

	Total	Per Unit	Percent of Sales
Sales (20,000 units)	\$1,200,000	\$60	100%
Variable expenses	900,000	45	? %
Contribution margin	300,000	\$15	? %
Fixed expenses	240,000		
Net operating income	\$ 60,000		

Management is anxious to increase the company's profit and has asked for an analysis of a number of items.

Required:

1. Compute the company's CM ratio and variable expense ratio.
2. Compute the company's break-even point in both units and sales dollars. Use the equation method.
3. Assume that sales increase by \$400,000 next year. If cost behavior patterns remain unchanged, by how much will the company's net operating income increase? Use the CM ratio to compute your answer.
4. Refer to the original data. Assume that next year management wants the company to earn a profit of at least \$90,000. How many units will have to be sold to meet this target profit?
5. Refer to the original data. Compute the company's **margin of safety in both dollar and percentage form.**
6.
 - a. Compute the company's **degree of operating leverage** at the present level of sales.
 - b. Assume that through a more intense effort by the sales staff, the company's sales increase by 8% next year. By what percentage would you **expect net operating income to increase?** Use the degree of operating leverage to obtain your answer.
 - c. Verify your answer to (b) by preparing a **new contribution format income statement showing an 8% increase in sales.**
7. In an effort to increase sales and profits, management is considering the use of a higher-quality speaker. The higher-quality speaker would increase variable costs by **\$3 per unit**, but management could eliminate one quality inspector who is paid a salary of **\$30,000 per year**. The sales manager estimates that the higher-quality speaker would increase annual **sales by at least 20%.**
 - a. Assuming that changes are made as described above, prepare a **projected contribution format income statement for next year.** Show data on a total, per unit, and percentage basis.
 - b. Compute the company's new break-even point in both units and dollars of sales. Use the formula method.
 - c. **Would you recommend that the changes be made?**

2-2. Cost of goods manufactured statement. The following data are from the accounts of Millville Company:

Inventories:	July 1, 19A	June 30, 19B
Finished goods.....	\$20,000	\$28,000
Work in process.....	60,000	36,000
Materials.....	40,000	48,000
Sales discounts.....		\$ 8,000
Purchase discounts.....		3,200
Sales.....		1,800,000
Purchase returns and allowances.....		20,000
Depreciation—factory machinery.....		160,000
Factory insurance.....		50,000
Freight out.....		8,000
Other factory expenses.....		16,000
Bond interest expense.....		50,000
Sales salaries.....		100,000
Freight in.....		12,000
Direct factory labor.....		800,000
Materials purchases.....		400,000
Advertising expense.....		12,000

Required: Prepare a cost of goods manufactured statement for the year ended June 30, 19B. (CGAA adapted)

2-3. Cost of goods sold statement. The following information has been taken from the records of Maxwell Company:

Inventories:	January 1	December 31
Finished goods.....	\$ 5,000	\$ 7,000
Work in process.....	15,000	9,000
Materials.....	10,000	12,000
Materials purchases.....		\$100,000
Direct labor.....		200,000
Freight in.....		3,000
Sales salaries and expenses.....		25,000
Other factory expenses.....		4,000
Freight out.....		2,000
Factory insurance.....		12,500
Depreciation—machinery.....		40,000
Purchase returns and allowances.....		5,000
Sales.....		350,000
Purchase discounts.....		800
Sales discounts.....		2,000

Required: Prepare a cost of goods sold statement for the year. (CGAA adapted)

