# CHAPTER 10 In-Class QUIZ

1. A mixed cost function has a constant component of $20,000. If the total cost is $60,000 and the independent variable has the value 200, what is the value of the slope coefficient?
   a. $200
   b. $400
   c. $600
   d. $40,000

2. [CMA Adapted] Of the following methods, the one that would *not* be appropriate for analyzing how a specific cost behaves is
   a. the scattergraph method.
   b. the industrial engineering approach.
   c. linear programming.
   d. statistical regression analysis.

3. When the high-low method is used to estimate a cost function, the variable cost per unit is found by
   a. performing regression analysis on the associated cost and cost driver database.
   b. subtracting the fixed cost per unit from the total cost per unit based on either the highest or lowest observation of the cost driver.
   c. dividing the difference between the highest and lowest observations of the cost driver by the difference between costs associated with the highest and lowest observations of the cost driver.
   d. dividing the difference between costs associated with the highest and lowest observations of the cost driver by the difference between the highest and lowest observations of the cost driver.

**The following data apply to questions 4 and 5.**

Tory Company derived the following cost relationship from a regression analysis of its monthly manufacturing overhead cost.

$y = \$80{,}000 + \$12X$        where:   $y$ = monthly manufacturing overhead cost
                                          $X$ = machine-hours

The standard error of estimate of the regression is $6,000.

The standard time required to manufacture one six-unit case of Tory's single product is four machine-hours. Tory applies manufacturing overhead to production on the basis of machine-hours, and its normal annual production is 50,000 cases.

4. [CMA Adapted] Tory's estimated variable manufacturing overhead cost for a month in which scheduled production is 10,000 cases would be
   a. $80,000.
   b. $480,000.
   c. $160,000.
   d. $320,000.

5. [CMA Adapted] Tory's predetermined fixed manufacturing overhead rate would be
   a. $4.80/MH.
   b. $4.00/MH.
   c. $3.20/MH.
   d. $1.60/MH.

6.	Three criteria to use in identifying cost drivers from the potentially large set of independent variables that can be included in a regression model are
	a.	goodness of fit, size of the intercept term, and specification analysis.
	b.	independence between independent variables, economic plausibility, and specification analysis.
	c.	economic plausibility, goodness of fit, and significance of independent variable.
	d.	spurious correlation, expense of gathering data, and multicollinearity.


7.	Companies that take advantage of quantity discounts in purchasing their materials have
	a.	decreasing cost functions.
	b.	linear cost functions.
	c.	nonlinear cost functions.
	d.	stationary cost functions.


8.	With the cumulative average-time learning model
	a.	the cumulative time per unit declines by a constant percentage when production doubles.
	b.	the time needed to produce the last unit declines by a constant percentage when production doubles.
	c.	costs increase in total by a constant percentage as production increases.
	d.	the total cumulative time increases in proportion to production increases.

9.   When using the incremental unit-time learning model
     a.   the cumulative time per unit declines by a constant percentage when production doubles.
     b.   the time needed to produce the last unit declines by a constant percentage when production doubles.
     c.   the time to produce one additional unit decreases by a constant percentage.
     d.   costs increase incrementally in an undetermined pattern.

10.  Which of the following is *not* a common problem encountered in collecting data for cost estimation?
     a.   Lack of observing extreme values
     b.   Missing data
     c.   Changes in technology
     d.   Distortions resulting from inflation

# CHAPTER 10 QUIZ SOLUTIONS

1.  a
2.  c
3.  d
4.  b
5.  d
6.  c
7.  c
8.  a
9.  b
10. a

## Quiz Question Calculations

1.  Total cost      $60,000          40,000
    Fixed cost       20,000          200 units = $200/unit (variable cost)
    Variable cost    40,000

4.  $y = 80,000 + 12x$

    Variable cost = (10,000 cases × 4 machine hours/case × $12/machine hour)
    Variable cost = $480,000

5.  $\dfrac{\text{Fixed costs}}{\text{Machine hours}}$   =   $\dfrac{\$80,000}{50,000 \times 4}$   =   $.40/ machine hour

    $.40/ machine hour × 4mh/unit = $1.60

THE FOLLOWING INFORMATION APPLIES TO QUESTION 66.
Penny's TV and Appliance Store is a small company that has hired you to perform some management advisory services. The following information pertains to 20x3 operations.

| | |
|---|---:|
| Sales (2,000 televisions) | $ 900,000 |
| Cost of goods sold | 400,000 |
| Store manager's salary per year | 70,000 |
| Operating costs per year | 157,000 |
| Advertising and promotion per year | 15,000 |
| Commissions (4% of sales) | 36,000 |

