17.59 (45 min) Sales variance analysis

(1) Contribution-margin budget variance:

$$\text{Contribution-margin budget variance} = \text{Sum of contribution-margin variances for each product}$$

$$\text{Contribution-margin budget variance for product i} = \left(\text{Actual total contribution margin for product i} - \text{Budgeted total contribution margin for product i}\right)$$

Applying the formula yields the following results.

RM-67	contribution-margin budget variance = $5,880,000–$6,000,000 =	$ 120,000 U
JR-63	contribution-margin budget variance = $4,760,000–$3,600,000 =	1,160,000 F
	Contribution-margin budget variance	$1,040,000 F

(2) Contribution-margin variance:

$$\text{Contribution-margin variance} = \text{Sum of contribution-margin variances for each product}$$

$$\text{Contribution-margin variance for product i} = \left(\text{Actual unit contribution margin for product i} - \text{Budgeted unit contribution margin for product i}\right) \times \text{Actual sales volume for product i}$$

In this case, the formula yields the following results.

RM-67	contribution-margin variance = ($1,050–$1,000) × 5,600 =	$280,000 F
JR-63	contribution-margin variance = ($1,700–$1,800) × 2,800 =	280,000 U
	Contribution-margin variance	$ 0

17.59 (continued)

(3) Contribution-margin sales-volume variance:

$$\text{Contribution-margin sales-volume variance} = \text{Sum of contribution-margin sales-volume variances for each product}$$

$$\text{Contribution-margin sales-volume variance for product i} = \left(\text{Actual unit sales volume for product i} - \text{Budgeted unit sales volume for product i}\right) \times \text{Budgeted contribution margin for product i}$$

Using the formula, the contribution-margin sales-volume variance is computed as follows:

RM-67	contribution-margin sales-volume variance = (5,600–6,000) × $1,000 =	$ 400,000 U
JR-63	contribution-margin sales-volume variance = (2,800–2,000) × $1,800 =	1,440,000 F
	Contribution-margin sales-volume variance	$1,040,000 F

(4) Contribution-margin sales-mix variance:

$$\text{Contribution-margin sales-mix variance} = \text{Sum of contribution-margin sales-mix variances for each product}$$

$$\text{Contribution-margin sales-mix variance for product i} = \text{Budgeted contribution margin for product i} \times \left(\text{Actual sales proportion for product i} - \text{Budgeted sales proportion for product i}\right) \times \text{Actual total unit sales volume for all products}$$

We then have the following calculation:

RM-67	contribution-margin sales-mix variance = $1,000 × [(2/3)–.750)] × 8,400 =	$ 700,000 U
JR-63	contribution-margin sales-mix variance = $1,800 × [(1/3)–.250)] × 8,400 =	1,260,000 F
	Contribution-margin sales-mix variance.....	$ 560,000 F

17.59 (continued)

(5) Contribution-margin sales-quantity variance:

$$\text{Contribution-margin sales-quantity variance} = \text{Sum of contribution-margin sales-quantity variances for each product}$$

$$\text{Contribution-margin sales-quantity variance for product i} = \text{Budgeted contribution margin for product i} \times \left(\text{Actual total unit sales volume for all products} - \text{Budgeted total unit sales volume for all products} \right) \times \text{Budgeted sales proportion for product i}$$

The contribution-margin sales-quantity variance is computed as follows:

RM-67	contribution-margin sales-quantity variance = $1,000 × (8,400–8,000) × .75 =	$300,000 F
JR-63	contribution-margin sales-quantity variance = $1,800 × (8,400–8,000) × .25 =	180,000 F
	Contribution-margin sales-quantity variance.....	$480,000 F