2.2 Raw Material Consumed = Opening RM + RM purchase - closing RM

~~= 40,000 + 400,000~~

RM purchase → (+) 400,000

purchase discount → (-) 3200

purchase Returns → (-) 20000

376800

Freight In (+) 12000

388,800

∴ Raw Material consumed = 40,000 + 388,800 - 48,000

= 380800

prime cost = RM consumed + Direct Labour

= 380800 + 800000

= 1180800

factory overhead + Prime cost = Manufacturing cost

Depreciation - FM → (+) 160,000

factory Insurance → (+) 50,000

Other → (+) 16,000

226,000

∴ Manufacturing cost = 1180800 + 226000
= 1406800

Cost of goods manufactured = Manufacturing cost +
opening work in process - closing WIP

$$= 14806800 + 60,000 - 36,000$$

$$= 1430,800$$

2.3

Material purchase $\rightarrow$ 100,000

purchase Returns $\rightarrow$ (-) 5,000

" Discount $\rightarrow$ (-) 800

94,200

Freight ^{In} ~~Out~~ (+) 3,000

97,200

• Raw Material Consumed = $10,000 + 97,200 - 12,000$
 $= 95,200$

• prime cost = $95,200 + 200,000$
 $= 295,200$

Depreciation machinery $\rightarrow$ 40,000

Factory Insurance $\rightarrow$ 12,500

Other $\rightarrow$ 4,000

56,500

• Manufacturing Cost = $295,200 + 56,500$
 $= 351,700$

$$\begin{aligned} \bullet \text{ cost of goods Manufactured} &= 351,700 + 15,000 - 9,000 \\ &= 357,700 \end{aligned}$$

$$\begin{aligned} \bullet \text{ cost of goods sold} &= 357,700 + 5,000 - 7,000 \\ &= 355,700 \end{aligned}$$

Capital Budgeting (Garrison 604)

1. Net operating Income = 200,000

Depreciation (Non-cash) = 300,000
(+)

∴ Annual net cash inflow = 500,000

2. present value = Future value / $(1+r)^n$ $r = \text{discount rate}$
 $n = \text{year}$

present value of cash inflow = $500,000 / (1+0.12)^1 + \dots + 500,000 / (1+0.12)^8$

= 24,83,819.883

present value of cash out flow = 24,00,000

∴ Net present value = 24,83,819.883 - 24,00,000
= 83,819.883 $\approx$ 83,820

As NPV positive, project acceptable.

3. present value of cash inflow for 20% =

$500,000 / (1.20)^1 + \dots + 500,000 / (1.20)^8$
= ~~6,64,455.68~~ = 10,18,579.002

∴ Net present value = ~~735,544.32~~

= - 181,420.0084

$\approx$ - 181,420

∴ Factor of internal Rate of return = $12 + \left[\frac{83820}{83820 - (-181420)} \right]^{(20-12)}$

= 13.186%

$$\begin{aligned} 4. \text{ Payback period} &= \frac{\text{Investment Required}}{\text{Annual Net Cash Flow}} \\ &= \frac{2400,000}{500,000} = 4.8 \text{ year.} \end{aligned}$$

$$\begin{aligned} 5. \text{ Simple Rate of Return} &= \frac{\text{Annual Net operating Income}}{\text{Investment Required}} \\ &= \frac{200,000}{2,40,000} = 8.3\%. \end{aligned}$$

Process Costing

4.3

1.

Equivalent Unit of production

Particular	Mixing	Material	Conversion
Unit completed and transferred	50	50	50
Ending work in process	100% or 1	80% or .8	70% or .7
production per equivalent unit	(4) 501	50.8	50.7

2.

Particular	Mixing	Material	Conversion
Beginning work in process	1670	90	605
Cost added during september	81460	6,006	42,490
Total	83,130	6,096	43,095
Equivalent Unit of production	501	50.8	50.7
Cost per Equivalent Unit	(÷) 1630	120	850

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3. Particular	Mixing	Material	Conversion	Total
Number of equivalent Units	1	0.8	0.7	
Cost per equivalent Unit	1630	120	850	
Ending work in process cost	(X) 1630	06	595	2321

Particular	Mixing	Material	Conversion	Total
Unit completed and transferred	50	50	50	
Cost per equivalent Unit	1630	120	850	
Cost of unit completed and transferred	(X) 81500	6000	42500	130,000

4. Particular	Mixing	Material	Conversion	Total
Cost of Beginning work in process	1670	36	605	2365
Cost added during September	81466	6006	42490	129956

Total = 132,321

∴ Total cost accounted = (Ending work in process cost + cost of unit completed and transferred)