I. Relevant Cost

A. Future differential costs; to be relevant to management, costs must be incurred in the future and be different from the alternatives

1. *Historical cost*s should have no Marginal bearing on decisions other than providing a frame of reference

2. *Accuracy* of estimated future costs is a limiting factor and a goal but because estimates are by definition, in the future, there will always be inaccuracies.

B. The Relationship of Income Statement Format to Decision Making

Review Handout 2 C for comparisons of Absorption Costing and Variable (Marginal) Costing.

1. Absorption Costing Income Statements :

a. Each unit of production (inventory) "absorbs" some fixed cos

b. Fixed costs are "product costs" (costs assigned to production)

c. If inventory is increased in relation to sales, absorption costing will produce a higher net income than variable (Marginal costing) because the fixed cost in inventory are not charged against income in the current period

d. Classify costs as *manufacturing, selling* and *administrative*

e. Typically used for external reporting purposes

2. Variable (Marginal) Costing Income Statements:

a. Inventory is not assigned fixed costs

b. Fixed cost are a "period cost" (cost assigned to the period in which they were incurred)

c. If inventory is increased in relation to sales, Variable (Marginal) Costing will produce a lower net income than absorption costing because the fixed costs are part of the cost of goods sold (COS) and therefore charged against income in the current period.

d. Costs are classified as variable or fixed

e. Not currently permitted for external reporting under US or International GAAP

Comparative Income Statements

	Absorption Costing
	Sales:
COS:	BOY
	+ Purchases
	Available for Sale
	-EOY
	Cost of Sales
	Selling Expenses
	Admin Expenses
	Net Income

	Variable (Marginal) Costing
	Sales
Less:	Variable Manufacturing Costs
	Variable Selling Costs
	Variable Administrative Costs
	Contribution Margin
Less:	Fixed Manufacturing Costs
	Fixed Selling Costs
	Fixed Administrative Costs
	Net Income

Note that under absorption costing fixed costs are included in all components of the income statement

3. Advantages of Variable Costing

a. Focus is on cost behavior (variable or fixed) rather than business function

b. This focus on *Contribution Margin (the amount contributed to profit either in total or per unit)* is a superior approach for decision making

c. Works in conjunction with CVP analysis in analyzing alternatives

d. Avoids misuse of unit cost computations created under absorption costing models

e. Allows managers to assess predicted income at different levels of production

4. Disadvantages of Variable Costing:

a. Can lead to "suicidal" price cutting of managers price too closely to total variable cost

. 5. Advantages of Absorption (Full) costing Models
   a. All costs (including fixed costs) must be covered over the long run
   b. If competitors' production efficiencies are closely related to our company's efficiency, absorption costing models provide insight into competitors cost structure and margins
   c. saves the cost of alternative costing models
   d. For lazy managers and firms that cannot quickly respond to market forces, absorption models can lead to price stability because they take less planning

II. Pricing Decisions

A. Common Factors Affecting Pricing Decisions
   1. Customer Demand
   2. legal requirements
   3. competitive environment

Note: This concept is totally lost on the administrators who run this University…not to mention the State of California….

B. Pricing Models
   1. The market sets the price in competitive markets (of course, many markets are not competitive)
   2. Cost Plus Pricing: A pricing system typically based on an *average cost plus a desired mark-up.*
      a. The *mark-up component* is usually not fixed but based upon a combination of the factors described in A above
      b. As a general rule: If fixed costs are truly fixed over the relevant range of operations, any price that covers the variable costs will make a contribution to fixed costs and, depending on the market environment (assuming low price will not change the perceived value of the product), will increase income and should be acceptable to management…
   3. Target Costing: Assumes the selling price of the product is set by the market and the company can only control the cost components to make profit

Example 5-1: Preparation of Variable and Absorption Costing Income Statements

XYZ Inc. reported the following data for the year ending 31 December, 2011:

Sales	$	13,000,000	Long-term Rent, Factory	$	100,000
Sales Commissions:		500,000	Factory Superintendent Salary		30,000
Advertising:		400,000	Factory Supervisor's salary		100,000
Shipping Expenses:		300,000	Direct Materials Used:		4,000,000
Admin. Executive Salaries		100,000	Direct Labor Used:		2,000,000
Depreciation on Factory Equipment		400,000	Indirect Labor:		800,000
Admin Clerical Salaries (Variable)		400,000	Cutting Tools Used:		60,000
Fire Insurance Factory Equipment		2,000	Factory Methods Research		40,000
Property Taxes Factory Equipment		30,000	Abrasive for machining:		100,000

Required:
1. Prepare the contribution and absorption costing income statements for XYZ, Inc.
2. Prepare a separate supporting Schedule of Indirect Manufacturing Costs subdivided between fixed and variable costs.
3. If you assume that variable costs are directly proportional to sales and fixed costs are fixed over the relevant range:
   A. What is operating income if sales is $12,000,000
   B. Which income statement provides the solution? Why?

