

Examination: 5075 „Management V“

Fall Term 2004/05

Examiner: Dr. Barbara Pirchegger

The following aids can be used:

non-programmable calculators without communication- or text processing function, ruler.

Hint: A maximum of 120 points can be reached from solving the 5 problem sets below. The numbers in brackets tell you how many points can be obtained from each problem.

**Problem 1 (15 points):**

Bob's Textile Company sells shirts for men and boys. The average selling price and variable cost for each product are as follows:

	Men's	Boys
Selling Price	\$28.00	\$24.00
Variable cost	20.40	16.80

Fixed costs are \$38,400.

**Required:**

- a. What is the breakeven point in units for each type of shirt, assuming the sales mix is 2:1 in favor of men's shirts?
- b. What is the operating income, assuming the sales mix is 2:1 in favor of men's shirts, and sales total 9,000 shirts?

**Problem 2 (20 points):**

McKenna Company manufactured 1,000 units during April with a total overhead budget of \$12,400. However, while manufacturing the 1,000 units the microcomputer that contained the month's cost information broke down. With the computer out of commission, the accountant has been unable to complete the variance analysis report. The information missing from the report is lettered in the following set of data:

Variable overhead:

Standard cost per unit: 0.4 labor hour at \$4.2 per hour

Actual costs: \$2,100 for 376 hours

Flexible budget: a

Total flexible-budget variance: b

Variable overhead spending variance: c

Variable overhead efficiency variance: d

Fixed overhead:

Budgeted costs: e

Actual costs: f

Flexible-budget variance: \$500 favorable

**Required:**

Compute the missing elements in the report represented by the lettered items.

**Problem 3 (30 points):**

Bobby Smith and Sons Company was concerned that increased sales did not result in increased profits for 20x3. Both variable unit and total fixed manufacturing costs for 20x2 and 20x3 remained constant at \$18 and \$2,000,000, respectively.

In 20x2, the company produced 100,000 units and sold 80,000 units at a price of \$50 per unit. There was no beginning inventory in 20x2. In 20x3, the company made 70,000 units and sold 90,000 units at a price of \$50. Selling and administrative expenses were all fixed at \$100,000 each year.

**Required:**

- Prepare income statements for each year using absorption costing.
- Prepare income statements for each year using variable costing.
- Explain why the income was different each year using the two methods. Show computations.

**Problem 4 (35 points):**

Tessmer Manufacturing Company produces inventory in a highly automated assembly plant in Olathe, Kansas. The automated system is in its first year of operation and management is still unsure of the best way to estimate the overhead costs of operations for budgetary purposes. For the first six months of operations, the following data were collected:

	Machine hours	Kilowatt-hours	Total Overhead Cost
January	3,800	4,520,000	138,000
February	3,650	4,340,000	136,800
March	3,900	4,500,000	139,200
April	3,300	4,290,000	136,800
May	3,250	4,200,000	126,000
June	3,100	3,800,000	120,000

**Required:**

- Use the high-low method to determine the estimating cost function with machine-hours as the cost driver.
- Use the high-low method to determine the estimating cost function with kilowatt-hours as the cost driver.
- For July, the company ran the machines for 3,000 hours and used 4,000,000 kilowatt-hours of power. The overhead costs totaled \$114,000. Based on the results from a and b, which cost driver was the best predictor for July?
- Use the least square method to determine the estimating cost function with machine hours as the cost driver.

Use the following formulas:

$$y = a + b * X$$

$$a = \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{n(\sum X^2) - (\sum X)(\sum X)} \quad b = \frac{n(\sum XY) - (\sum X)(\sum Y)}{n(\sum X^2) - (\sum X)(\sum X)}$$

**Problem 5 (20 points):**

Norton's Mufflers manufactures three different product lines, Model X, Model Y, and Model Z. The following per unit data apply:

	<u>Model X</u>	<u>Model Y</u>	<u>Model Z</u>
Selling price	\$80	\$90	\$100
Max. sales in units	100	120	80
Direct materials	30	30	30
Direct labor (\$10 per hour)	15	15	20
Variable support costs (\$5 per machine-hour)	5	10	10

**Required:**

- Calculate the optimal production program if 400 machine hours are available.
- Compute the contribution margin for the production program found in a.
- Calculate the optimal production program if labor capacity rather than machine hours is restricted to 400 hours.
- Calculate the contribution margin for the production program determined in c.