The cost transferred into Finished Goods Inventory is the cost of the lifts transferred out of the Testing Department. SeaWorthy uses weighted-average process costing.

Requirements

1. Draw a time line for the Testing Department.
2. Use the time line to compute the number of equivalent units of work performed by the Testing Department during the period.
3. Compute SeaWorthy's transferred-in and conversion costs per equivalent unit. Use the unit costs to assign total costs to (a) units completed and transferred out of Testing and (b) units in Testing's Ending work in process inventory.
4. Compute the cost per unit for lifts completed and transferred out to Finished goods inventory. Why would management be interested in this cost?

Problems (Group B)

P16A-17B Computing equivalent units and assigning costs to completed units and ending work in process; no beginning inventory or cost transferred in [30–45 min]

Sue Electronics makes CD players in three processes: assembly, programming, and packaging. Direct materials are added at the beginning of the assembly process. Conversion costs are incurred evenly throughout the process. The Assembly Department had no work in process on March 31. In mid-April, Sue Electronics started production on 100,000 CD players. Of this number, 76,100 CD players were assembled during April and transferred out to the Programming Department. The April 30 work in process in the Assembly Department was 40% of the way through the assembly process. Direct materials costing $375,720 were placed in production in Assembly during April, and direct labor of $157,700 and manufacturing overhead of $98,505 were assigned to that department.

Requirements

1. Draw a time line for the Assembly Department.
2. Use the time line to help you compute the number of equivalent units and the cost per equivalent unit in the Assembly Department for April.
3. Assign total costs in the Assembly Department to (a) units completed and transferred to Programming during April and (b) units still in process at April 30.
4. Prepare a T-account for Work in Process Inventory—Assembly to show its activity during April, including the April 30 balance.

P16A-18B Computing equivalent units and assigning costs to completed units and ending work in process; no beginning inventory or cost transferred in [30–45 min]

Reed Paper, Co., produces the paper used by wallpaper manufacturers. Reed's four-stage process includes mixing, cooking, rolling, and cutting. During October, the Mixing Department started and completed mixing for 4,420 rolls of paper. The department started but did not finish the mixing for an additional 650 rolls, which were 25% complete with respect to both direct materials and conversion work at the end of October. Direct materials and conversion costs are incurred evenly throughout the mixing process. The Mixing Department incurred the following costs during October:

Work in process inventory–mixing

Bal, Oct 1	0
Direct materials	5,675
Direct labor	570
Manufacturing overhead	6,240

Requirements

1. Draw a time line for the Mixing Department.
2. Use the time line to help you compute the number of equivalent units and the cost per equivalent unit in the Mixing Department for October.
3. Show that the sum of (a) cost of goods transferred out of the Mixing Department and (b) Ending work in process inventory—Mixing equals the total cost accumulated in the department during October.
4. Journalize all transactions affecting the company's mixing process during October, including those already posted.

P16A-19B Computing equivalent units and assigning costs to completed units and ending WIP inventory; two materials, added at different points; no beginning inventory or cost transferred in [30–45 min]

Root's Exteriors produces exterior siding for homes. The Preparation Department begins with wood, which is chopped into small bits. At the end of the process, an adhesive is added. Then the wood/adhesive mixture goes on to the Compression Department, where the wood is compressed into sheets. Conversion costs are added evenly throughout the preparation process. March data for the Preparation Department are as follows (in millions):

Sheets		Costs	
Beginning work in process inventory	0 sheets	Beginning work in process inventory	$ 0
Started production	3,300 sheets	Costs adding during March:	
Completed and transferred out to		Wood	2,600
Compression in March	1,900 sheets	Adhesives	1,365
		Direct labor	640
Ending work in process inventory (45%		Manufacturing overhead	2,445
of the way through the preparation process)	1,400 sheets	Total costs	$ 7,050

Requirements

1. Draw a time line for the Preparation Department.
2. Use the time line to help you compute the equivalent. (*Hint*: Each direct material added at a different point in the production process requires its own equivalent-unit computation.)
3. Compute the total costs of the units (sheets)
   a. Completed and transferred out to the Compression Department.
   b. In the Preparation Department's Ending work in process inventory.
4. Prepare the journal entry to record the cost of the sheets completed and transferred out to the Compression Department.
5. Post the journal entries to the Work in process inventory—Preparation T-account. What is the ending balance?

P16A-20B Computing equivalent units for a second department with beginning inventory; preparing a production cost report and recording transactions on the basis of the report's information; weighted-average method [45–60 min]

Claudia Carpet manufactures broadloom carpet in seven processes: spinning, dyeing, plying, spooling, tufting, latexing, and shearing. In the Dyeing Department, direct materials (dye) are added at the beginning of the process. Conversion costs are incurred evenly throughout the process. Claudia uses weighted-average process costing. Information for July 2011 follows:

E18-21 *(L. OBJ. 4)* **Computing margin of safety [15 min]**
Ronnie's Repair Shop has a monthly target operating income of $17,000. Variable costs are 80% of sales, and monthly fixed costs are $12,000.