1.   What are the estimated total costs if Penny's expects to sell 3,000 units next year?
a.   $896,000                              c.   $1,017,000
b.   $678,000                              d.   $799,000

***Answer*: a              *Difficulty*: 3              *Objective*: 3**
**$896,000 = $242,000 + 218 (3,000)**


THE FOLLOWING INFORMATION APPLIES TO QUESTION 87.
The Hunter Company uses the high-low method to estimate the cost function.  The information for 20x3 is provided below:

| | **Machine-hours** | **Labor Costs** |
|---|:---:|:---:|
| Highest observation of cost driver | 400 | $10,000 |
| Lowest observation of cost driver | 240 | $ 6,800 |

2.   What is the estimate of the total cost when 300 machine-hours are used?
a.   $2,000                              c.   $6,000
b.   $4,000                              d.   $8,000

***Answer*: d              *Difficulty*: 3              *Objective*: 4**
**y = $2,000 + ($20 x 300) = $8,000**

THE FOLLOWING INFORMATION APPLIES TO QUESTION 90.
For Carroll Company, labor-hours are 12,500 and wages $47,000 at the high point of the relevant range, and labor-hours are 7,500 and wages $35,000 at the low point of the relevant range.
3.   What is the estimate of total labor costs at Carroll Company when 10,000 labor-hours are used?

a.   $17,000                              c.   $21,167
b.   $41,000                              d.   $27,000

***Answer*: b              *Difficulty*: 3              *Objective*: 4**
**y = $17,000 + ($2.40 x 10,000) = $41,000**

THE FOLLOWING INFORMATION APPLIES TO QUESTIONS 91 AND 92.
The Barnett Company has assembled the following data pertaining to certain costs that cannot be easily identified as either fixed or variable. Barnett Company has heard about a method of measuring cost functions called the high-low method and has decided to use it in this situation.

| Cost | Hours |
|------|-------|
| $24,900 | 5,250 |
| 24,000 | 5,500 |
| 36,400 | 7,500 |
| 44,160 | 9,750 |
| 45,000 | 9,500 |

4.    What is the cost function?
       a.    $y = \$43,191 + \$0.19X$              c.    $y = \$41,900 + \$0.23X$
       b.    $y = \$4,875 + \$5.25X$               d.    $y = \$2,430 + \$4.28X$

       *Answer*:  **d**                         *Difficulty*:  **3**                         *Objective*:  **4**
       **($44,160 - $24,900) / (9,750 – 5,250) = $4.28 for the highest and lowest values of the cost driver**

5.    What is the estimated total cost at an operating level of 8,000 hours?
       a.    $43,740                              c.    $46,875
       b.    $36,670                              d.    $37,125

       *Answer*:  **b**                         *Difficulty*:  **3**                         *Objective*:  **4**
       **$36,670 = $2,430 + ($4.28 x 8,000)**

THE FOLLOWING INFORMATION APPLIES TO QUESTIONS 93 AND 94.
Presented below are the production data for the first six months of the year for the mixed costs incurred by Gallup Company.

| Month | Cost | Units |
|-------|------|-------|
| January | $4,890 | 4,100 |
| February | 4,024 | 3,200 |
| March | 6,480 | 5,300 |
| April | 8,840 | 7,500 |
| May | 5,800 | 4,800 |
| June | 7,336 | 6,600 |

Gallup Company uses the high-low method to analyze mixed costs.

6.  How would the cost function be stated?
    a.  y = $440 + $1.12X
    b.  y = $3,562.30 + $0.144X
    c.  y = $107.20 + $1.224X
    d.  y = $7,850 + $0.132X

    ***Answer*:  a**            ***Difficulty*:  3**            ***Objective*:  4**
    **b = ($8,840 - $4,024) / (7,500 – 3,200) = $1.12**
    **$8,840 = a + $1.12 (7,500)**
    **a = $440**

7.  What is the estimated total cost at an operating level of 5,000 units?
    a.  $6,227.20
    b.  $6,040.00
    c.  $4,283.20
    d.  $8,510.00

    ***Answer*:  b**            ***Difficulty*:  3**            ***Objective*:  4**
    **y = $440 + $1.12 (5,000) = $6,040**

8.  The Bhaskara Corporation used regression analysis to predict the annual cost of indirect materials.  The results were as follows:

    | Indirect Materials Cost Explained by Units Produced | |
    | --- | --- |
    | Constant | $21,890 |
    | Standard error of Y estimate | $4,560 |
    | $r^2$ | 0.7832 |
    | Number of observations | 22 |
    | | |
    | X coefficient(s) | 11.75 |
    | Standard error of coefficient(s) | 2.1876 |

