
# Managerial Accounting

# COURSE OVERVIEW

| Session | Topic | Hilton / Platt |
|---|---|---|
| 1 | The Changing Role of Managerial Accounting | Chapter 1 |
| | Basic Cost Management Concepts | Chapter 2 |
| 2 | Product / Job Costing | Chapter 3 |
| | Transfer Pricing | Chapter 13 |
| 3 | Cost-Volume-Profit Analysis | Chapter 7 |
| | Inventory Costing (Absorption vs. Variable Costing) | Chapter 8 |
| 4 | Decision-Making: Relevant Costs and Benefits | Chapter 14 |
| | Responsibility Center, Performance Measures & Controls | (Chapter 12/13) |
| 5 | Activity-Based Costing | Chapter 5 |
| 6 | Activity Analysis, Cost Behavior, and Cost Estimation | Chapter 6 |
| | Budgets – Financial Planning and Analysis | Chapter 9 |
| 7 | Standard Costing and Direct Cost Variances | Chapter 10 |
| 8 | Signaling Effects of Incentives | |
| | Sustainability and Controlling | |

# CHAPTER 7
# COST-VOLUME-PROFIT ANALYSIS

# CVP ANALYSIS

## OUTLINE

### CONTRIBUTION MARGIN APPROACH

### BREAK-EVEN ANALYSIS

### COST-VOLUME-PROFIT (CVP) ANALYSIS

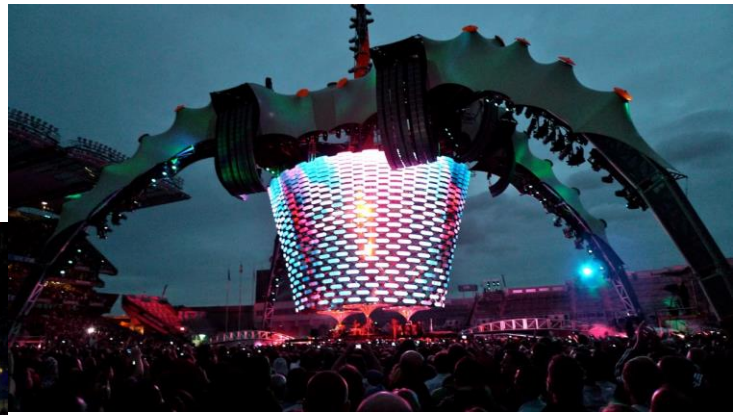
### SENSITIVITY ANALYSIS

### CVP WITH MULTIPLE PRODUCTS

# CVP ANALYSIS

## U2 360° TOUR: THE BIGGEST ROCKSHOW EVER

- $120 Million fixed costs
- $750,000 expenses per day
- Loudest sound system ever



# CVP ANALYSIS

# CVP ANALYSIS

## HOW DOES PROFIT CHANGE WITH …

- An increase in sales?
- A decrease in cost?
- A shift in cost structure – an increase in variable costs and a decrease in fixed costs?
- A price change which increases volume but lowers profit per unit?
- Selling an additional product?

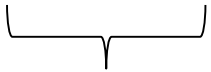
Cost-Volume-Profit Analysis:
evaluate possible outcomes for the business under differing circumstances

# CVP ANALYSIS

## BASIC EQUATIONS TO ADDRESS THESE QUESTIONS

- Operating Income (OI) = Revenue – Variable Costs(VC) – Fixed Costs (FC)
  - Revenue = Price (P) *Quantity (Q)
  - VC = VC per unit ($VC_u$) * Q

- OI = P*Q – VCu*Q – FC
- OI = (P – VCu)*Q – FC



Contribution Margin

# CVP ANALYSIS

## CONTRIBUTION MARGIN

- Contribution Margin (CM) = Revenue – Variable Costs (VC)
- Unit Contribution Margin ($CM_u$) = Price (P) – $Vc_u$

- $CM_u$ captures how much each unit “contributes” towards fixed costs
- $CM_u$ is the amount added to operating income by selling an additional unit

- CM Ratio: CM/Sales → the % amount added to operating income per $ in sales revenue

# CVP ANALYSIS

## BREAK-EVEN POINT

- Using relation between unit sales, prices, costs, and profits in planning and decision-making
  - How much to sell to recoup all fixed expenses?
  - Also called break-even analysis

- Break-even point
  - The point where revenues equal costs
  - The point of zero profit

# CVP ANALYSIS

## COMPUTING THE BREAK-EVEN POINT

### UNIT CONTRIBUTION MARGIN APPROACH

- Unit Contribution Margin ($CM_u$) = Price (P) – $Vc_u$

- Captures how much each unit "contributes" towards fixed costs, i.e., how many units must we sell to cover all fixed costs (to break even)

$$FC = Q^* CM_u \iff Q = FC / CM_u$$

# CVP ANALYSIS

## COMPUTING THE BREAK-EVEN POINT

### CONTRIBUTION MARGIN RATIO (% CONTRIBUTION OF SALES)

$$\text{Break-even (dollars)} = (\text{Break-even units}) * \text{Sale\_price}$$

- Sometimes, management prefers break-even point in $
- Contribution margin ratio: % contribution per $ in sales

$$\frac{\text{Contribution margin}}{\text{Sales}} = \text{CM Ratio}$$

$$\frac{\text{Fixed costs}}{\text{CM Ratio}} = \text{Break-even point (in sales dollars)}$$

# CVP ANALYSIS

## COMPUTING THE BREAK-EVEN POINT

### BREAK-EVEN POINTS

- Units

$$\text{Break–even units} = \frac{\text{Fixed costs}}{\text{Unit contribution margin}}$$

- Currency Amount

$$\text{Break-even (\$, €, …)} = \frac{\text{Fixed costs}}{\text{CM Ratio}}$$

# CVP ANALYSIS

## COMPUTING THE BREAK-EVEN POINT

### EXAMPLE

- Curl Inc. sells 500 surf boards for $250,000.
- The associated fixed and variable costs are $80,000 and $150,000 respectively.

- Compute the break-even point in units as well as in dollars!

# CVP ANALYSIS

## COMPUTING THE BREAK-EVEN POINT

### COMPUTING $CM_U$ AND CM RATIO

$CM_U$: For each additional surf board sold, Curl generates $200 in contribution margin.

| | Total | Per Unit | Percent |
|---|---|---|---|
| Sales (500 surf boards) | $250,000 | $ 500 | 100% |
| Less: variable expenses | 150,000 | 300 | 60% |
| Contribution margin | $100,000 | $ 200 | 40% |
| Less: fixed expenses | 80,000 | | |
| Net income | $ 20,000 | | |

CM ratio: 200/500
Per $ in sales, 40% contribution

# CVP ANALYSIS

## COMPUTING THE BREAK-EVEN POINT

$$\text{Break-even units} = \frac{\text{Fixed costs}}{\text{Unit CM}} = \frac{80{,}000}{200} = 400$$

Each unit sold contributes $200 towards recovering fixed costs → 400 units need to be sold to break even

$$\text{Break-even sales} = \frac{\text{Fixed costs}}{\text{CM ratio}} = \frac{80{,}000}{0.4} = \$\ 200{,}000$$

Each $ in sales revenue contributes 40% towards recovering fixed costs → need $200,000 in sales revenue to break even

# CVP ANALYSIS

## COST-VOLUME-PROFIT ANALYSIS

- Break-even does not capture how profit changes as activity changes

- CVP analysis: capture the relationship between profit and volume of activity
- Often graphically displayed