Requirements

1. Compute the monthly margin of safety in dollars if the shop achieves its income goal.
2. Express Ronnie's margin of safety as a percentage of target sales.

E18-22 *(L. OBJ. 5)* **Calculating breakeven point for two product lines [15–20 min]**
Scotty's Scooters plans to sell a standard scooter for $40 and a chrome scooter for $50. Scotty's purchases the standard scooter for $25 and the chrome scooter for $30. Scotty expects to sell two standard scooters for every three chrome scooters. His monthly fixed costs are $18,900.

Requirements

1. How many of each type of scooter must Scotty's Scooters sell each month to break even?
2. To earn $14,400?

Problem (Group A)

P18-23A *(L. OBJ. 1, 2, 3)* **Calculating cost-volume profit elements [45–60 min]**
The budgets of four companies yield the following information:

	Company			
	North	South	East	West
Sales revenue	$ 710,000	$ (4)	$ 600,000	$ (10)
Variable costs	(1)	150,000	288,000	160,160
Fixed costs	(2)	121,000	139,000	(11)
Operating income (loss)	$ 13,800	$ (5)	$ (7)	$ 42,840
Units sold	190,000	10,000	(8)	(12)
Contribution margin per unit	$ 1.42	$ (6)	$ 97.50	$ 14.72
Contribution margin ratio	(3)	0.20	(9)	0.23

Requirements

1. Fill in the blanks for each missing value.
2. Which company has the lowest breakeven point in sales dollars? What causes the low breakeven point?

P18-24A *(L. OBJ. 2, 3)* **Break even sales; sales to earn a target operating income; contribution margin income statement [30–45 min]**
British Productions performs London shows. The average show sells 1,200 tickets at $50 per ticket. There are 120 shows a year. The average show has a cast of 70, each earning an average of $300 per show. The cast is paid after each show. The other variable cost is a program-printing cost of $7 per guest. Annual fixed costs total $459,000.

Requirements

1. Compute revenue and variable costs for each show.
2. Use the income statement equation approach to compute the number of shows British Productions must perform each year to break even.
3. Use the contribution margin approach to compute the number of shows needed each year to earn a profit of $3,825,000. Is this profit goal realistic? Give your reasoning.
4. Prepare British Productions' contribution margin income statement for 120 shows for 2011. Report only two categories of costs: variable and fixed.

P18-25A *(L. OBJ. 2, 3, 4)* **Analyzing CVP relationships [30–45 min]**

Allen Company sells flags with team logos. Allen has fixed costs of $588,000 per year plus variable costs of $5.50 per flag. Each flag sells for $12.50.

Requirements

1. Use the income statement equation approach to compute the number of flags Allen must sell each year to break even.
2. Use the contribution margin ratio CVP formula to compute the dollar sales Allen needs to earn $32,200 in operating income for 2011.
3. Prepare Allen's contribution margin income statement for the year ended December 31, 2011, for sales of 73,000 flags. Cost of goods sold is 60% of variable costs. Operating costs make up the rest of variable costs and all of fixed costs.
4. The company is considering an expansion that will increase fixed costs by 20% and variable costs by $0.60 cents per flag. Compute the new breakeven point in units and in dollars. Should Allen Company undertake the expansion? Give your reasoning.

P18-26A *(L. OBJ. 2, 3, 4)* **Computing breakeven sales and sales needed to earn a target operating income; graphing CVP relationships; sensitivity analysis [30–45 min]**

Big Time Investor Group is opening an office in Dallas. Fixed monthly costs are office rent ($8,200), depreciation on office furniture ($1,500), utilities ($2,300), special telephone lines ($1,300), a connection with an online brokerage service ($2,900), and the salary of a financial planner ($11,800). Variable costs include payments to the financial planner (9% of revenue), advertising (12% of revenue), supplies and postage (4% of revenue), and usage fees for the telephone lines and computerized brokerage service (5% of revenue).

Requirements

1. Use the contribution margin ratio CVP formula to compute Big Time's breakeven revenue in dollars. If the average trade leads to $800 in revenue for Big Time, how many trades must be made to break even?
2. Use the income statement equation approach to compute the dollar revenues needed to earn a target monthly operating income of $11,200.
3. Graph Big Time's CVP relationships. Assume that an average trade leads to $800 in revenue for Big Time. Show the breakeven point, the sales revenue line, the fixed cost line, the total cost line, the operating loss area, the operating income area, and the sales in units (trades) and dollars when monthly operating income of $11,200 is earned. The graph should range from 0 to 80 units.
4. Suppose that the average revenue Big Time earns increases to $900 per trade. Compute the new breakeven point in trades. How does this affect the breakeven point?