inc., a manufacturer of portable radios, purchases the components from subcontractors to use to assemble into a complete radio. Each radio requires three units each of Part XBEZ52, which has a standard cost of \$1.45 per unit. During May, Blaster experienced the following with respect to Part XBEZ52.

| | Units |
|---------------------------|--------|
| Purchases (\$18,000) | 12,000 |
| Consumed in manufacturing | 10,000 |
| Radios manufactured | 3,000 |

During May, Blaster Inc. incurred a purchase price variance of

- A. \$500 favorable.
- B. \$450 unfavorable.
- C. \$600 unfavorable.
- D. \$450 favorable.

A. This answer is incorrect. See the correct answer for a complete explanation.

B. The price variance is calculated as follows: $(AP - SP) \times AQ$. This answer results from using the standard quantity

allowed for the actual output (9,000 units) instead of the actual quantity purchased (12,000). See the correct answer for a complete explanation.

C. The price variance is calculated as follows: $(AP - SP) \times AQ$. The actual price is \$1.50 per unit ($\$18,000 \div 12,000$). The standard price is \$1.45 per unit, and the actual quantity purchased was 12,000 units. Note that we use the actual quantity purchased in the formula because we need to determine the purchase price variance. The price variance is \$600 unfavorable $[(\$1.50 - \$1.45) \times 12,000]$. The variance is positive because the actual price was greater than the standard price, so the variance is unfavorable.

D. This answer is incorrect. See the correct answer for a complete explanation.

Question 45 - CMA 694 3-23 - Manufacturing Input Variances - Materials and Labor

A favorable materials price variance coupled with an unfavorable materials usage variance would most likely result from

- A. The purchase and use of higher than standard quality materials.
- B. The purchase of lower than standard quality materials.
- C. Product mix production changes.
- D. Machine efficiency problems.

A. The purchase and use of higher than standard quality materials would most likely result in an unfavorable materials price variance and either not significantly affect the material usage variance or would lead to favorable material efficiency variance.

B. The favorable materials price variance means that the material was purchased for a lower price than planned. This could happen due to a quantity discount, lower quality materials, or some other reason. The unfavorable materials usage variance means that the production process used more material than had been planned. This could happen due to a lower skill level of workers, poor material quality or some other reason. However, these two variances together are most likely caused by the same reason. This reason could be the purchase of lower than standard quality materials.

C. Product mix production changes would not cause the materials price variance.

D. Machine efficiency problems would not cause the materials price variance.

Question 46 - IMA 08-P2-24 - Manufacturing Input Variances - Materials and Labor

After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be **inconsistent** with the consultant's conclusion?

- A. Management noted that minimal incentive bonuses have been paid in recent periods.
- B. A review of performance reports revealed the presence of many unfavorable efficiency variances.
- C. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
- D. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases in output being followed by rapid, sustained declines.

A. Incentive bonuses are generally based on successful performance which can be measured using standards. If bonuses are not being paid out, performance has not been what was expected and perhaps the expectations were unrealistic. Therefore, this is consistent with the consultant's conclusion, not inconsistent.

B. Many unfavorable efficiency (quantity of labor used) variances could be a sign of an unrealistic standard. Therefore, this is consistent with the consultant's conclusion, not inconsistent. If the company continually uses more hours than anticipated revisions may be necessary.

C. How the budget was developed and in what detail is not relevant to the standards being used within the company. Furthermore, if standards are also developed using a bottom-up philosophy, there is little chance that they will be too tight. Therefore, this is inconsistent with the consultant's conclusion.

D. These types of variances can indicate an effort to produce the quantities demanded followed by a reining in of costs to meet unrealistic standards. Therefore, this is consistent with the consultant's conclusion, not inconsistent.

Question 47 - CMA 693 3-15 - Manufacturing Input Variances - Materials and Labor

The flexible budget for the month of May was for 9,000 units with direct material at \$15 per unit. Direct labor was budgeted at 45 minutes per unit for a total of \$81,000. Actual output for the month was 8,500 units with \$127,500 in direct material and \$77,775 in direct labor expense. The direct labor standard of 45 minutes was maintained throughout the month. Variance analysis of the performance for the month of May would show a(n)

- A. Unfavorable direct labor price variance of \$1,275.
- B. Favorable direct labor efficiency variance of \$1,275.
- C. Unfavorable direct labor efficiency variance of \$1,275.
- D. Favorable material usage variance of \$7,500.

A.