    What is the linear cost function?
    a.  Y = $21,890 + $11.75X
    b.  Y = $4,560 + $5.15X
    c.  Y = $20,100 + $4.60X
    d.  none of the above

    ***Answer*:  a**            ***Difficulty*:  2**            ***Objective*:  A**

9.  Craig's Cola was to manufacture 1,000 cases of cola next week.  The accountant provided the following analysis of total manufacturing costs.

    | Variable | Coefficient | Standard Error | t-Value |
    | --- | --- | --- | --- |
    | Constant | 100 | 71.94 | 1.39 |
    | Independent variable | 200 | 91.74 | 2.18 |

    $r^2 = 0.82$
    What is the estimated cost of producing the 1,000 cases of cola?
    a.  $200,100
    b.  $142,071
    c.  $100,200
    d.  $9,000
    ***Answer*:  a**            ***Difficulty*:  2**            ***Objective*:  A**
    **y = $100 + ($200 x 1,000) = $200,100**

10. Pam's Stables used two different independent variables (trainer's hours and number of horses) in two different equations to evaluate the cost of training horses. The most recent results of the two regressions are as follows:

**Trainer's hours:**

| Variable | Coefficient | Standard Error | t-Value |
|----------|-------------|----------------|---------|
| Constant | 913.32 | 198.12 | 4.61 |
| Independent Variable | 20.90 | 2.94 | 7.11 |

$r^2 = 0.56$

**Number of horses:**

| Variable | Coefficient | Standard Error | t-Value |
|----------|-------------|----------------|---------|
| Constant | 4,764.50 | 1,073.09 | 4.44 |
| Independent Variable | 864.98 | 247.14 | 3.50 |

$r^2 = 0.63$

What is the estimated total cost for the coming year if 16,000 trainer hours are incurred and the stable has 400 horses to be trained, based on the best cost driver?

a.  $99,929.09
b.  $350,756.50
c.  $335,313.32
d.  $13,844,444.50

***Answer*: b**       ***Difficulty*: 3**       ***Objective*: A**
**y = $4,764.50 + $864.98(400) = $350,756.50 based on highest r$^2$, which uses # of horses as the cost driver**

# CHAPTER 11 In-Class QUIZ

1.  Which of the following should *not* be considered for every option in the decision process?
    a.  Relevant revenues
    b.  Relevant costs
    c.  Historical costs
    d.  Opportunity costs

2.  What is always the question to ask to determine if revenues or costs are relevant?
    a.  What is the time frame for achieving results?
    b.  What difference will an action make?
    c.  Who will be responsible?
    d.  How much will it cost?

3.  [CPA Adapted] Mikaelabelle Products sells product A at a selling price of $40 per unit. Mikaelabelle's cost per unit based on the full capacity of 500,000 units is as follows:

    | | |
    |---|---|
    | Direct materials | $ 6 |
    | Direct labor | 3 |
    | Indirect manufacturing (60% of which is fixed) | 10 |
    | | $19 |

    A one-time-only special order offering to buy 50,000 units was received from an overseas distributor. The only other costs that would be incurred on this order would be $4 per unit for shipping. Mikaelabelle has sufficient existing capacity to manufacture the additional units. In negotiating a price for the special order, Mikaelabelle should consider that the minimum selling price per unit should be

    a.  $17.
    b.  $19
    c.  $21.
    d.  $23.

**The following data apply to questions 4 and 5.**

Troy Instruments uses ten units of Part Number S1798 each month in the production of scientific equipment. The unit cost to manufacturing one unit of S1798 is presented below.

| | |
|---|---:|
| Direct materials | $ 4,000 |
| Materials handling (10% of direct materials cost) | 400 |
| Direct manufacturing labor | 6,000 |
| Indirect manufacturing (200% of direct labor) | 12,000 |
| Total manufacturing cost | $22,400 |

Materials handling represents the direct variable costs of the Receiving Department that are applied to direct materials and purchased components on the basis of their cost. This is a separate charge in addition to indirect manufacturing cost. Troy's annual indirect manufacturing cost budget is one-fourth variable and three-fourths fixed. Duncan Supply, one of Troy's reliable vendors, has offered to supply Part Number S1798 at a unit price of $17,000.

4.   [CMA Adapted] If Troy purchases the S1798 units from Duncan, the capacity Troy used to manufacture these parts would be idle. Should Troy decide to purchase the parts from Duncan, the unit cost of S1798 would
a.   decrease by $3,700.
b.   decrease by $5,600.
c.   increase by $3,600.
d.   increase by $5,300.

