1. An example of a discretionary fixed cost is:
   A. Required insurance on the factory building.
   B. Property taxes on the factory
   C. Management training costs
   D. Depreciation of buildings and equipment
   Answer C Management training costs are not variable while the amount spent on training can be determined by management.

2. A disadvantage of the high-low method of cost analysis is that:
   A. it cannot be used when there are a very large number of observations.
   B. it is too time consuming to apply.
   C. it uses two extreme data points, which may not be representative of normal conditions.
   D. it relies totally on the judgment of the person performing the cost analysis.
   Answer C The high-low method ignores all data points but two, so it may not capture the relationship in the data.

3. Anderton Corporation has provided the following production and average cost data for two levels of monthly production volume. The company produces a single product.

<table>
<thead>
<tr>
<th>Production volume</th>
<th>4,000 units</th>
<th>6,000 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>$38.50/unit</td>
<td>$38.50/unit</td>
</tr>
<tr>
<td>Direct labor</td>
<td>$37.80/unit</td>
<td>$37.80/unit</td>
</tr>
<tr>
<td>Manufacturing overhead</td>
<td>$87.80/unit</td>
<td>$65.20/unit</td>
</tr>
</tbody>
</table>

   The best estimate of the total monthly fixed manufacturing cost is:
   A. $391,200
   B. $271,200
   C. $566,400
   D. $351,200
   E. None of the above
   Answer B Note materials and labor are both variable costs as the variable cost per unit is constant; hence, the only fixed manufacturing costs are OH costs. Total OH at 4,000 units = (4,000($38.50 + $37.80)) = $391,200; total OH at 6,000 units = (6,000($38.50 + $65.20)) = $391,200.
   Hence VOA/unit = ($391,200 - $351,200)/6,000 = $20/unit.
   TFOH = TVOH + TFOSH; $351,200 = (4,000($38.50 + $37.80)) + $20/unit.
   TFOH = $271,200.

---

1. This examination consists of 30 multiple-choice questions. Each question is worth 5 points.
2. You must sit in your assigned seat to take the exam. If you are not in the correct seat, you will lose 5 points.
3. Print and code your name, ID number, and your recitation section number on the computer answer sheet; please enter your section number as listed below. In the blank for TEST, please write the version number below. Be sure to use a number 2 pencil and sign the answer sheet.
4. You will have 1.5 hours to complete the exam. The exam will end at 9:30 p.m. All multiple-choice questions must be coded on the answer sheet before the end of the examination period at 9:30. Your score on these questions is based only on the coded answers. Please help us collect exams promptly when the exam is over.
5. Cheating is a serious offense. Use of unauthorized written materials, receiving or giving verbal or written assistance from or to another person during an exam is considered cheating. In addition:
   - All cell phones must be turned off and in a bag (book bag or purse or other bag) under your seat—seeing a telephone (other than under your seat) will be taken as an attempt to cheat.
   - You may not use calculators that can store information or communicate with others; lids of calculator must be removed and in your bag.
   - No papers and books must be in your book bag and under your seat.
   - No pencil bags, no hats.
   - Of course, no talking, use of notes, etc.

Any student discovered cheating in an examination will be given a grade of F for the course.

6. In all problems answers are rounded to the nearest dollar or cent as indicated in the problem. Thus, if you compute an answer to be $1,333,333.3333 and an answer of $1.33 is given, the $1.33 is the correct answer. Similarly, if you compute an answer to be $432,897,654, all answers are rounded to the nearest dollar, and the answer $433 is listed as an answer, $433 is the correct answer.