The direct labor price variance is calculated $(AP - SP) \times AQ$ or $(\text{Actual Rate} - \text{Standard Rate}) \times \text{Actual Hours}$. The standard labor rate per hour is \$12, calculated as follows: the labor standard is 45 minutes per unit, or .75 of an hour. 9,000 units were planned, so total planned hours was $.75 \times 9,000$ or 6,750 hours. Total planned cost was \$81,000, so the standard cost per hour was $\$81,000 \div 6,750$ hours, or \$12 per hour.

The actual labor rate was \$12.20, calculated as follows: The labor standard of 45 minutes per unit or .75 of an hour per unit was maintained. 8,500 units were actually produced, so the total actual hours was $.75 \times 8,500$ or 6,375 hours. Total actual cost was \$77,775, so the actual cost per hour (the actual rate) was $\$77,775 \div 6,375$ hours, or \$12.20 per hour.

Putting the numbers into the formula, we get $(\$12.20 - \$12.00) \times 6,375 = \$1,275$ Unfavorable.

B.

Because the budgeted and actual hours were the same, there was no direct labor efficiency variance. The formula is: $(AQ - SQ) \times SP$ or $(\text{Actual Hours} - \text{Standard Hours for Actual Output}) \times \text{Standard Rate}$. We know that the company maintained the direct labor standard of 45 minutes, or .75 of an hour per unit, throughout the month. The standard labor hour rate is \$12 per hour, calculated as follows: 9,000 units planned \times .75 of an hour per unit = total hours planned of 6,750. A total cost of \$81,000 was planned, so therefore, the standard hourly rate must be $\$81,000 \div 6,750$, or \$12 per hour.

The Standard Hours for the Actual Output is $.75 \times 8,500$, or 6,375 hours. Since we are told that the direct labor standard was maintained, the Actual Hours must be the same as the Standard Hours, or 6,375.

Putting the numbers into the formula, we get $(6,375 - 6,375) \times \$12 = 0$. However, it is not really necessary to go through all those calculations. Because the problem states that the direct labor standard was maintained throughout the period, we can know that the direct labor efficiency variance must be zero.

C.

Because the actual and budgeted hours were the same, there was no direct labor efficiency variance. The formula is: $(AQ - SQ) \times SP$ or $(\text{Actual Hours} - \text{Standard Hours for Actual Output}) \times \text{Standard Rate}$. We know that the company maintained the direct labor standard of 45 minutes, or .75 of an hour per unit, throughout the month. The standard labor hour rate is \$12 per hour, calculated as follows: 9,000 units planned \times .75 of an hour per unit = total hours planned of 6,750. A total cost of \$81,000 was planned, so therefore, the standard hourly rate must be $\$81,000 \div 6,750$, or \$12 per hour.

The Standard Hours for the Actual Output is $.75 \times 8,500$, or 6,375 hours. Since we are told that the direct labor

standard was maintained, the Actual Hours must be the same as the Standard Hours, or 6,375.

Putting the numbers into the formula, we get $(6,375 - 6,375) \times \$12 = 0$. However, it is not really necessary to go through all those calculations. Because the problem states that the direct labor standard was maintained throughout the period, we can know that the direct labor efficiency variance must be zero.

D.

This problem does not give enough information to enable calculation of a materials usage variance. The materials quantity, or usage, variance is the difference between the actual quantity of materials that were used for the actual output and the standard quantity of materials for the actual output, multiplied by the standard price per unit of direct materials. The problem does not give us either the standard quantity or the actual quantity of materials per unit of output. Nor does it give us the standard price per unit of direct materials. We are given only the standard price for the total direct materials per unit of **finished product**.

Therefore, we have no way of telling whether the actual quantity used was different from the quantity planned for the output; and we have no way of telling whether the actual price per unit was different from the planned price per unit. By dividing the actual material cost by the actual number of units produced and the planned materials costs by the planned number of units, we can determine that the actual direct materials cost was \$15 per finished unit of product and the planned direct materials cost was also \$15 per finished unit of product, so we know that the **total** direct materials variance (price and quantity) was zero. However, that could consist of any variances at all for price and quantity that would net to zero.

Since there is just not enough information given in this problem to permit a calculation of the materials usage variance (or the materials price variance, either), it cannot be said that the material usage variance was \$7,500 favorable.

Question 48 - CIA 592 IV-18 - Manufacturing Input Variances - Materials and Labor

The following is a standard cost variance analysis report on direct labor cost for a division of a manufacturing company.

| Job | Actual Hours at Actual Wages | Actual Hours at Standard Wages | Standard Hours at Standard Wages |
|--------|------------------------------|--------------------------------|----------------------------------|
| 213 | \$3,243 | \$3,700 | \$3,100 |
| 215 | 15,345 | 15,675 | 15,000 |
| 217 | 6,754 | 7,000 | 6,600 |
| 219 | 19,788 | 18,755 | 19,250 |
| 221 | <u>3,370</u> | <u>3,470</u> | <u>2,650</u> |
| Totals | \$48,500 | \$48,600 | \$46,600 |

What is the total flexible budget direct labor variance for the division?

