

1. Kristopher Manufacturing produces two types of entry doors: Deluxe and Standard. The allocation basis for support costs has been direct labor dollars. For 2013, Kristopher compiled the following data for the two products:

	<u>Deluxe</u>	<u>Standard</u>
Sales in units	50,000	400,000
Sales price per unit	\$650	\$475
Direct material and labor costs per unit	\$180	\$130
Manufacturing overhead costs per unit	\$80	\$120

Last year, Kristopher purchased an expensive robotics system to allow for more decorative door products in the deluxe product line. The CFO suggested that an activity-based costing (ABC) analysis could be valuable to help evaluate a product mix and promotion strategy for the next sales campaign. She obtained the following ABC information for 2013:

<u>Activity</u>	<u>Cost</u>	<u>Cost Driver</u>	<u>Total</u>	<u>Deluxe</u>	<u>Standard</u>
Setups	\$500,000	# of setups	500	400	100
Machine-related	\$44,000,000	# of machine hours	600,000	300,000	300,000
Packing	\$5,000,000	# of shipments	250,000	50,000	200,000

**Required (15 points):**

- a. Using the current system, what is the estimated
  1. total cost of manufacturing one unit for each type of door?
  2. profit per unit for each type of door?
- b. Using the activity-based costing data presented above,
  1. compute the cost-driver rate for each overhead activity.
  2. compute the revised manufacturing overhead cost per unit for each type of entry door
  3. compute the revised total cost to manufacture one unit of each type of entry door.
  4. compute the profit per unit for each type of door.
- c. Is the deluxe door as profitable as the original data estimated? Why or why not?

2. The Sterling Company uses a standard cost system in which manufacturing overhead costs are applied to the units of the company's single product on the basis of direct labor-hours (DLHs). The standard cost card for the product follows:

Standard Cost Card-per unit of product:		
Direct materials, 4 yards at \$3.50 per yard		\$14
Direct labor, 1.5 DLHs at \$8 per DLH		12
Variable overhead, 1.5 DLHs at \$2 per DLH		3

The following data pertain to last year's activities:

- The company manufactured 18,000 units of product during the year. A total of 70,200 yards of material was purchased during the year at a cost of \$3.75 per yard. All of this material was used to manufacture the 18,000 units.
- The company worked 29,250 direct labor hours during the year at a cost of \$7.80 per hour.
- Actual variable manufacturing overhead costs were \$61,425.

**Required (15 points):**

- a. Compute the direct materials price and quantity variances for the year.
  - b. Compute the direct labor rate and efficiency variances for the year.
  - c. Compute the variable overhead rate and efficiency variances for the year.
  - d. Discuss some possible reasons for the direct labor variances that you computed.
3. Mojito Corporation is contemplating purchasing equipment that would increase sales revenue by \$438,000 per year and cash operating expense by \$258,000 per year. The equipment would cost \$504,000 and have a 9 year life with no salvage value. The annual depreciation would be \$56,000.

**Required (5 points):**

Determine the simple rate of return on the investment.

4. The management of Dulcinea Corporation is considering a project that would require an initial investment of \$331,000 and would last for 8 years. The annual net operating income from the project would be \$54,000, including depreciation of \$40,000. At the end of the project, the scrap of the project's assets would be \$11,000.

**Required (5 points):**

Determine the payback period of the project.

5. Vaden Company produces a single product. The cost of producing and selling a single unit of this product at the company's normal activity level of 50,000 units per month is as follows:

Direct materials	\$32.50	$\times 3,000$
Direct labor	7.20	
Variable manufacturing overhead	1.30	
Fixed manufacturing overhead	20.90	
Variable selling & administrative expense	1.90	$\times 3,000$
Fixed selling & administrative expense	7.30	

TONGH  
4/22

The normal selling price of the product is \$75.00 per unit.  $65.60 \times 3,000 = 196,800$   
 $75 \times 3,000 = 225,000$  DISCOUNT  $65.60 \times 3,000 = 196,800$

An order has been received from an overseas customer for 3,000 units to be delivered this month at a special discounted price. This order would have no effect on the company's normal sales price and would not change the total amount of the company's fixed costs. The variable selling and administrative expense would be \$0.30 less per unit on this order than on normal sales.

Direct labor is a variable cost in this company.

**Required (10 points):**

- Suppose there is ample idle capacity to produce the units required by the overseas customer and the special discounted price on the special order is \$65.60 per unit. By how much would this special order increase (decrease) the company's net operating income for the month?
  - Suppose the company is already operating at capacity when the special order is received from the overseas customer. What would be the opportunity cost of each unit delivered to the overseas customer?
6. Kristopher Limos, Inc. is considering the purchase of a limousine that would cost \$149,868, would have a useful life of 9 years and would have no salvage value. The limousine would bring in cash inflows of \$36,000 per year in excess of its cash operating costs.

**Required (5 points):**

Determine the internal rate of return on the investment in the new limousine.