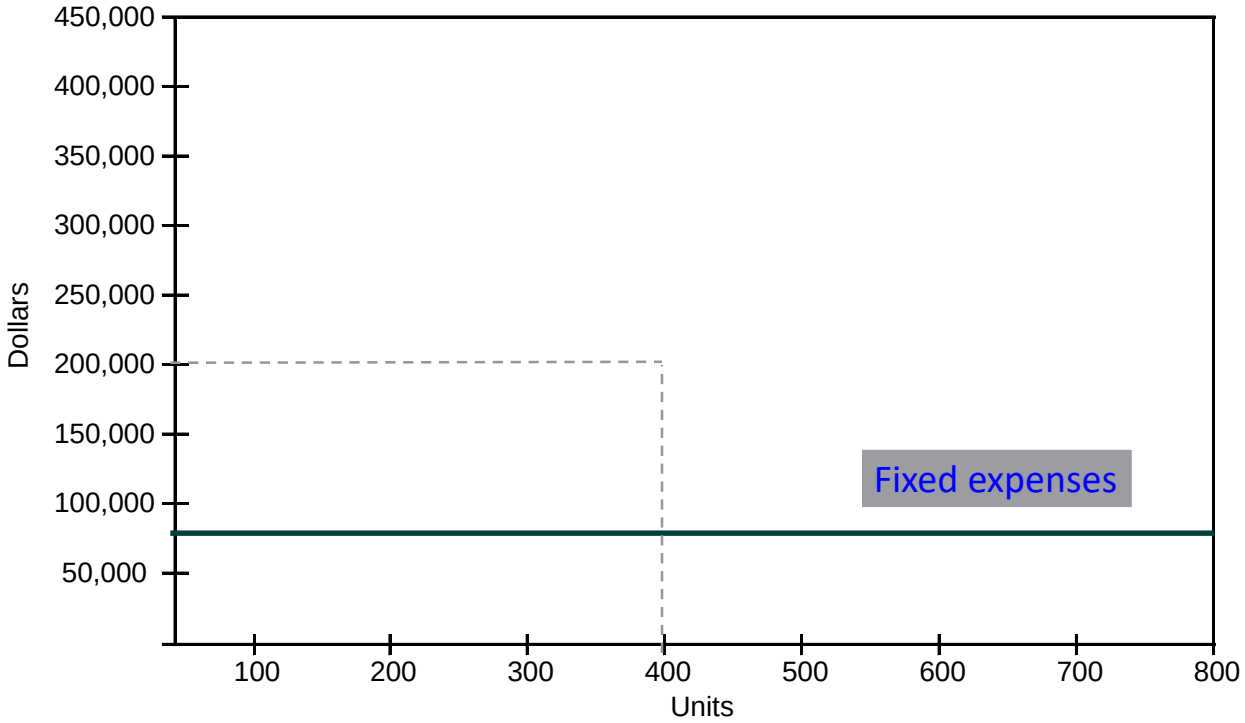
# CVP ANALYSIS

## CVP: SCENARIO ANALYSIS & GRAPHS

| Production | 300 units | 400 units | 500 units |
|---|---|---|---|
| Sales | $150,000 | $200,000 | $250,000 |
| Variable costs | $90,000 | $120,000 | $150,000 |
| Total Contribution margin | $60,000 | $80,000 | $100,000 |
| Unit CM | $ 200 | $ 200 | $ 200 |
| Fixed costs | $80,000 | $80,000 | $80,000 |
| Profits | ($20,000) | - | $20,000 |