- A. \$1,900 favorable.
- B. \$1,900 unfavorable.
- C. \$2,000 unfavorable.
- D. \$100 favorable.

A. The flexible budget variance is unfavorable, because the actual cost incurred is greater than the standard cost for the actual level of output (the flexible budget).

B. The total labor variance (also called the flexible budget variance) is the difference between the actual costs incurred by the company and the standard costs for the actual level of output (the flexible budget). The "Actual Hours at Actual Wages" in the first column are the actual costs incurred. The "Standard Hours at Standard Wages" in the third column are the standard costs for the actual level of output. Thus, the total labor variance is $\$48,500 - \$46,600 = \$1,900$ unfavorable.

C.

This is the difference between the Actual Hours at Standard Wages and Standard Hours at Standard Wages. This is the direct labor efficiency variance. The formula for the direct labor efficiency variance is $(AQ - SQ) \times SP$. That formula can also be written as $(AQ \times SP) - (SQ \times SP)$. $(AQ \times SP)$ is equal to "Actual Hours at Standard Wages," while $(SQ \times SP)$ is equal to "Standard Hours at Standard Wages." The direct labor efficiency variance is one component of the total flexible budget direct labor variance. The other component is the direct labor rate variance. However, the question asks for the total flexible budget direct labor variance.

D.

This is the difference between the Actual Hours at Actual Wages and Actual Hours at Standard Wages. This is the direct labor rate variance. The formula for the direct labor rate variance is $(AP - SP) \times AQ$. That formula can also be written as $(AP \times AQ) - (SP \times AQ)$. $(AP \times AQ)$ is equal to "Actual Hours at Actual Wages," while $(SP \times AQ)$ is equal to "Actual Hours at Standard Wages." The direct labor rate variance is one component of the total flexible budget direct labor variance. The other component is the direct labor efficiency variance. However, the question asks for the total flexible budget direct labor variance.

Question 49 - CMA 1287 4-30 - Manufacturing Input Variances - Materials and Labor

Todco planned to produce 3,000 units of its single product, Teragram, during November. The standard specifications for one unit of Teragram include six pounds of materials at \$.30 per pound. Actual production in November was 3,100 units of Teragram. The accountant computed a favorable materials purchase price variance of \$380 and an unfavorable materials quantity variance of \$120. Based on these variances, one could conclude that

- A. More materials were used than were purchased.
- B. More materials were purchased than were used.
- C. The actual usage of materials was less than the standard allowed.
- D. The actual cost of materials was less than the standard cost.

A. A favorable materials purchase price variance and an unfavorable materials quantity variance do not relate to the quantity of materials purchased and used in production.

B. A favorable materials purchase price variance and an unfavorable materials quantity variance do not relate to the quantity of materials purchased and used in production.

C. An unfavorable materials quantity variance means that **more** materials were used in production than budgeted (standard), not less.

D. A favorable materials purchase price variance means the actual purchase price was less than was budgeted (the standard).

Question 50 - CMA 697 3-22 - Manufacturing Input Variances - Materials and Labor

The controller for Durham Skates is reviewing the production cost report for July. An analysis of direct materials costs reflects an unfavorable flexible budget variance of \$25. The plant manager believes this is excellent performance on a flexible budget for 5,000 units of direct materials. However, the production supervisor is not pleased with this result because he claims to have saved \$1,200 in materials cost on actual production using 4,900 units of direct materials. The standard materials cost is \$12 per unit. Actual materials used for the month amounted to \$60,025.

The actual average cost per unit for materials was

- A. \$12.01
- B. \$12.00
- C. \$12.24

D. \$12.25

A. This is not the correct answer. See the correct answer for a complete explanation.

B. This is standard cost per unit of material not the actual average cost per unit of material. See the correct answer for a complete explanation.

C. This is not the correct answer. See the correct answer for a complete explanation.

D. Actual materials used for the month amounted to \$60,025, and 4,900 units of direct materials were used. The actual average cost per unit of material was \$12.25 ($\$60,025 \div 4,900$).

Question 51 - CMA 695 3-25 - Manufacturing Input Variances - Materials and Labor

Price variances and efficiency variances can be key to the performance measurement within a company. In evaluating the performance within a company, a materials efficiency variance can be caused by all of the following **except** the

A. Performance of the workers using the material.

B. Design of the product.

C. Actions of the purchasing department.

D. Sales volume of the product.

A. The materials efficiency variance could be caused by a number of reasons, one of which is poor worker performance. If workers assembling the products are not performing their work properly, raw materials could be wasted or ruined.

