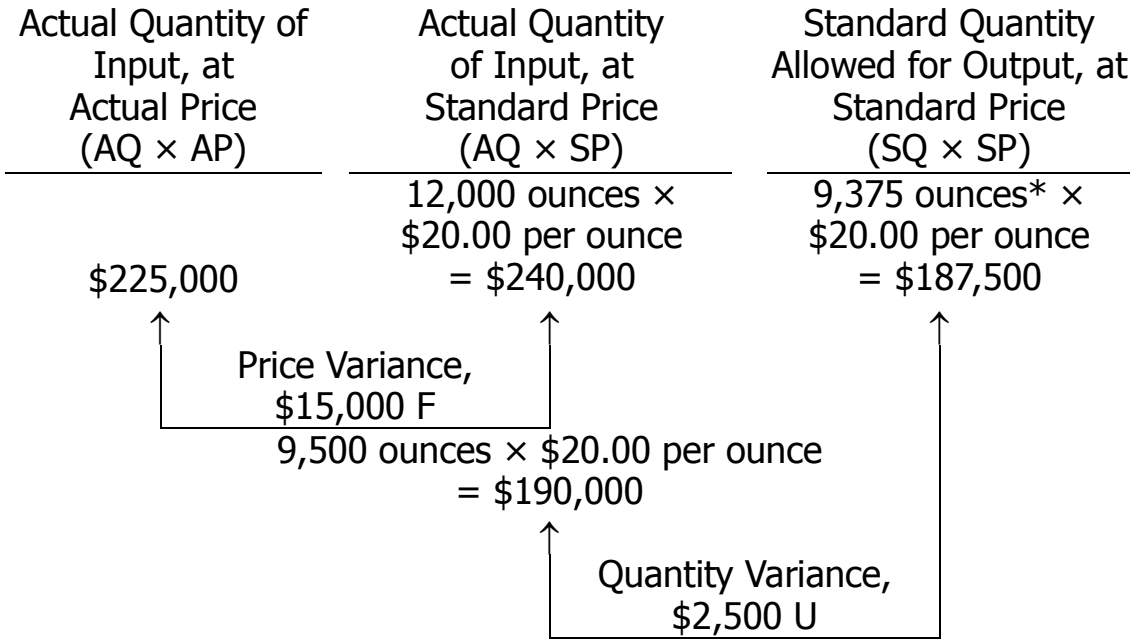
Problem 10-19 (45 minutes)

1. a. In the solution below, the materials price variance is computed on the entire amount of materials purchased whereas the materials quantity variance is computed only on the amount of materials used in production:



*3,750 units × 2.5 ounces per unit = 9,375 ounces

Alternatively:

Materials price variance = AQ (AP – SP)
12,000 ounces ($18.75 per ounce* – $20.00 per ounce) = $15,000 F

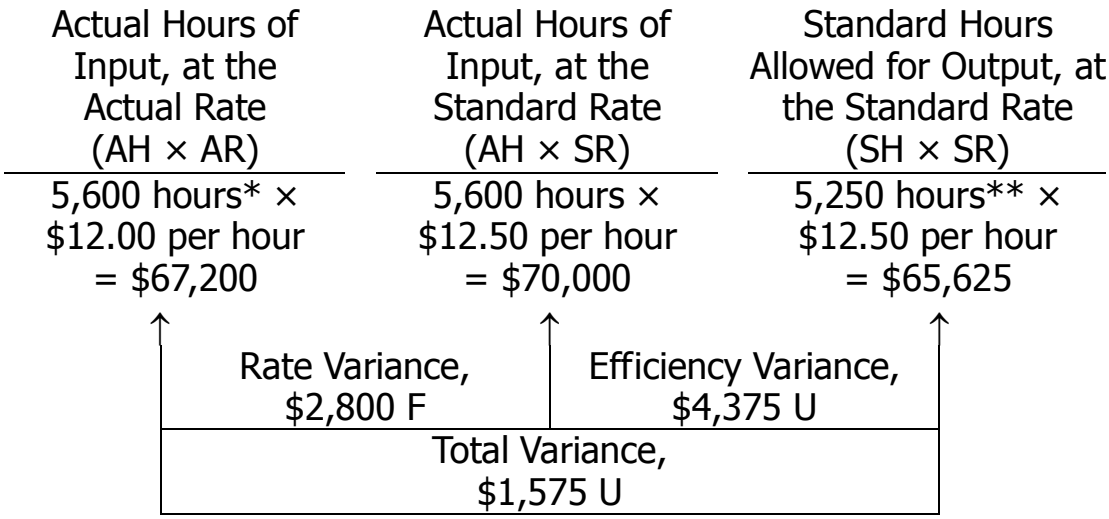
*$225,000 ÷ 12,000 ounces = $18.75 per ounce