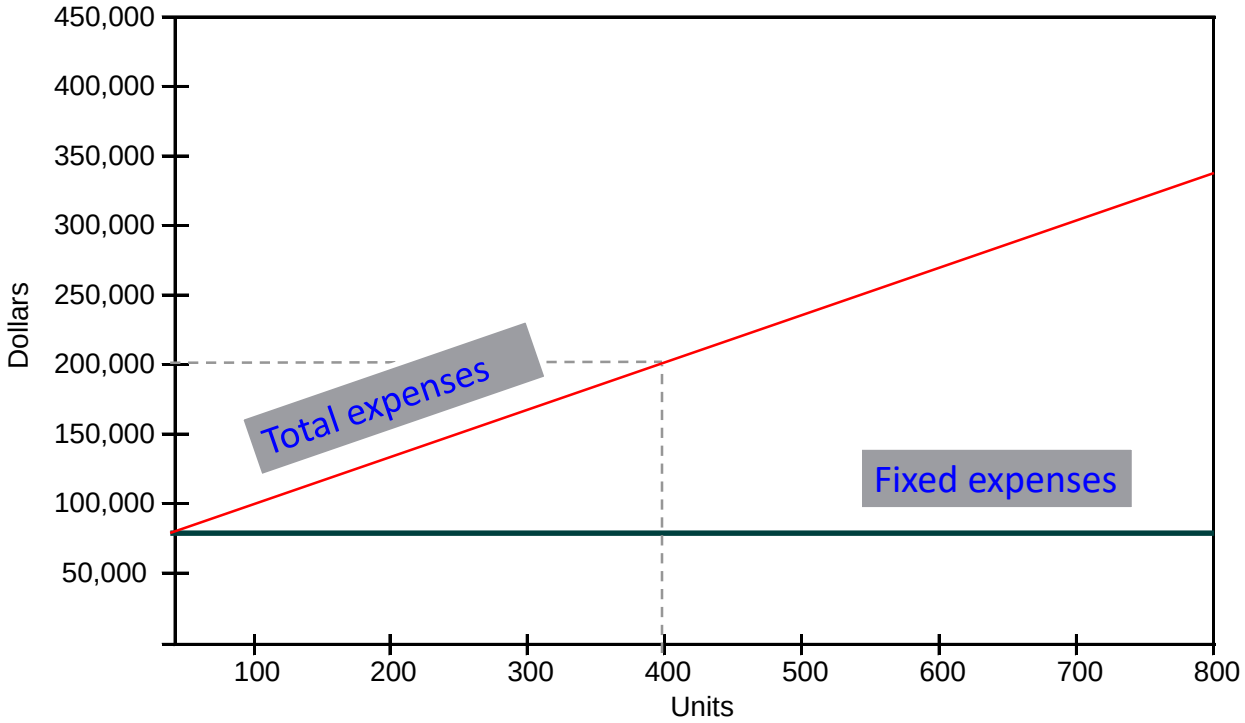
# CVP ANALYSIS

## COST-VOLUME PROFIT GRAPH



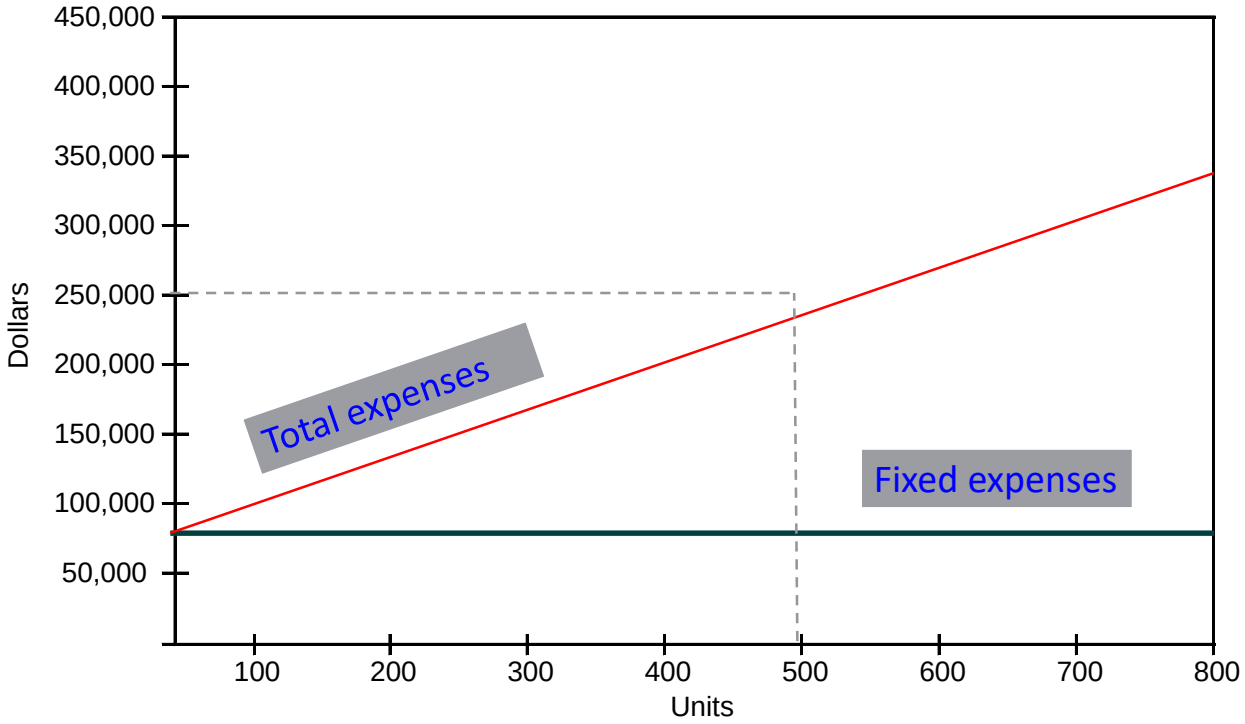
# CVP ANALYSIS

## COST-VOLUME PROFIT GRAPH



# CVP ANALYSIS

## COST-VOLUME PROFIT GRAPH



# CVP ANALYSIS

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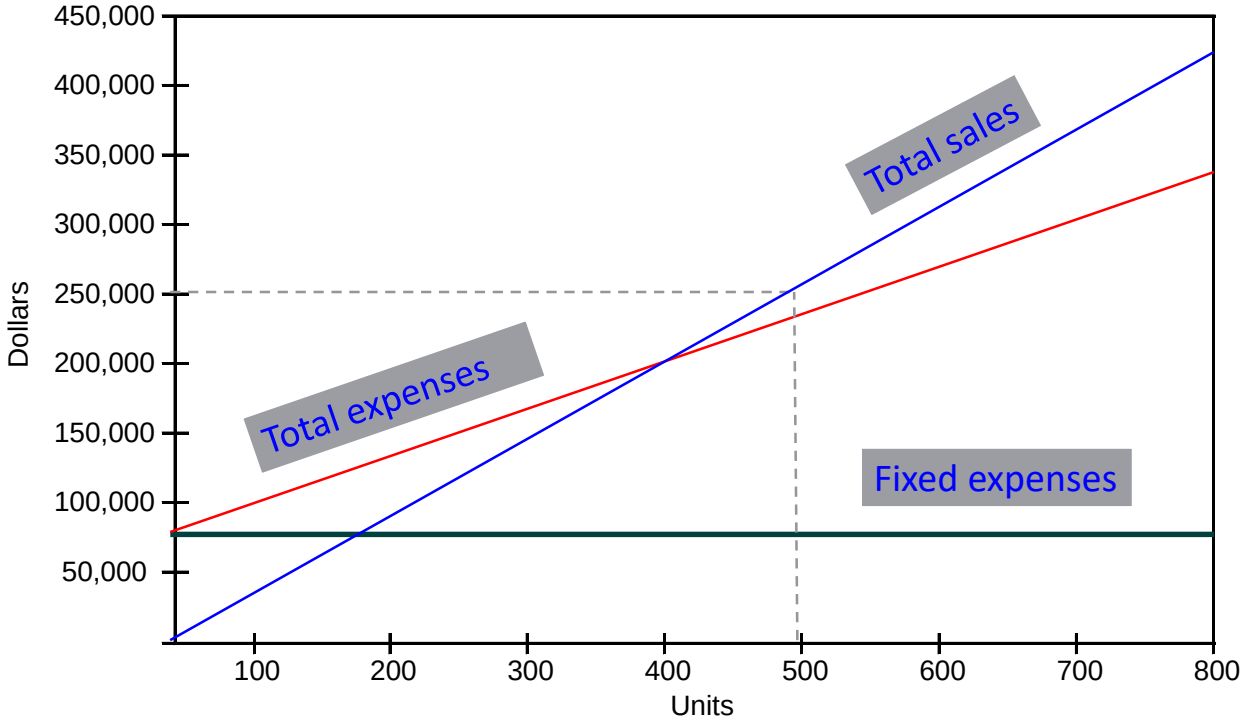
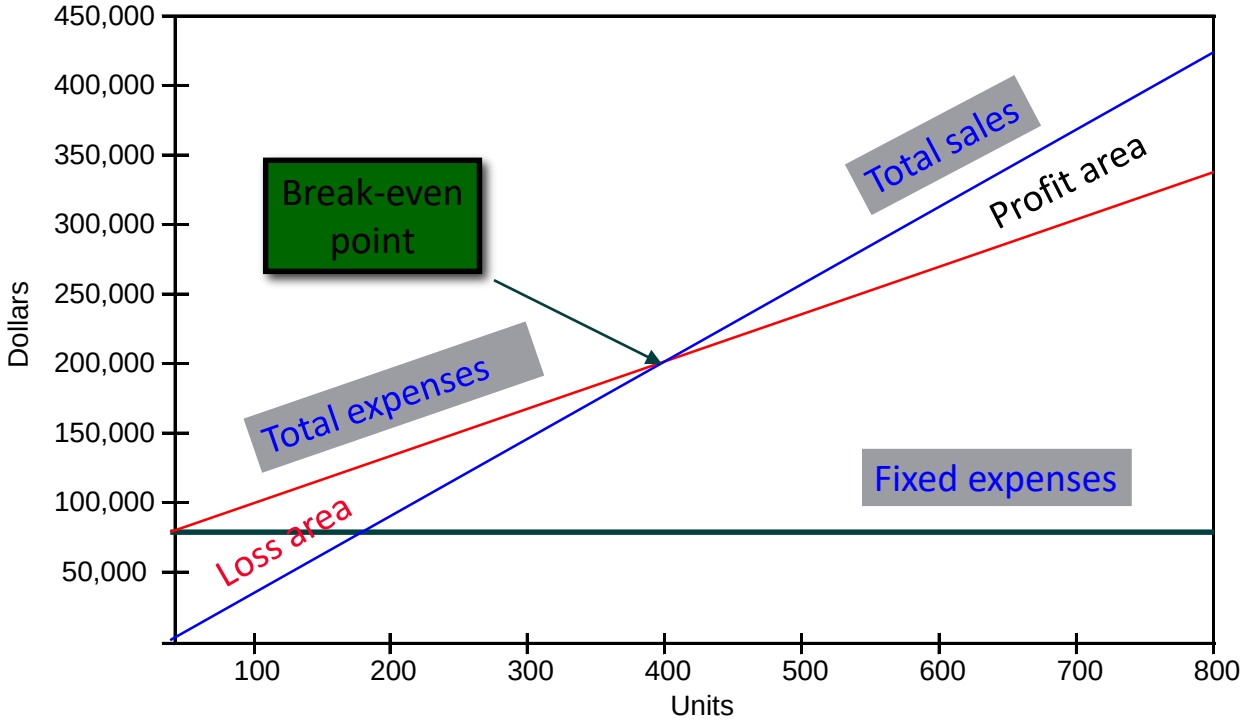