5.   [CMA Adapted] Assume that Troy Instruments does not wish to commit to a rental agreement to rent all idle capacity but could use idle capacity to manufacture another product that would contribute $60,000 per month. If Troy elects to manufacture S1798 in order to maintain quality control, Troy's opportunity cost is
a.   $(53,000).
b.   $7,000.
c.   $(24,000)
d.   $36,000.

6.      Which of the following is *not* a correct use of the term *opportunity cost*?
   a.      Opportunity costs are considered period costs rather than inventoriable costs for accounting purposes.
   b.      Opportunity costs must be considered by managers when making decisions.
   c.      Opportunity cost plus the incremental future revenues and costs equal the relevant revenues and costs of any alternative when capacity is constrained.
   d.      The opportunity cost of holding inventory is the income forgone by tying up money in inventory and not investing it elsewhere.




7.      Nicholas, Inc. has provided the following unit data for review:

|                                        | Simple Product | Advanced Product |
| -------------------------------------- | -------------- | ---------------- |
| Selling price                          | $22.75         | $55.00           |
| Variable cost                          | 10.00          | 34.50            |
| Pounds of scarce raw material per unit | 3              | 5                |

Which product, Simple or Advanced, is most profitable for Nicholas, Inc. to manufacture?
   a.      Both in ratio of 3:5
   b       Both in ratio of 5:8
   c.      Simple
   d.      Advanced




8.      RCG Services is investigating its profitability relationship with each of its customers. What is the key question RCG should ask in deciding to keep or to drop a particular customer?
   a.      Will the customer meet a specific designated gross margin percentage?
   b.      Will the customer be willing to pay a higher price to insure RCG's profitability?
   c.      Will enough customers be found to replace any customers dropped for lack of profitability?
   d.      Will expected total corporate office costs decrease if decision is made to drop the customer?

9.  [CPA Adapted] At December 31, 2005, Brown Co. had a machine with an original cost of $90,000, accumulated depreciation of $75,000, and an estimated salvage value of zero. On December 31, 2005, Brown was considering the purchase of a new machine having a five-year life, costing $150,000, and having an estimated salvage value of $30,000 at the end of five years. In its decision concerning the possible purchase of the machine, how much should Brown consider as sunk cost at December 31, 2005?
    a.  $150,000
    b.  $120,000
    c.  $90,000
    d.  $15,000

10. Which of the following is *not* a reason for the performance evaluation model to differ from the decision model?
    a.  The use of different time frames: One being an annual basis, the other a period of several years.
    b.  The accounting systems enable each decision to be tracked separately.
    c.  The accrual accounting method incorporates irrelevant costs.
    d.  Top management is rarely aware of particular desirable alternatives that were not chosen by subordinate managers.

1. c
2. b
3. a
4. d
5. b
6. a
7. c
8. d
9. c
10. b

THE FOLLOWING INFORMATION APPLIES TO QUESTIONS 1 THROUGH 3.

Welch Manufacturing is approached by a European customer to fulfill a one-time-only special order for a product similar to one offered to domestic customers.  Welch Manufacturing has excess capacity.  The following per unit data apply for sales to regular customers:

| | | |
|---|---|---|
| *Variable costs:* | | |
| | Direct materials | $40 |
| | Direct labor | 20 |
| | Manufacturing support | 35 |
| | Marketing costs | 15 |
| *Fixed costs:* | | |
| | Manufacturing support | 45 |
| | Marketing costs | 15 |
| Total costs | | 170 |
| Markup (50%) | | 85 |
| Targeted selling price | | $255 |

1.  What is the contribution margin per unit?
    a.  $85
    b.  $110
    c.  $145
    d.  $255

**$255 – ($40 + $20 + $35 + $15) = $145**

2.  For Welch Manufacturing, what is the minimum acceptable price of this special order?
    a.  $110
    b.  $145
    c.  $170
    d.  $255

**$40 + $20 + $35 + $15 = $110**

3.  What is the change in operating profits if the 1,000 unit one-time-only special order is accepted for $180 a unit by Welch?
    a.  $70,000 increase in operating profits
    b.  $10,000 increase in operating profits
    c.  $10,000 decrease in operating profits
    d.  $75,000 decrease in operating profits

**$180 – ($40 + $20 + $35 + $15) = $70;   1,000 x $70 = $70,000 increase**

THE FOLLOWING INFORMATION APPLIES TO QUESTIONS 4 AND 5.
Schmidt Corporation produces a part that is used in the manufacture of one of its products. The costs associated with the production of 10,000 units of this part are as follows:

| | |
|---|---|
| Direct materials | $ 45,000 |
| Direct labor | 65,000 |
| Variable factory overhead | 30,000 |
| Fixed factory overhead | 70,000 |
| Total costs | $210,000 |

Of the fixed factory overhead costs, $30,000 is avoidable.