7. On your scantron form please be sure to code your recitation section number as listed below:

<table>
<thead>
<tr>
<th>Section</th>
<th>Instructor</th>
<th>E-mail address</th>
<th>Day and Time</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>0003</td>
<td>Reid Kapapa</td>
<td><a href="mailto:rkapapa@purdue.edu">rkapapa@purdue.edu</a></td>
<td>F 8:30 AM – 9:20 AM</td>
<td>KRAN G018</td>
</tr>
<tr>
<td>0004</td>
<td>Reid Kapapa</td>
<td><a href="mailto:rkapapa@purdue.edu">rkapapa@purdue.edu</a></td>
<td>F 9:30 AM – 10:20 AM</td>
<td>KRAN G018</td>
</tr>
<tr>
<td>0005</td>
<td>Reid Kapapa</td>
<td><a href="mailto:rkapapa@purdue.edu">rkapapa@purdue.edu</a></td>
<td>F 10:30 AM – 11:20 AM</td>
<td>KRAN G018</td>
</tr>
<tr>
<td>0006</td>
<td>Reid Kapapa</td>
<td><a href="mailto:rkapapa@purdue.edu">rkapapa@purdue.edu</a></td>
<td>F 11:30 AM – 12:20 PM</td>
<td>KRAN G018</td>
</tr>
<tr>
<td>0007</td>
<td>Mitch Johnston</td>
<td><a href="mailto:johnst32@purdue.edu">johnst32@purdue.edu</a></td>
<td>F 11:30 AM – 12:20 PM</td>
<td>RAWL 1011</td>
</tr>
<tr>
<td>0008</td>
<td>Mitch Johnston</td>
<td><a href="mailto:johnst32@purdue.edu">johnst32@purdue.edu</a></td>
<td>F 12:30 AM – 1:20 PM</td>
<td>RAWL 1011</td>
</tr>
<tr>
<td>0009</td>
<td>Mitch Johnston</td>
<td><a href="mailto:johnst32@purdue.edu">johnst32@purdue.edu</a></td>
<td>F 1:30 PM – 2:20 PM</td>
<td>RAWL 1011</td>
</tr>
<tr>
<td>0010</td>
<td>Mitch Johnston</td>
<td><a href="mailto:johnst32@purdue.edu">johnst32@purdue.edu</a></td>
<td>F 2:30 PM – 3:20 PM</td>
<td>RAWL 1011</td>
</tr>
<tr>
<td>0011</td>
<td>Justin Waters</td>
<td><a href="mailto:waters9@purdue.edu">waters9@purdue.edu</a></td>
<td>F 12:30 PM – 1:20 PM</td>
<td>RAWL 1057</td>
</tr>
<tr>
<td>0012</td>
<td>Justin Waters</td>
<td><a href="mailto:waters9@purdue.edu">waters9@purdue.edu</a></td>
<td>F 1:30 PM – 2:20 PM</td>
<td>RAWL 1057</td>
</tr>
</tbody>
</table>

Version 1 (Pink)
4. At an activity level of 10,000 units, variable costs totaled $35,000 and fixed costs totaled $20,800. If 16,000 units are produced and this activity is within the relevant range, then:
   A. total cost would equal $89,280.
   B. total unit cost would equal $4.85.
   C. fixed cost per unit would equal $5.58.
   D. total costs would equal $55,800.
   E. none of the above.
   Answer E

   Variable costs per unit = $35,000/10,000 = $3.50/unit
   Thus, if 16,000 units are made, TC = ($3.50)(16,000) + $20,800 = $76,800
   Cost per unit = $76,800/(16,000 units) = $4.80

5. Reddy Company has the following cost formulas for overhead:

<table>
<thead>
<tr>
<th>Cost</th>
<th>Cost Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect materials</td>
<td>$2,000 plus $0.40 per machine hour</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$1,500 plus $0.60 per machine hour</td>
</tr>
<tr>
<td>Machine setup</td>
<td>$0.30 per machine hour</td>
</tr>
<tr>
<td>Utilities</td>
<td>$200 plus $0.10 per machine hour</td>
</tr>
<tr>
<td>Depreciation</td>
<td>$800</td>
</tr>
</tbody>
</table>

Based on these cost formulas, the total overhead cost at 600 machine hours is expected to be:
   A. $4,500
   B. $5,200
   C. $5,340
   D. None of the above
   Answer D

   Adding the cost functions above, the total costs for overhead are:
   \[(2,000 + 1,500 + 200 + 800) + (0.40 + 0.60 + 0.30 + 0.10) = 4,500 + 1.40\text{ per machine hour}\]
   At 600 machine hours, the total overhead cost = $4,500 + ($1.40)(600) = $5,340