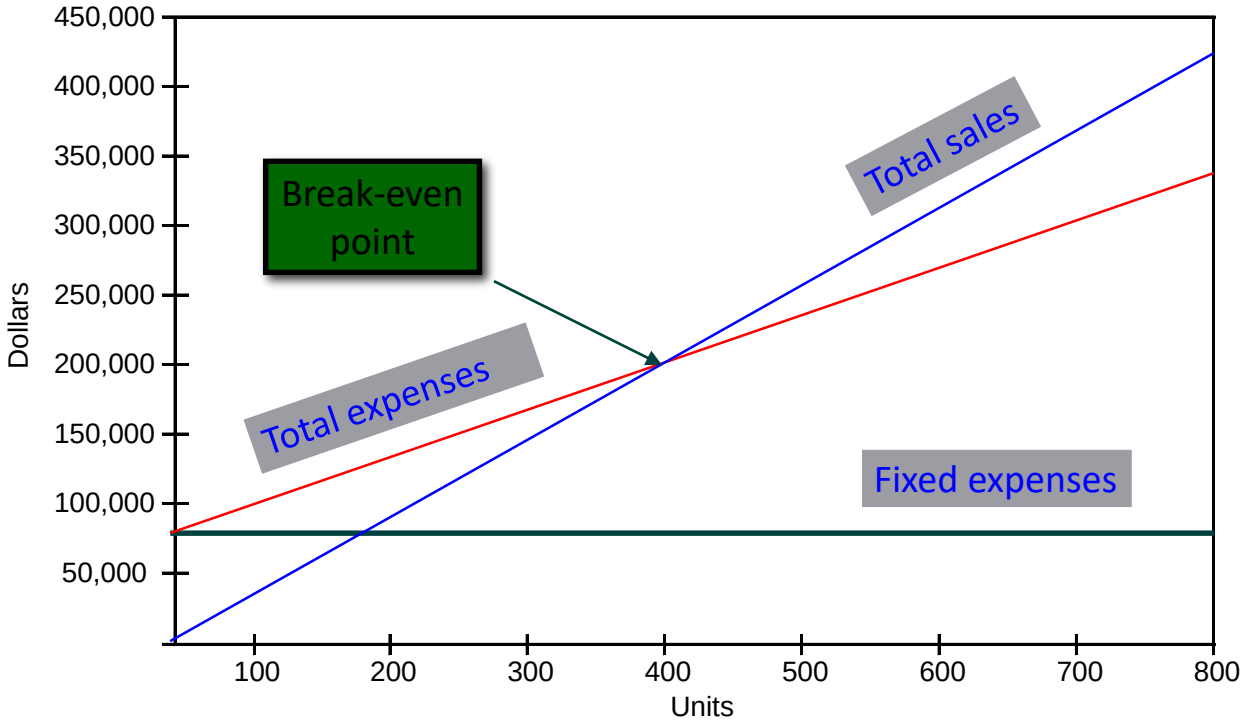
# CVP ANALYSIS

## COST-VOLUME PROFIT GRAPH



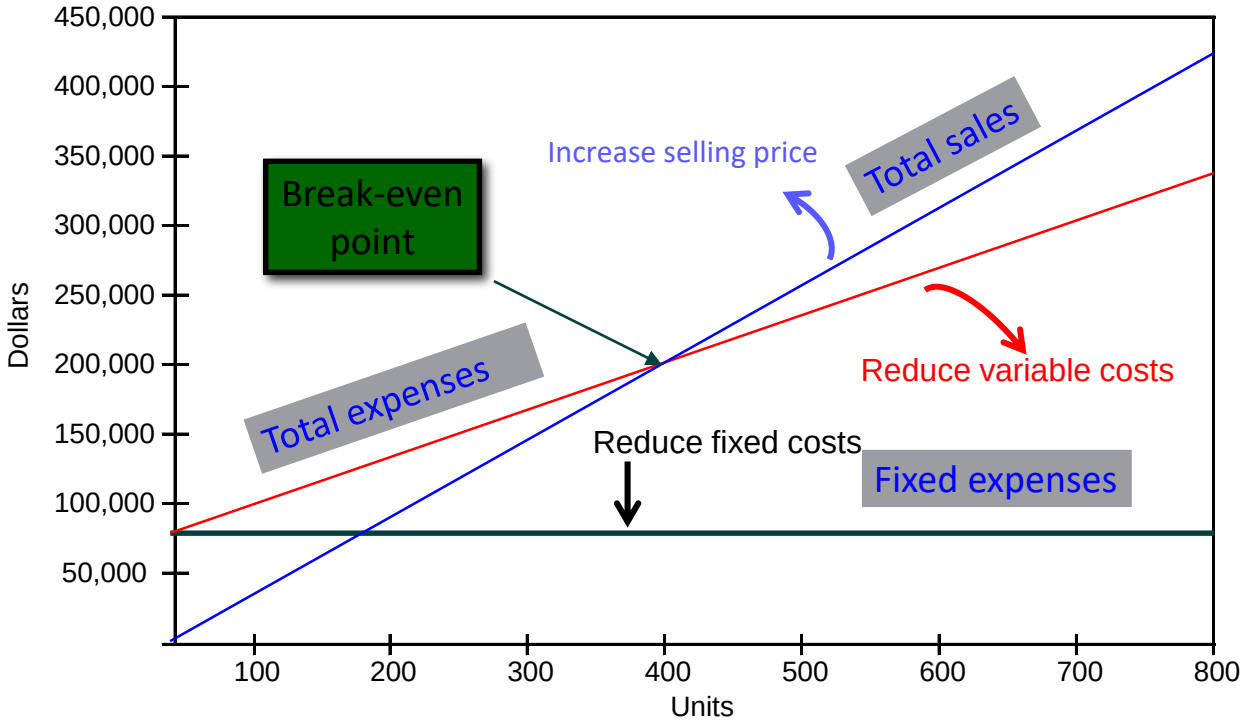
# CVP ANALYSIS

## HOW CAN YOU REDUCE THE BREAK-EVEN POINT?



# CVP ANALYSIS

## HOW CAN YOU REDUCE THE BREAK-EVEN POINT?



# CVP ANALYSIS

## TARGET PROFIT

- By simply adding target profit to fixed costs, the break-even point formula can be modified to become a profit planning tool.

$$\text{Target profit units} = \frac{\text{Fixed costs} + \text{Target profit}}{\text{Unit contribution margin}}$$

$$\text{Target profit sales} = \frac{\text{Fixed costs} + \text{Target profit}}{\text{CM Ratio}}$$

# CVP ANALYSIS

## E7-23

- University Pizza delivers to dorms and apartments.
- Annual fixed costs are $54,000, the selling price is $10 per pizza.
- Variable costs are $6 per pizza (production and delivery).