Solution: Example 5-1

XYZ Inc.
Contribution Income Statement
For the Year Ended December 31, 2009
(In thousands of dollars)

Sales			$13,000,000	
Less				
Direct Variable Expenses:				
Direct Materials Used:		$4,000,000		
		2,000,000		
Indirect Variable manufacturing costs (See Schedule 1)		960,000		
Total variable manufacturing cost of goods sold		$6,960,000		
Direct Variable selling expenses:				
Sales Commissions:	$500,000			
Shipping Expenses:	300,000	$800,000		
Indirect Variable Selling @ Admin Costs:				
Admin Clerical Salaries (Variable)		400,000		
Total variable expenses			$8,160,000	
Contribution margin			$4,840,000	0.372308
Less fixed expenses:				
Fixed Manufacturing Overhead (See Schedule 1)				
Total Fixed Overhead Man Costs		$702,000		
Administrative Expenses:				
Admin. Executive Salaries		100,000		
Advertising:		400,000		
Operating income			$1,202,000	
			$3,638,000	

XYZ Inc.

Absorption Income Statement

For the Year Ended December 31, 2009

(In thousands of dollars)

Sales			$13,000,000
Less manufacturing cost of goods sold:			
Direct Materials Used:	$4,000,000		
Direct Labor Used:	2,000,000		
Total Indirect Man. Costs:	1,662,000		
Cost of Goods Sold:		$7,662,000	
Gross profit			$5,338,000
Selling Expenses:			
Sales Commissions:	$500,000		
Shipping Expenses:	300,000		
Advertising:	400,000	$1,200,000	
Administrative Expenses:			
Admin Clerical Salaries (Variable)	$400,000		
Admin. Executive Salaries	100,000	$500,000	
Selling and Administrative Expenses			$1,700,000
Operating Income			$3,638,000

Schedule of Indirect Manufacturing Costs:

Sales	13,000,000	
Indirect Manufacturing Coss:		
Variable Overhead Costs:		
Cutting Tools Used:	60,000	
Abrasive for machining:	100,000	
Indirect Labor:	800,000	
Total Variable Costs:		960,000
Fixed Overhead Manufacturing Costs:		
Factory Superintendent Salary	30,000	
Factory Supervisor's salary	100,000	
Factory Methods Research	40,000	
Long-term Rent, Factory	100,000	
Fire Insurance Factory Equipment	2,000	
Property Taxes Factory Equipment	30,000	
Depreciation on Factory Equipment	400,000	
Total Fixed Overhead Man Costs		702,000
Total Indirect Man. Costs:		1,662,000

If you assume that variable costs are directly proportional to sales and fixed costs are fixed over the relevant range:

A. What is operating income if sales is $12,000,000

Contribution Margin Ratio is: 0.372308 (refer to Variable Costing Income Statement). If income goes from

Current Sales	$13,000,000
Expected Sales	12,000,000
Δ Sales	$1,000,000
CM Ratio:	0.37230769
Δ Expected NI	$372,308

Current NI	$3,638,000
Less: ΔNI	$372,308
Expected NI	$3,265,692

B. Which income statement provides the solution? Variable costing
Why? Because it enables you to make simple computations **as long as you are within the Relevant Range**

Example 2: Cost Plus and Target Costing:
XYZ manufactures it's own heavy equipment and also does some custom work for other manufacturers. Extensive market research suggest that a certain custom part will sell for $46. A similar part has the following unit production costs:

DM:	$ 24
DL:	10
OH:	16
	$ 50

For the following independent situations, assume that XYZ requires a gross margin of 30%.

1. If XYZ uses **cost plus** pricing, setting the price 30% above the manufacturing cost, what price would be charged to manufacture the part? Would you produce the part? Why or Why not?

2. If XYZ uses Target pricing what would the charge for the part? What is the highest acceptable manufacturing cost that XYZ should accept to manufacture the part?

3. What specific steps would XYZ undertake to make production of this part feasible under target costing?

Solution: Example 2

1. Cost-plus pricing is adding a specified markup to cost to cover those components of the value chain not included in the cost plus a desired profit. In this case the markup is 30% of production cost.

   Price charged for piston pin = 1.30 × $50.00 = $65.00. If the estimated selling price is only $46 and this price cannot be influenced by Caterpillar, a manager would be unlikely to favor releasing this product for production.

2. Target costing assumes the market price cannot be influenced by companies except by changing the value of the product to consumers. The price charged would then be the $46 estimated by market research. The highest acceptable manufactured cost or target cost, T, is

	Dollars
Target Price	$ 46.00
Target Cost	T
Target Gross Margin	$ .30T

Where:

$46 - T = .30T$

$1.30T = 46$

$T = 46 \div 1.30$

$= \$35.38$

3. The required cost reduction over the product's life is

Existing manufacturing cost	$ 50.00
Target manufacturing cost	35.38
Required cost reduction	$ 14.62

   Steps that Caterpillar managers can take to meet the required cost reduction include value engineering during the design phase, Kaizen costing during the production phase, and activity-based management throughout the product's life.