4. Phil Company has offered to sell 10,000 units of the same part to Schmidt Corporation for $18 per unit. Assuming there is no other use for the facilities, Schmidt should
   a. make the part as this would save $3 per unit.
   b. buy the part as this would save $3 per unit.
   c. buy the part as this would save the company $30,000.
   d. make the part as this would save $1 per unit.

**Avoidable costs total $170,000 = $45,000 + $65,000 + $30,000 + $30,000.**
**$18 - $170,000/10,000 = $1**

5. Assuming no other use of their facilities, the highest price that Schmidt should be willing to pay for 10,000 units of the part is
   a. $210,000.
   b. $140,000.
   c. $170,000.
   d. $180,000.

**$45,000 + $65,000 + $30,000 + $30,000 = $170,000**

Stephans Corporation currently manufactures a subassembly for its main product. The costs per unit are as follows:

| | |
|---|---|
| Direct materials | $ 1.00 |
| Direct labor | 10.00 |
| Variable overhead | 5.00 |
| Fixed overhead | 8.00 |
| Total | $24.00 |

Bill Company has contacted Stephans with an offer to sell them 5,000 of the subassemblies for $22.00 each. Stephans will eliminate $25,000 of fixed overhead if it accepts the proposal.

6. Should Stephans make or buy the subassemblies? What is the difference between the two alternatives?
   a. Buy; savings = $20,000
   b. Buy; savings = $50,000
   c. Make; savings = $60,000
   d. Make; savings = $5,000

**Cost to buy:      5,000 x $22 = $110,000**
**Cost to make:     $110,000 - 105,000 = $5,000  ** make**

THE FOLLOWING INFORMATION APPLIES TO QUESTIONS 7 AND 8.
The management accountant for Martha's Book Store has prepared the following income statement for the most current year.

|  | **Cookbook** | **Travel Book** | **Classics** | **Total** |
|---|---|---|---|---|
| Sales | $60,000 | $100,000 | $40,000 | $200,000 |
| Cost of goods sold | 36,000 | 65,000 | 20,000 | 121,000 |
| Contribution margin | 24,000 | 35,000 | 20,000 | 79,000 |
| Order and delivery processing | 18,000 | 21,000 | 8,000 | 47,000 |
| Rent (per sq. foot used) | 2,000 | 1,000 | 3,000 | 6,000 |
| Allocated corporate costs | 7,000 | 7,000 | 7,000 | 21,000 |
| Corporate profit | $ (3,000) | $ 6,000 | $ 2,000 | $ 5,000 |

7. If the cookbook product line had been discontinued prior to this year, the company would have reported
   a. greater corporate profits.
   b. the same amount of corporate profits.
   c. less corporate profits.
   d. resulting profits cannot be determined.

**$60,000 - $36,000 - $18,000 - $2,000 = $4,000**
**The cookbook product line contributed $4,000 toward corporate profits. Without the cookbooks, corporate profits would be $4,000 less than currently reported.**

8. If the travel book line had been discontinued, corporate profits for the current year would have decreased by
   a. $35,000.
   b. $14,000.
   c. $13,000.
   d. $6,000.

**$100,000 - $65,000 - $21,000 - $1,000 = $13,000**

THE FOLLOWING INFORMATION APPLIES TO QUESTIONS 9 THROUGH 10.
Frederick, Inc., is considering replacing a machine. The following data are available:

|  | Old Machine | Replacement Machine |
|---|---|---|
| Original cost | $45,000 | $35,000 |
| Useful life in years | 10 | 5 |
| Current age in years | 5 | 0 |
| Book value | $25,000 | - |
| Disposal value now | $8,000 | - |
| Disposal value in 5 years | 0 | 0 |
| Annual cash operating costs | $7,000 | $4,000 |

9.  For the decision to keep the old machine, the relevant costs of keeping the old machine total
    a.  $60,000.
    b.  $35,000.
    c.  $47,000.
    d.  $72,000.

**$7,000 x 5 = $35,000**

10. The difference between keeping the old machine and replacing the old machine is
    a.  $37,000 in favor of keeping the old machine.
    b.  $12,000 in favor of keeping the old machine.
    c.  $37,000 in favor of replacing the old machine.
    d.  $12,000 in favor of replacing the old machine.

**New [$35,000 + (5 x $4,000)] – Old [$8,000 + (5 x $7,000)] = $12,000**