1. Using unit contribution margin, what is B/E in units?
2. What is the contribution margin ratio?
3. Using contribution margin ratio, B/E in sales $?
4. How many pizzas to sell to earn a net profit of $60,000?

# CVP ANALYSIS

## APPLYING CVP ANALYSIS

- CVP provides structure to evaluate profit under alternative scenarios
- What happens to profit if:
  - Firm changes selling price
  - Cost structure changes
- Firm should select alternative which maximizes profit.

## APPLYING CVP ANALYSIS: EXAMPLE

- Curl is currently selling 500 surf boards per month.

$$FC = \$80{,}000,\ VC_u = \$300,\ P = \$500$$

- The owner believes that an increase of $10,000 in the monthly advertising budget would increase board sales to 540 units.
- Should the firm authorize the increase in advertising?

- Calculate profitability under each scenario!

## APPLYING CVP ANALYSIS: EXAMPLE (CONT'D)

- Calculate profitability under each scenario!

- No advertising: Profit = (200)*500 - $80,000 = $20,000
- Advertising: Profit = (200)*540 - $90,000 = $18,000

- Sales increase does not outweigh the additional costs → select no advertising

## APPLYING CVP ANALYSIS: EXAMPLE (CONT'D)

- Incremental sales & costs matter
- Advertising increases sales by 40 units → affects profit in two ways
  - Increase in profit due to 40 unit increase in sales: 40*200 = 8,000
  - Decrease in profit due to change in fixed costs by $10,000
- $8,000 - $10,000 < 0 → advertising decreases profit

## CVP ANALYSIS WITH MULTIPLE PRODUCTS

- Sales mix
  - The proportion of sales of various products
- How do you compute break-even points?
  - Different products have different costs, different sales prices and different contribution margins
  - However, fixed costs are common
- Key: Weighted average contribution margin

# CVP ANALYSIS

## CVP ANALYSIS WITH MULTIPLE PRODUCTS

- $OI = CM_{u1}Q_1 + CM_{u2}Q_2$ – Fixed Costs

- Express quantity per product as a % of total quantity

$$(\%Prod_1 = Q_1 / (Q_1 + Q_2),\ Q_{TTL} = Q_1 + Q_2)$$

- $OI = (CM_{u1}(\%Prod_1) + CM_{u2}(\%Prod_2))\ Q_{TTL}$ – Fixed Costs

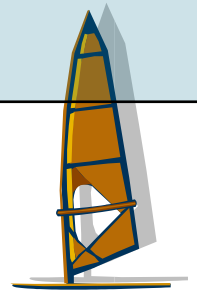
**Weighted average unit contribution margin**

## CVP ANALYSIS WITH MULTIPLE PRODUCTS: EXAMPLE (CONT'D)

- Assume that Curl sells sail boards along with surfboards as following:

| | Sale price | Variable cost | Units sold |
|---|---|---|---|
| Surfboards | 500 | 300 | 500 |
| Sailboards | 1,000 | 450 | 300 |
| Fixed costs – added capacity | | 170,000 | |

- Compute the break-even points!



## CVP ANALYSIS WITH MULTIPLE PRODUCTS: EXAMPLE (CONT'D)

- Unit contribution margin
  - surf boards: $CM_U = 500 – 300 = 200$
  - sail boards: $CM_U = 1{,}000 – 450 = 550$
- Sales mix = 500 surf, 300 sail boards (800 total)
  - 62.5% (5/8) surf boards
  - 37.5% (3/8) sail boards
- Weighted average unit contribution margin = (0.625)*200+(0.375)*550 = 331.25

## CVP ANALYSIS WITH MULTIPLE PRODUCTS: EXAMPLE (CONT'D)

- Break–even point = $$\frac{\text{Fixed costs}}{\text{Weighted average unit contribution margin}}$$

$$\text{Break–even point} = \frac{170{,}000}{331.25}$$

$$\text{Break–even point} = 514$$

- Curl Inc. has to sell 514 combined units to break-even – the mix is important!

## CVP ANALYSIS WITH MULTIPLE PRODUCTS: EXAMPLE (CONT'D)

- Individual break-even points:

| | Combined break-even point | Weights | Individual break-even point |
|---|---|---|---|
| Surfboards | 514 | 0.625 | 321 |
| Sailboards | 514 | 0.375 | 193 |
| Total | | | 514 |

- Curl Inc. has to sell 321 surfboards and 193 sailboards to break even.

# CVP ANALYSIS

## ASSUMPTIONS UNDERLYING CVP ANALYSIS

- Selling price is constant throughout the entire relevant range.
- Costs are linear over the relevant range.
- In multi-product companies, the sales mix is constant.
- In manufacturing firms, inventories do not change (units produced = units sold).

# CVP ANALYSIS

## CASE 7-55

- Current situation vs. new option:

| Independent Sales Agents | Own Sales Personnel |
|---|---|
| • Currently receive a commission of 20% of sales<br>• Demand an increase to 25% | • 3 individuals required (annual salary of $45,000 each)<br>• Plus commissions of 5% of sales<br>• 2 sales managers at fixed annual salaries of $120,000 each |

# CVP ANALYSIS

## CASE 7-55 (CONT'D)

- Budgeted income statement reflects independent sales agents (20%)
- Assume COGS 100% variable
- All income statement fixed costs and the variable cost percentages would remain the same under each scenario

**LAKE CHAMPLAIN SPORTING GOODS COMPANY**
**Budgeted Income Statement**
**For the Year Ended December 31, 20x4**

| | | |
|---|---|---|
| Sales | | $15,000,000 |
| Cost of goods sold | | 9,000,000 |
| Gross margin | | $ 6,000,000 |
| Selling and administrative expenses: | | |
| Commissions | $3,000,000 | |
| All other expenses (fixed) | 150,000 | 3,150,000 |
| Income before taxes | | $ 2,850,000 |
| Income tax (30%) | | 855,000 |
| Net Income | | $ 1,995,000 |

# CVP ANALYSIS

## CASE 7-55 (CONT'D)

1. Estimate B/E point in sales $ based on IS for both scenarios:
   - independent sales agents, 20% commission
   - own sales personnel
2. Compute estimated $ sales volume that yields the same net income if sales commission rises to 25%
3. Compute estimated $ sales volume that would yield an identical net income under both scenarios (25% commission vs. own sales personnel)

# CHAPTER 8

# INVENTORY COSTING: ABSORPTION VS. VARIABLE COSTING

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING

- Inventory Costing: how is fixed manufacturing overhead allocated?