6. You are applying the scattergraph method and find that the regression line you have drawn passes through a data point with the following coordinates: 1,000 units and $9,600. The regression line passes through the Y axis at the $600 point. Which of the following is the cost formula that represents the line?
   A. \[Y = 600 + 9.00X\]
   B. \[Y = 900 + 9.00X\]
   C. \[Y = 9,600 + 9.60X\]
   D. \[Y = 9,600 + 9.60X\]
   E. None of the above
   Answer A

   Variable costs per unit = ($9,600 - $600)/(1,000 – 0) = $9/unit.
   Thus, the formula for the line is $600 + 9.00X

7. The cost of goods sold in a retail store totaled $325,000. Fixed selling and administrative expenses totaled $115,000 and variable selling and administrative expenses were $210,000. If the store’s contribution margin totaled $590,000, then sales must have been:
   A. $1,030,000
   B. $915,000
   C. $650,000
   D. None of the above
   Answer A

   Note, since this company is a retailer, the COGS are all variable: thus Sales can be determined as follows:
   \[\text{Sales} = (325,000 + 210,000) = 590,000; \text{or} \ \text{Sales} = 1,125,000\]

8. The management of Degenhart Corporation, a manufacturing company, has provided the following data for February:

<table>
<thead>
<tr>
<th>Sales</th>
<th>$480,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable production expense</td>
<td>71,000</td>
</tr>
<tr>
<td>Fixed production expense</td>
<td>99,000</td>
</tr>
<tr>
<td>Variable selling expense</td>
<td>66,000</td>
</tr>
<tr>
<td>Fixed selling expense</td>
<td>60,000</td>
</tr>
<tr>
<td>Variable administrative expense</td>
<td>124,000</td>
</tr>
</tbody>
</table>

   The total contribution margin for February was:
   A. $34,000
   B. $333,000
   C. $191,000
   D. $310,000
   E. None of the above
   Answer E

   Total contribution margin = Sales – All variable costs = 480,000 – ($310,000 + $60,000) = $233,000

9. Rymore Company would like to classify the following costs according to their cost behavior:

<table>
<thead>
<tr>
<th>July</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales in units</td>
<td>1,500 units</td>
</tr>
<tr>
<td>Cost A</td>
<td>$35,000</td>
</tr>
<tr>
<td>Cost B</td>
<td>16,000</td>
</tr>
<tr>
<td>Cost C</td>
<td>67,500</td>
</tr>
</tbody>
</table>

Which of the following classifications best describes the behavior of Cost A?
   A. Mixed
   B. Variable
   C. Fixed
   D. None of the above
   Answer A

   It is clear that A is not fixed as the total amount does change; the average cost in July is $35,000/1,500 units = $23.33/unit; the average cost in August is $36,000/1,600 units = $22.50. Since the average cost is decreasing, it must include both variable and fixed amounts.
10. A company has provided the following data:

- Sales: 3,000 units
- Sales price: $70/unit
- Variable costs: $50/unit
- Fixed costs: $25,000

If the dollar contribution margin per unit is increased by 10%, total fixed cost is decreased by 20%, and all other factors remain the same, net operating income will:

A. increase by $61,000.
B. increase by $20,000.
C. increase by $3,500.
D. increase by $11,000.
E. None of the above

Answer D

Current income = ($70 - $50)(3,000 units) - $25,000 = $35,000

The new CM/unit = (1.1)($70 - $50) = $22/unit

The new FC = .8($25,000) = $20,000

Thus, the new income = ($22)(3,000 units) - $20,000 = $46,000

Thus income has increased by $46,000 - $35,000 = $11,000.

11. At a break-even point of 400 units sold, variable expenses were $4,000 and fixed expenses were $2,000. What will the 401st unit sold contribute to profit?

A. $0
B. $5
C. $10
D. $15
E. None of the above

Answer B

NI = Sales - Variable costs - Fixed costs

0 = Sales - $4,000 - $2,000; hence, Sales = $6,000

CM/unit = ($6,000 - $4,000)/400 units = $5/unit

Thus, the next unit (the 401st unit) contributes $5/unit.