B. The materials efficiency variance could be caused by a number of reasons, one of which is poor design of the product. Poor design could make it impossible for the standards to be met if, for instance, two parts did not fit together the way they were supposed to, and in working with them to make them fit, some were broken and became unusable. That would cause excess usage of the materials and unplanned costs.

C.

The materials efficiency variance could be caused by a number of reasons, one of which is poor quality of the materials, which would be caused by actions of the purchasing department. For example, the purchasing department might purchase inferior materials in an effort to save money. Instead of saving money, the result might be that too many items purchased would be defective and unusable. This could result in additional costs to make them usable. Or, if the defective items could not be made usable, they would have to be thrown away, causing excess materials usage.

D. The materials efficiency variance is the difference between the actual material usage and the standard material usage for the actual level of output, multiplied by the standard price. There is no connection between the sales volume of the product and the materials efficiency variance.

Question 52 - CMA 1291 3-3 - Manufacturing Input Variances - Materials and Labor

Arrow Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Arrow has established the following standards for the prime costs of one unit of product.

| | Standard Quantity | Standard Price | Standard Cost |
|------------------|------------------------------|---------------------------|--------------------------|
| Direct materials | 8 pounds | \$1.80 per pound | \$14.40 |
| Direct labor | .25 hours | \$8.00 per hour | <u>2.00</u> |
| | | | \$16.40 |

During November, Arrow purchased 160,000 pounds of direct materials at a total cost of \$304,000. The total factory wages for November were \$42,000, 90% of which were for direct labor. Arrow manufactured 19,000 units of product during November using 142,500 pounds of direct materials and 5,000 direct labor hours.

The direct labor price (rate) variance for November is

- A. \$2,200 favorable.
- B. \$1,900 unfavorable.
- C. \$2,000 unfavorable.
- D. \$2,090 favorable.

A. The labor rate/price variance is: (Actual Rate – Standard Rate) × Actual Hours. The actual direct labor cost was \$37,800 (\$42,000 × 90%) for the month of November. The actual rate was \$7.56 (\$37,800 ÷ 5,000). The actual number of hours was 5,000. The labor rate/price variance was (\$7.56 – \$8.00) × 5,000 = \$(2,200) favorable. A negative variance for a cost is a favorable variance.

B. The labor rate/price variance is favorable as the actual direct labor rate is lower than the standard. See the correct answer for a complete explanation.

C. This answer results from using the total factory wages of \$42,000 to calculate the direct labor actual rate. However, only 90% of the total factory wages were direct labor. See the correct answer for a complete explanation.

D. The labor rate/price variance is calculated as: (Actual Rate – Actual Rate) × Actual Hours. This answer results from using the hours allowed for the actual output (19,000 × .25) instead of the actual hours. See the correct answer for a complete explanation.

Question 53 - CMA 696 3-24 - Manufacturing Input Variances - Materials and Labor

Ardmore Enterprises uses a standard cost system in its small appliance division. The standard cost of manufacturing one unit of Zeb is as follows:

| | |
|--|-----------|
| Materials - 60 pounds at \$1.50 per pound | \$ 90 |
| Labor - 3 hours at \$12 per hour | 36 |
| Factory overhead - 3 hours at \$8 per hour | <u>24</u> |
| Total standard cost per unit | \$150 |

The budgeted variable factory overhead rate is \$3 per labor hour, and the budgeted fixed factory overhead is \$27,000 per month. During May, Ardmore produced 1,650 units of Zeb compared with a normal capacity of 1,800 units. The actual cost per unit was as follows:

| | |
|--|--------------|
| Materials (purchased and used) - 58 pounds at \$1.65 per pound | \$ 95.70 |
| Labor - 3.1 hours at \$12 per hour | 37.20 |
| Factory overhead - \$39,930 per 1,650 units | <u>24.20</u> |
| Total actual cost per unit | \$157.10 |

The labor rate variance for May is

- A. \$4,950 favorable.
- B. \$1,920 favorable.
- C. \$0
- D. \$4,950 unfavorable.

A. This is the material quantity variance. The question asks for the labor rate variance. See the correct answer for a complete explanation.

B. This is the difference between the actual total overhead incurred and the flexible budget overhead. This is not the

labor rate variance. See the correct answer for a complete explanation.

C. The labor rate variance formula is: (Actual Rate – Standard Rate) × Actual Hours. The labor rate variance is zero as the standard rate equals the actual rate of \$12.00 per hour.

D. The labor rate variance is not unfavorable. See the correct answer for a complete explanation.