### ABSORPTION (FULL) COSTING

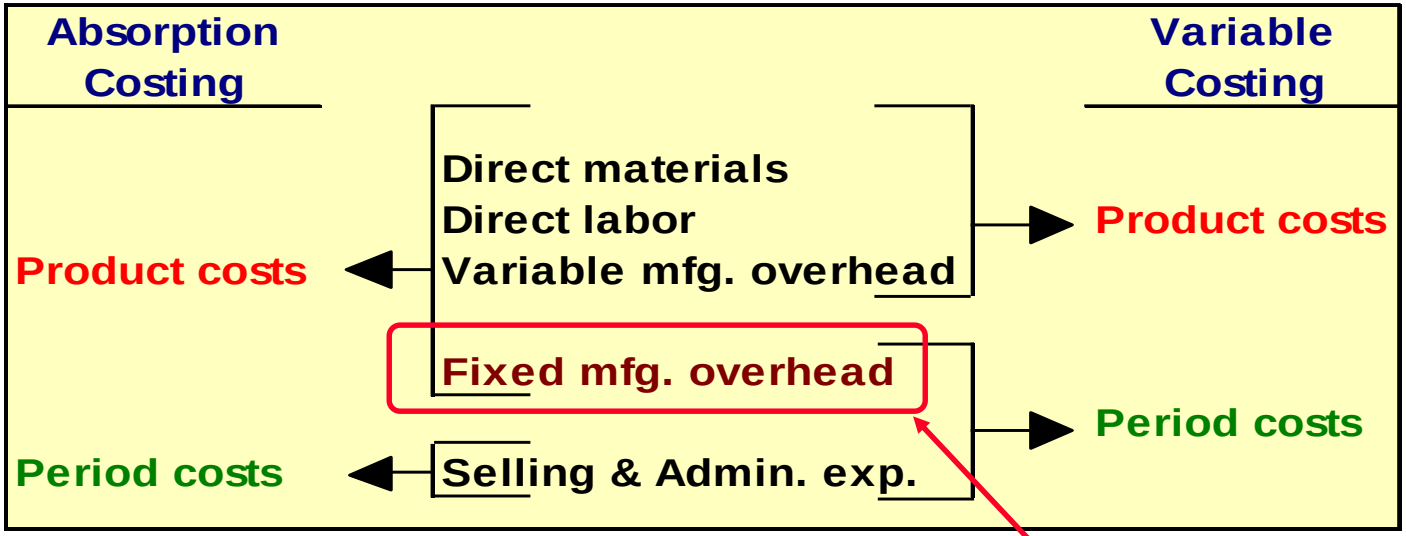
- Both fixed and variable production costs are assigned to products.

### VARIABLE COSTING

- Only variable costs are assigned to products (also called direct costing)

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING




The difference between absorption and variable costing is the treatment of fixed manufacturing overhead.

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING

- Mellon Co. produces a single product with the following information available:

| | |
|---|---|
| **Number of units produced annually** | **25,000** |
| **Variable costs per unit:** | |
| **Direct materials, direct labor and variable mfg. overhead** | **$ 10** |
| **Fixed costs per year:** | |
| **Mfg. overhead** | **$150,000** |
| **Selling & administrative expenses** | **$160,000** |

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING

- Unit product cost is determined as follows:

| | Absorption Costing | Variable Costing |
|---|---|---|
| Direct materials, direct labor, and variable mfg. overhead | $ 10 | $ 10 |
| Fixed mfg. overhead ($150,000 ÷ 25,000 units) | 6 | - |
| Unit product cost | $ 16 | $ 10 |

- Selling and administrative expenses are always treated as period expenses & deducted from revenue.

# INVENTORY COSTING

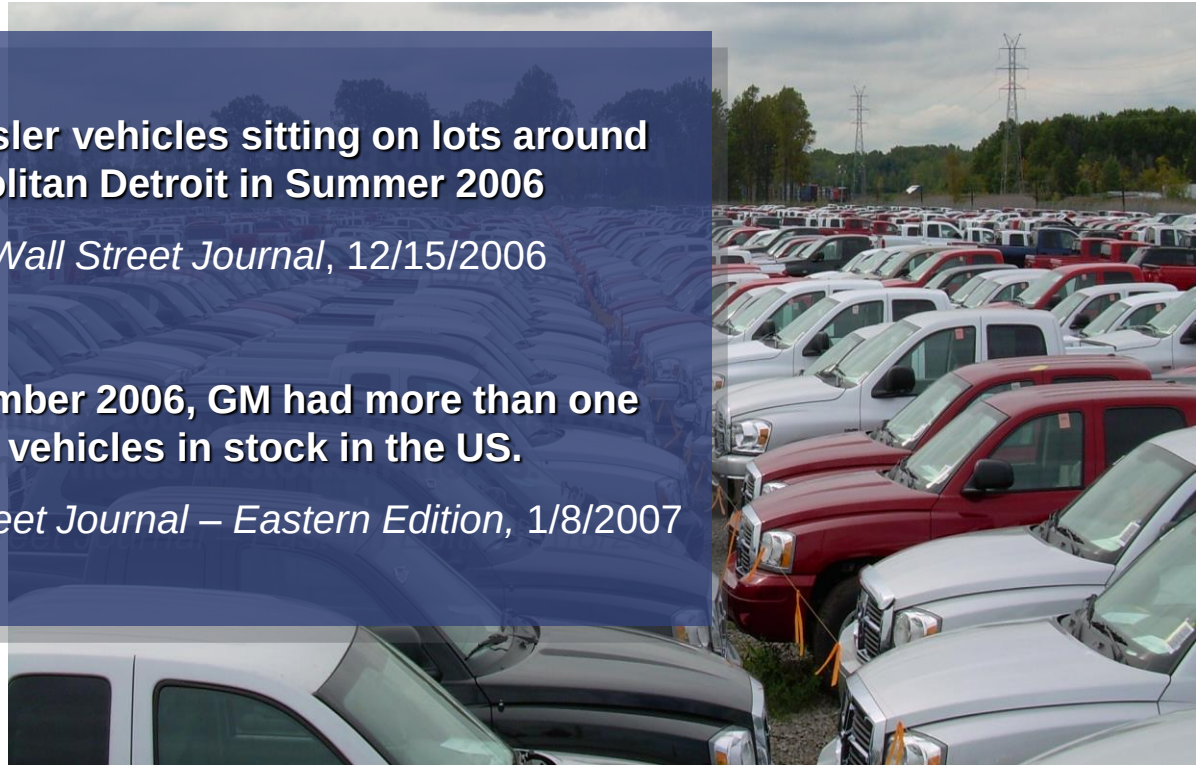
## ABSORPTION AND VARIABLE COSTING

**100,000 Chrysler vehicles sitting on lots around metropolitan Detroit in Summer 2006**

source: *Wall Street Journal*, 12/15/2006

**During December 2006, GM had more than one million vehicles in stock in the US.**

source: *Wall Street Journal – Eastern Edition,* 1/8/2007



# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING

- "GM, Ford, and DaimlerChrysler… are lopping thousands of dollars off sticker prices on 2007 models"
  *(source: Wall Street Journal, 9/27/2006)*


- "Chrysler is slicing as much as $10,000 off the $30,000 price of the Dodge Durango, a big SUV whose sales have stalled."
  *(source: Wall Street Journal, 12/15/2006)*

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING

- Absorption costing (AC) is required by GAAP and the IRS for external reporting
  - Fixed manufacturing overhead (FMOH) is allocated to units of product
  - FMOH is part of Cost of Goods Sold (CoGS) for units sold, part of balance-sheet inventory value for unsold units
  - Consistent with long-run pricing decisions that must cover full costs

- Variable costing (VC) is used internally
  - All current-period FMOH is treated as a current-period cost, regardless of whether units are sold or not
  - Consistent with CVP analysis, impact of fixed costs emphasized
  - Consistent with short-run pricing decisions

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING: NET INCOME EFFECT

### HOW DO THE DIFFERENT UNIT COSTS IMPACT NET INCOME?

- Sell units for $30
- Unit costs are $16 under absorption and $10 under variable costing
- Fixed costs are $150,000 ($6 per unit)

| | Year 0 | Year 1 | Year 2 |
|---|---|---|---|
| Production | 25,000 | 25,000 | 25,000 |
| Sales | 25,000 | 20,000 | 30,000 |

- Big question: Under which costing system is the operating income higher?