12. Carver Company produces a product which sells for $30. Variable manufacturing costs are $15 per unit. Fixed manufacturing costs are $5 per unit based on the current level of activity, and fixed selling and administrative costs are $4 per unit. A selling commission of 10% of the selling price is paid on each unit sold. The contribution margin per unit is:

A. $3
B. $15
C. $8
D. $17
E. None of the above

Answer E

CM/unit = Price - VC/unit = $30 - [$15 + 10%($30)] = $12

Midterm 2 – page 5
Use the following information for questions 16 and 17:

Mitch Corporation’s contribution margin ratio is 14% and its fixed monthly expenses are $87,000.

16. If the company’s sales for a month are $678,000, what is the best estimate of the company’s net operating income? Assume that the fixed monthly expenses do not change.

- A. $591,000
- B. $496,080
- C. $94,920
- D. $7,920
- E. None of the above

**Answer:** D  
\[ NI = \text{(CM ratio)} \times \text{(Sales)} - \text{F} \]  
\[ NI = (0.14) \times (678,000) - 87,000 = 7,920 \]

17. If the company has a target profit of $23,400 after paying for its income taxes and the tax rate is 40% of income, what sales level (to the nearest dollar) must the company achieve to reach this target profit.

- A. $788,571
- B. $1,039,286
- C. $855,429
- D. $900,000
- E. None of the above

**Answer:** D  
\[ \text{New NIAT} = (1 - t) \times \text{NIBT}; \]  
\[ $23,400 = (0.6) \times \text{NIBT}; \]  
\[ \text{Thus, target NIBT} = 39,000 \]  
\[ \text{NIBT} = \text{(CM ratio)} \times \text{(Sales)} - \text{F} \]  
\[ 39,000 = (0.14) \times \text{(S)} - 87,000; \]  
\[ \text{Thus, S} = 900,000 \]

18. Silver Company produces a single product. Last year, the company’s variable production costs totaled $7,500 and its fixed manufacturing overhead costs totaled $4,500. The company produced 3,000 units during the year and sold 2,400 units. There were no units in the beginning inventory. Which of the following statements is true?

- A. Under variable costing, the units in the ending inventory will be costed at $4 each.
- B. The net operating income under absorption costing for the year will be $900 lower than the net operating income under variable costing.
- C. The net operating income under absorption costing for the year will be $900 higher than the net operating income under variable costing.
- D. Under absorption costing, the units in ending inventory will be costed at $2.50 each.

**Answer:** C  
Variable cost per unit = $7,500/3,000 = $2.50/unit  
Absorption cost per unit = $2.50/unit + $4,500/3,000 = $2.50 + $1.50 = $4.00/unit  
Since production exceeded sales by 3,000 - 2,400 = 600 units, absorption income is larger by (600 units)($1.50/unit) = $900.  
Thus C is the only statement that is correct.

Use the following information for questions 19 and 20:

Dewiel Corporation manufactures a variety of products. The following data pertain to the company’s operations over the last two years:

- Variable costing net operating income, last year: $90,900
- Variable costing net operating income, this year: $110,700
- Increase in ending inventory, last year: 1,500 units
- Decrease in ending inventory, this year: 1,200 units
- Fixed manufacturing overhead cost per unit: $4/unit

19. What was the absorption costing net operating income last year?

- A. $90,900
- B. $96,900
- C. $84,900
- D. $92,100
- E. None of the above

**Answer:** B  
\[ \text{Last year, production exceeded sales, and unsold units were added to the inventory.} \]  
\[ \text{Under absorption costing with each unit put into the inventory $4 in FOH was deferred to the inventory and was not expensed. Thus, last year, absorption income} = $90,900 + (1,500 units)($4/unit) = 96,900. \]

20. What was the absorption costing net operating income this year?

- A. $105,900
- B. $115,500
- C. $89,700
- D. $109,500
- E. None of the above

**Answer:** A  
\[ \text{This year, production was less than sales and, in addition to selling all of the units made this period, some units were sold out of the inventory. This means with absorption costing there are extra FOH costs, or this year, absorption income} = $110,700 - (1,200 units)($4/unit) = 105,900. \]

