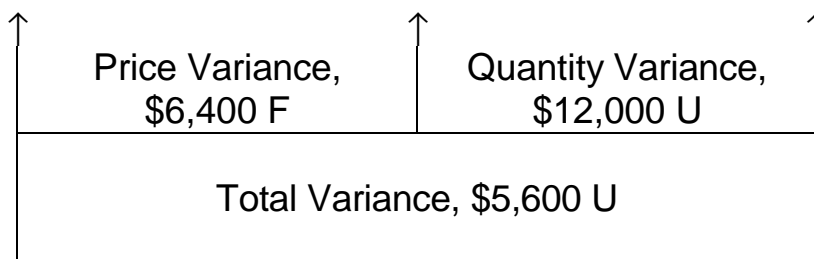


Problem 10-13 (50 minutes)

1. a.

Actual Quantity of Inputs, at Actual Price (AQ × AP)	Actual Quantity of Inputs, at Standard Price (AQ × SP)	Standard Quantity Allowed for Output, at Standard Price (SQ × SP)
32,000 ft. × \$4.80 per ft. = \$153,600	32,000 ft. × \$5.00 per ft. = \$160,000	29,600 ft.* × \$5.00 per ft. = \$148,000



*8,000 footballs × 3.7 ft. per football = 29,600 ft.

Alternative Solution:

Materials price variance = AQ (AP – SP)
32,000 ft. (\$4.80 per ft. – \$5.00 per ft.) = \$6,400 F

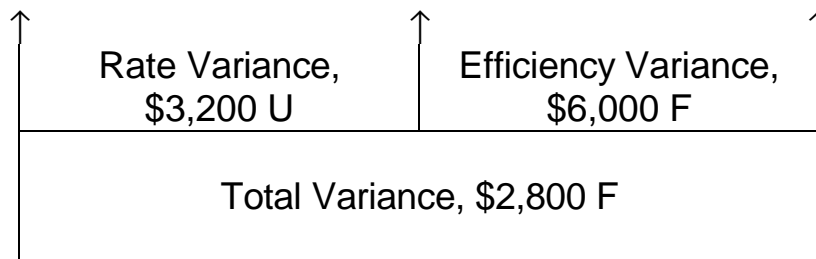
Materials quantity variance = SP (AQ – SQ)
\$5.00 per ft. (32,000 ft. – 29,600 ft.) = \$12,000 U

b. Raw materials (32,000 ft. x \$5.00 per ft.)	160,000	
Materials price variance (32,000 ft. x \$0.20 per ft. F)		6,400
Accounts payable (32,000 ft. x \$4.80 per ft.)		153,600
Work in process (29,600 ft. x \$5.00 per ft.)	148,000	
Materials quantity variance (2,400 ft. U x \$5.00 per ft.)	12,000	
Raw materials (32,000 ft. x \$5.00 per ft.)		160,000

Problem 10-13 (continued)

2. a.

Actual Hours of Input, at the Actual Rate (AH × AR)	Actual Hours of Input, at the Standard Rate (AH × SR)	Standard Hours Allowed for Output, at the Standard Rate (SH × SR)
6,400 hrs.* × \$8.00 per hr. = \$51,200	6,400 hrs. × \$7.50 per hr. = \$48,000	7,200 hrs.** × \$7.50 per hr. = \$54,000



*8,000 footballs × 0.8 hrs. per football = 6,400 hrs.

**8,000 footballs × 0.9 hrs. per football = 7,200 hrs.

Alternate Solution:

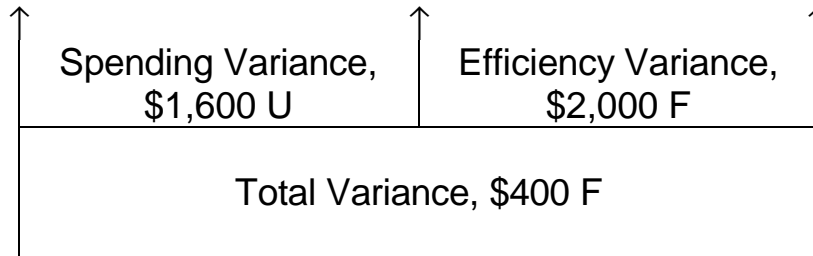
Labor rate variance = AH (AR – SR)
6,400 hrs. (\$8.00 per hr. – \$7.50 per hr.) = \$3,200 U

Labor efficiency variance = SR (AH – SH)
\$7.50 per hr. (6,400 hrs. – 7,200 hrs.) = \$6,000 F

b. Work in process (7,200 hrs. x \$7.50 per hr.)	54,000
Labor rate variance (6,400 hrs. x \$0.50 per hr. U) ..	3,200
Labor efficiency variance (800 hrs. F x \$7.50 per hr.)	6,000
Wages payable (6,400 hrs. x \$8.00 per hr.)	51,200

Problem 10-13 (continued)

3.	Actual Hours of Input, at the Actual Rate (AH × AR) <hr/> 6,400 hrs. × \$2.75 per hr. = \$17,600	Actual Hours of Input, at the Standard Rate (AH × SR) <hr/> 6,400 hrs. × \$2.50 per hr. = \$16,000	Standard Hours Allowed for Output, at the Standard Rate (SH × SR) <hr/> 7,200 hrs. × \$2.50 per hr. = \$18,000
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Alternate Solution:

$$\begin{aligned} \text{Variable overhead spending variance} &= \text{AH} (\text{AR} - \text{SR}) \\ 6,400 \text{ hrs.} (\$2.75 \text{ per hr.} - \$2.50 \text{ per hr.}) &= \$1,600 \text{ U} \end{aligned}$$

$$\begin{aligned} \text{Variable overhead efficiency variance} &= \text{SR} (\text{AH} - \text{SH}) \\ \$2.50 \text{ per hr.} (6,400 \text{ hrs.} - 7,200 \text{ hrs.}) &= \$2,000 \text{ F} \end{aligned}$$

4. No. He is not correct in his statement. The company has a large, unfavorable materials quantity variance that should be investigated. Also, the overhead spending variance equals 10 percent of standard, which should also be investigated.

It appears that the company's strategy to increase output by giving raises was effective. Although the raises resulted in an unfavorable rate variance, this variance was more than offset by a large, favorable efficiency variance.

Problem 10-13 (continued)

5. There are many possible causes of the variances. Some of the more likely causes include the following:

Materials variances:

Favorable price variance: Fortunate buy, outdated standards, inferior quality materials, unusual discount due to quantity purchased, drop in market price, less costly method of freight.

Unfavorable quantity variance: Carelessness, poorly adjusted machines, unskilled workers, inferior quality materials, outdated standards.

Labor variances:

Unfavorable rate variance: Use of highly skilled workers, change in pay scale, outdated standards, overtime.

Favorable efficiency variance: Use of highly skilled workers, high quality materials, new equipment, outdated or inaccurate standards.

Variable overhead variances:

Unfavorable spending variance: Increase in costs, outdated standards, waste, theft, spillage, purchases in uneconomical lots.

Favorable efficiency variance: Same as for labor efficiency variance.