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING: NET INCOME EFFECT

- Absorption allocates fixed costs to products (fixed costs are “absorbed”)
  - Decreases gross margin (i.e. COGS increase)
  - Defers fixed costs into inventory (if sales < production)

Let’s work a numerical example!

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING: NET INCOME EFFECT

- Mellon Co.,

  in year 1 of operations,

  had no beginning inventory,

  produced 25,000 units

  and sold 20,000 units

  at $30 each.

**Absorption Costing Income Statement**

| | Absorption Costing | |
|---|---|---|
| Sales (20,000 × $30) | | $ 600,000 |
| Less cost of goods sold: | | |
| Beginning inventory | $ - | |
| Add COGM (25,000 × $16) | 400,000 | |
| Goods available for sale | $ 400,000 | |
| Ending inventory (5,000 × $16) | 80,000 | 320,000 |
| Gross margin | | $ 280,000 |
| Less selling & admin. exp. | | |
| Fixed | 160,000 | 160,000 |
| Operating income | | $ 120,000 |

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING: NET INCOME EFFECT

- Mellon Co.,

  in year 1 of operations,

  had no beginning inventory,

  produced 25,000 units

  and sold 20,000 units

  at $30 each.

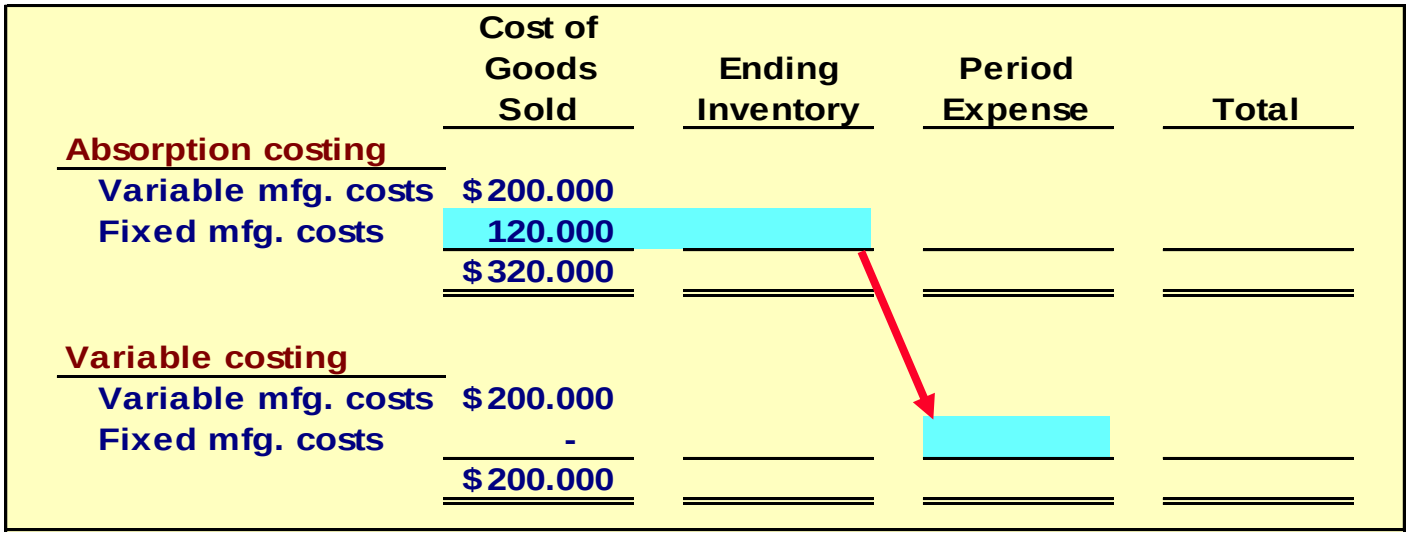
**Variable Costing Income Statement**

| | Variable Costing | |
|---|---|---|
| Sales (20,000 × $30) | | $ 600,000 |
| Less variable expenses: | | |
| Beginning inventory | $ - | |
| Add COGM (25,000 × $10) | 250,000 | |
| Goods available for sale | $ 250,000 | |
| Ending inventory (5,000 × $10) | 50,000 | |
| Variable cost of goods sold | | |
| Contribution margin | | $ 400,000 |
| Less fixed expenses: | | |
| Manufacturing overhead | $ 150,000 | |
| Selling & administrative expenses | 160,000 | 310,000 |
| Operating income | | $ 90,000 |

We exclude the fixed manufacturing OH.

# INVENTORY COSTING

## COMPARING ABSORPTION AND VARIABLE COSTING



# INVENTORY COSTING

## COMPARING ABSORPTION AND VARIABLE COSTING

- If production > sales, Absorption Costing Income > Variable Costing Income

| | Cost of Goods Sold | Ending Inventory | Period Expense | Total |
|---|---|---|---|---|
| **Absorption costing** | | | | |
| Variable mfg. costs | $200,000 | $ 50,000 | $ - | $250,000 |
| Fixed mfg. costs | 120,000 | 30,000 | - | 150,000 |
| | $320,000 | $ 80,000 | $ - | $400,000 |
| **Variable costing** | | | | |
| Variable mfg. costs | $200,000 | $ 50,000 | $ - | $250,000 |
| Fixed mfg. costs | - | - | 150,000 | 150,000 |
| | $200,000 | $ 50,000 | $150,000 | $400,000 |

# INVENTORY COSTING

## RECONCILING INCOME UNDER ABSORPTION & VARIABLE COSTING

- We can reconcile the difference between absorption and variable using the “shortcut method”.

$$\left(\begin{array}{c}\text{change in inventory}\\ \text{in units}\end{array}\right) \times \left(\begin{array}{c}\text{predetermined fixed}\\ \text{overhead rate per unit}\end{array}\right)$$

# INVENTORY COSTING

## RECONCILING INCOME UNDER ABSORPTION & VARIABLE COSTING

| | |
|---|---|
| **Variable costing operating income** | **$ 90,000** |
| **Add: Fixed mfg. overhead costs deferred in inventory (5,000 units × $6 per unit)** | **30,000** |
| **Absorption costing operating income** | **$ 120,000** |

$$\frac{\text{Fixed mfg. overhead}}{\text{Units produced}} = \frac{\$150{,}000}{25{,}000} = \$6.00 \text{ per unit}$$

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING: NET INCOME EFFECT

- In year 2 of operations, Mellon Co. started with an inventory of 5,000 units, produced 25,000 units & sold 30,000 units at $30.

**Absorption Costing Income Statement**

Ending inventory from previous period.

| | Absorption Costing | |
|---|---|---|
| Sales (30,000 × $30) | | $ 900,000 |
| Less cost of goods sold: | | |
| Beg. inventory (5,000 x $16) | $ 80,000 | |
| Add COGM (25,000 × $16) | 400,000 | |
| Goods available for sale | $ 480,000 | |
| Ending inventory | - | 480,000 |
| Gross margin | | $ 420,000 |
| Less selling & admin. exp. | | |
| Fixed | 160,000 | 160,000 |
| Operating income | | $ 260,000 |

25,000 units produced in the current period.