Materials quantity variance = SP (AQ – SQ)
$20.00 per ounce (9,500 ounces – 9,375 ounces) = $2,500 U

b. Yes, the contract probably should be signed. The new price of $18.75 per ounce is substantially lower than the old price of $20.00 per ounce, resulting in a favorable price variance of $15,000 for the month. Moreover, the material from the new supplier appears to cause little or no problem in production as shown by the small materials quantity variance for the month.

Problem 10-19 (continued)

2. a.



*35 technicians × 160 hours per technician = 5,600 hours
**3,750 units × 1.4 hours per technician = 5,250 hrs

Alternatively:

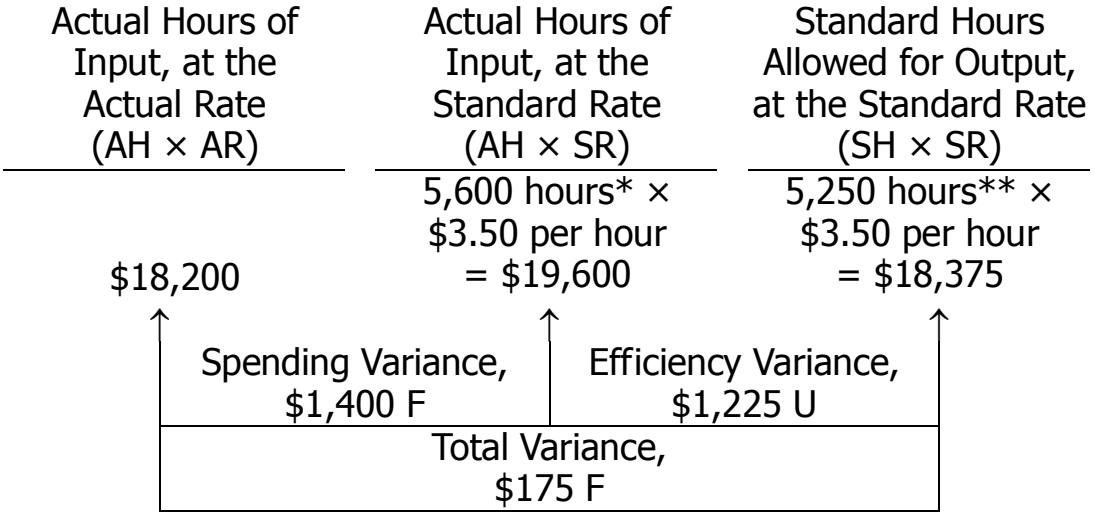
Labor rate variance = AH (AR – SR)
5,600 hours ($12.00 per hour – $12.50 per hour) = $2,800 F

Labor efficiency variance = SR (AH – SH)
$12.50 per hour (5,600 hours – 5,250 hours) = $4,375 U

b. No, the new labor mix probably should not be continued. Although it decreases the average hourly labor cost from $12.50 to $12.00, thereby causing a $2,800 favorable labor rate variance, this savings is more than offset by a large unfavorable labor efficiency variance for the month. Thus, the new labor mix increases overall labor costs.

Problem 10-19 (continued)

3.



* Based on direct labor hours:
35 technicians × 160 hours per technician = 5,600 hours

** 3,750 units × 1.4 hours per unit = 5,250 hours

Alternatively:

Variable overhead spending variance = AH (AR – SR)
5,600 hours ($3.25 per hour* – $3.50 per hour) = $1,400 F

*$18,200 ÷ 5,600 hours = $3.25 per hour

Variable overhead efficiency variance = SR (AH – SH)
$3.50 per hour (5,600 hours – 5,250 hours) = $1,225 U

Both the labor efficiency variance and the variable overhead efficiency variance are computed by comparing actual labor-hours to standard labor-hours. Thus, if the labor efficiency variance is unfavorable, then the variable overhead efficiency variance will be unfavorable as well.