7. EKH, Inc. is considering the purchase of a machine that would cost \$430,000 and would last for 6 years, at the end of which, the machine would have a salvage value of \$47,000. The machine would reduce labor and other costs by \$109,000 per year. Additional working capital of \$4,000 would be needed immediately, all of which would be recovered at the end of 6 years. The company requires a minimum pretax return of 17% on all investment projects.

**Required (7.5 points):**

Determine the net present value of the project.

Overpriced  
B/M

8. Evan Company manufactures and sells several products, one of which is called a slip differential. The company normally sells 30,000 units of the slip differential each month. At this activity level, unit costs are

Direct materials .....	\$4
Direct labor .....	3
Variable manufacturing overhead .....	4
Fixed manufacturing overhead.....	5
Variable selling .....	3
Fixed selling.....	1

7/16/21  
9/8/21/22  
4/22

An outside supplier has offered to produce the slip differentials for Evan Company, and to ship them directly to Evan Company's customers. This arrangement would permit Evan Company to reduce its variable selling expenses by one third (due to elimination of freight costs). The facilities now being used to produce the slip differentials would be idle and fixed manufacturing overhead would continue at 60 percent of its present level. The total fixed selling expenses of the company would be unaffected by this decision.

**Required (5 points):**

What is the maximum acceptable price quotation for the slip differentials from the outside supplier?

9. We discussed activity based costing systems as an alternative to traditional cost systems.

**Required (7.5 points):**

9/8/21  
4/22

- Explain how activity based costing (ABC) systems can provide more accurate product costs than traditional cost systems.
- What are the parts of the cost hierarchy used in ABC. Briefly explain each part and contrast this hierarchy to the fixed-variable dichotomy.

10. Kenley Corp. manufactures three products from a common input into a joint processing operation. Joint processing costs up to the split-off point total \$200,000 per year. The company allocates these costs to the joint products on the basis of their total sales value at the split-off point. Each product may be sold at the split-off point or processed further. The additional processing costs and sales value after further processing for each product are:

	Product J	Product K	Product L
Sales value at split-off	\$180,000	\$135,000	\$95,000
Further processing costs	60,000	105,000	85,000
Sales Value after further processing	230,000	280,000	160,000

7/16/21  
9/8/21/22  
4/22

The "further processing costs" consist of variable and avoidable fixed costs.

**Required (10 points):**

Which product or products should be sold at the split-off point and which product or products should be processed further? **Show your computations!**

12. Brink Tech is a for-profit vocational school. The school bases its budgets on two measures of activity (i.e., cost drivers), namely student and course. The school uses the following data in its budgeting:

	Fixed element per month	Variable element per student	Variable element per course
Revenue.....	\$0	\$212	\$0
Faculty wages.....	\$0	\$0	\$2,000
Course supplies .....	\$0	\$26	\$14
Administrative expenses ....	\$22,200	\$12	\$35

(0790)

In June, the school budgeted for 1,710 students and 110 courses. The school's income statement showing the actual results for the month appears below:

Brink Tech Income Statement For the Month Ended June 30	
Actual students .....	1,510
Actual courses .....	107
Revenue.....	\$319,730
Expenses:	
Faculty wages.....	216,360
Course supplies .....	40,548
Administrative expenses .	<u>43,325</u>
Total expense .....	<u>300,233</u>
Net operating income .....	<u>\$19,497</u>

**Required (10 points):**

Prepare a flexible budget performance report showing both the school's activity variances and revenue and spending variances for June. Label each variance as favorable (F) or unfavorable (U).

13. EMH Company has prepared the following product-line income data:

	Product			
	Total	A	B	C
Sales	\$100,000	\$50,000	\$20,000	\$30,000
Variable expenses	\$60,000	30,000	10,000	20,000
Contribution margin	40,000	20,000	10,000	10,000
Fixed expenses				
Rent	\$5,000	2,500	1,000	1,500
Depreciation	\$6,000	3,000	1,200	1,800
Utilities	\$4,000	2,000	500	1,500
Supervisors' salaries	\$5,000	1,500	500	3,000
Maintenance	\$3,000	1,500	600	900
Administrative expenses	\$10,000	3,000	2,000	5,000
Total fixed expenses	33,000	13,500	5,800	13,700
Net operating income	\$7,000	\$6,500	\$4,200	(\$3,700)

Don't  
drop  
C

The following additional information is available:

- The factory rent of \$1,500 assigned to Product C is avoidable if the product were dropped.
- The company's total depreciation would not be affected by dropping C.
- Eliminating Product C will reduce the monthly utility bill from \$1,500 to \$800.
- All supervisors' salaries are avoidable.
- If Product C is discontinued, the maintenance department will be able to reduce monthly expenses from \$3,000 to \$2,000.
- Elimination of Product C will make it possible to cut two persons from the administrative staff; their combined salaries total \$3,000.

**Required (5 points):**

Prepare an analysis showing whether Product C should be eliminated.