# INVENTORY COSTING

## ABSORPTION AND VARIABLE COSTING: NET INCOME EFFECT

- In year 2 of operations, Mellon Co. started with an inventory of 5,000 units, produced 25,000 units & sold 30,000 units at $30.

**Variable Costing Income Statement**

| | Variable Costing | |
|---|---|---|
| Sales (30,000 × $30) | | $ 900,000 |
| Less variable expenses: | | |
| Beg. inventory (5,000 × $10) | $ 50,000 | |
| Add COGM (25,000 × $10) | 250,000 | |
| Goods available for sale | $ 300,000 | |
| Ending inventory | - | |
| Variable cost of goods sold | $ 300,000 | 300,000 |
| Contribution margin | | $ 600,000 |
| Less fixed expenses: | | |
| Manufacturing overhead | $ 150,000 | |
| Selling & administrative expenses | 160,000 | 310,000 |
| Operating income | | $ 290,000 |

Excludes fixed manufacturing overhead.

# INVENTORY COSTING

## ABSORPTION COSTING (AC) VS. VARIABLE COSTING (VC): SUMMARY

| Production versus Sales | Total Inventory Effect | Period Expense Effect | | | Profit Effect |
|---|---|---|---|---|---|
| Produced > Sold | Increase | Fixed mfg. costs expensed AC | < | Fixed mfg. costs expensed VC | AC > VC |
| Produced < Sold | Decrease | Fixed mfg. costs expensed AC | > | Fixed mfg. costs expensed VC | AC < VC |
| Produced = Sold | No change | Fixed mfg. costs expensed AC | = | Fixed mfg. costs expensed VC | AC = VC |

# INVENTORY COSTING

## INCOME STATEMENT FORMAT: ABSORPTION VS. VARIABLE COSTING

- Absorption costing: classify costs by function
  - Revenues – Cost of Goods Sold = Gross profit
  - Gross profit – Selling General & Administrative Costs = Operating income
- Variable costing: classify costs by behavior
  - Revenues – variable costs (production, sales, etc.) = Contribution margin
  - Contribution margin – fixed costs (production, sales, etc.) = Operating income

# INVENTORY COSTING

## E8-23

- Sea Star Company manufactures diving masks with a variable cost of $12.50. The masks sell for $17.00. Budgeted fixed manufacturing overhead for the most recent year was $396,000. Actual production was equal to planned production.

- Under each of the following conditions, state
  1. whether operating income is higher under variable or absorption costing and
  2. the amount of the difference in reporting operating income under the two methods.
- Treat each condition as an independent case.

# INVENTORY COSTING

## E8-23

| | | |
|---|---|---|
| 1. | Production | 110,000 units |
| | Sales | 107,000 units |
| 2. | Production | 88,000 units |
| | Sales | 93,000 units |
| 3. | Production | 80,100 units |
| | Sales | 80,100 units |

# INVENTORY COSTING

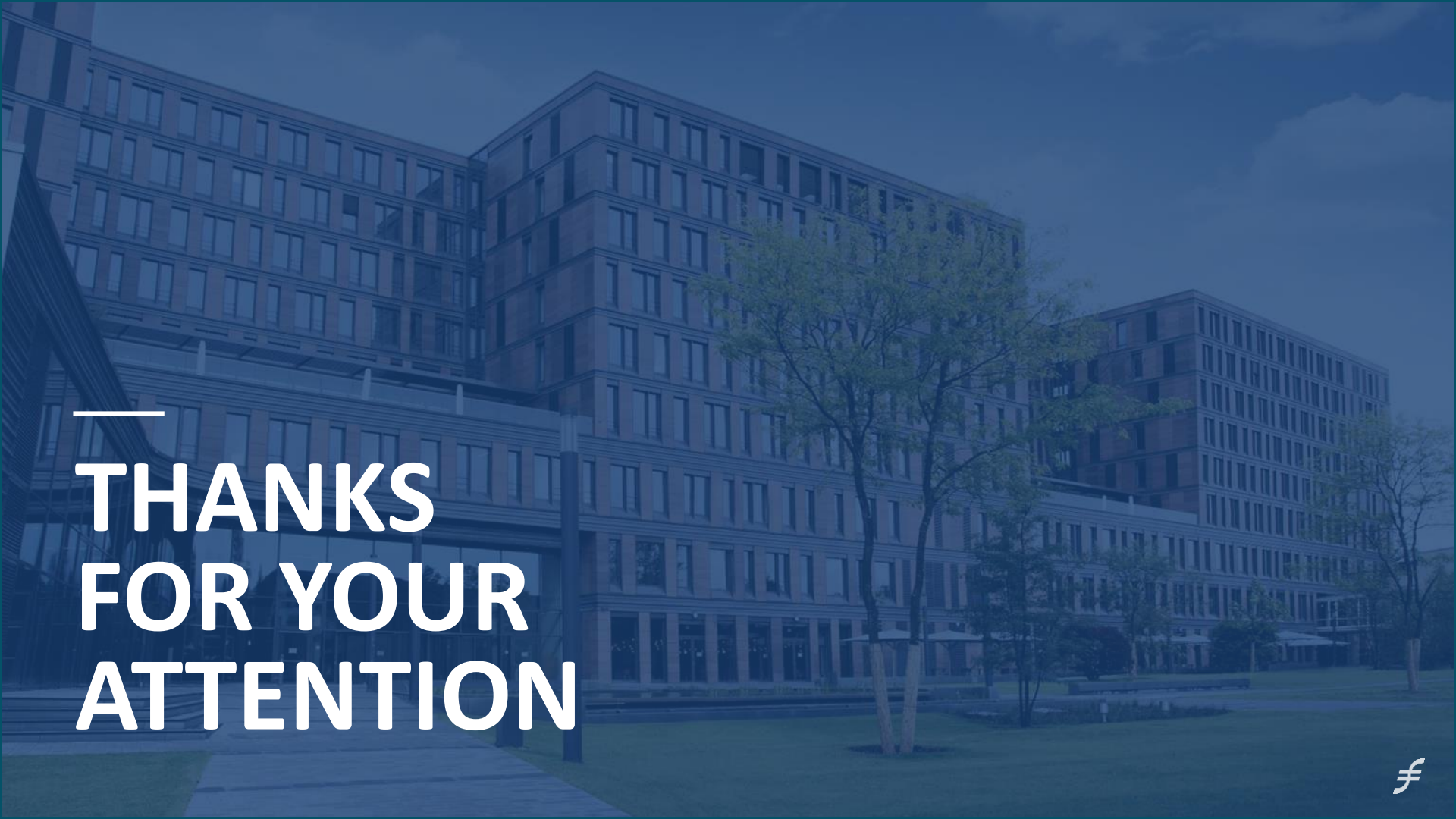
## E8-27

Information taken from Ticonderoga Paper Company's records for the most recent year is as follows:

- Direct material used $203,000
- Direct labor 70,000
- Variable manufacturing overhead 35,000
- Fixed manufacturing overhead 56,000
- Variable selling and administrative costs 28,000
- Fixed selling and administrative costs 14,000

**1.** Assuming Ticonderoga Paper Company uses variable costing, compute the inventoriable costs for the year.

**2.** Compute the year's inventoriable costs using absorption costing.


THANKS
FOR YOUR
ATTENTION

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