21. For which of the following decisions are opportunity costs relevant?

- A. The decision to make or buy a needed part
- B. The decision to keep or drop a product line

**Answer:** A  
Opportunity cost is relevant for both decisions—if make a part or keep a product line, there can be limited capacity and hence an opportunity cost for the action.
22. For which of the following decisions are sunk costs relevant?
A. the decision to keep an old machine or buy a new one.
B. the decision to sell a product at the split-off point or after further processing.
C. the decision to accept or reject a special order offer.
D. all of the above.
E. none of the above.  
Answer E: Sunk costs are never relevant as they are committed costs which the company must pay and hence are not affected by the decision.

23. What is the cause of the difference between absorption costing net operating income and variable costing net operating income?
A. Absorption costing deducts all manufacturing costs from net operating income; variable costing deducts only prime costs.
B. Absorption costing allocates fixed manufacturing costs between cost of goods sold and inventories; variable costing considers all fixed manufacturing costs to be period costs.
C. Absorption costing includes variable manufacturing costs in product costs; variable costing considers variable manufacturing costs to be period costs.
D. Absorption costing includes fixed administrative costs in product costs; variable costing considers fixed administrative costs to be period costs.
Answer B

24. Faram Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

<table>
<thead>
<tr>
<th>Production Volume</th>
<th>2,000 units</th>
<th>3,000 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>$175,000</td>
<td>$262,500</td>
</tr>
<tr>
<td>Direct labor</td>
<td>$112,200</td>
<td>$168,300</td>
</tr>
<tr>
<td>Manufacturing overhead</td>
<td>$128,600</td>
<td>$191,800</td>
</tr>
<tr>
<td>Total manufacturing cost</td>
<td>$415,800</td>
<td>$522,500</td>
</tr>
</tbody>
</table>

The best estimate of the total cost to manufacture 2,300 units is closest to:
A. $446,600
B. $465,840
C. $462,415
D. $478,170
E. None of the above

Answer B: Variable cost/unit = ($582,600 - $415,800)/(2,000 - 2,000) = $166.80/unit
TFC = TC - TVC = ($415,800 - (2,000 units)($166.80/unit)) = $82,200
If 2,300 units made, TC = ($166.80/unit)(2,300 units) + $82,200 = $465,840

25. Degner Inc. has some material that originally cost $19,500. The material has a scrap value of $13,300 as is, but if reworked at a cost of $2,100, it could be sold for $14,000. What would be the incremental effect on the company’s overall profit of reworking and selling the material rather than selling it as is or as scrap? That is what is the difference between the profits from reworking and selling the material and the profits from selling the material as scrap.
A. $(20,900)
B. $11,900
C. $(7,600)
D. $(1,400)
E. None of the above

Answer D: If rework the material, will realize $14,000 - $2,100 = $11,900
29 If sell the material for scrap, will realize $13,300.
Thus the difference is $11,900 - $13,300 = $(1,400)
Note the original cost of the material is irrelevant.

26. A study has been conducted to determine if one of the departments in Parry Company should be discontinued. The contribution margin in the department is $50,000 per year. Fixed expenses charged to the department are $65,000 per year. It is estimated that $40,000 of these fixed expenses could be eliminated if the department is discontinued. These data indicate that if the department is discontinued, the company's overall cash income would:
A. decrease by $25,000 per year
B. increase by $25,000 per year
C. decrease by $10,000 per year
D. increase by $10,000 per year
E. None of the above

Answer C: Cash lost is $50,000 in lost CM; cash saved is $40,000 in fixed expenses eliminated; hence, in total the cash income for the company would decrease by $10,000 per year.

27. The management of Austin Corporation is considering dropping product R97C. Data from the company's accounting system appear below:

<table>
<thead>
<tr>
<th>Description</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$130,000</td>
</tr>
<tr>
<td>Variable expenses</td>
<td>56,000</td>
</tr>
<tr>
<td>Fixed manufacturing expenses</td>
<td>49,000</td>
</tr>
<tr>
<td>Fixed selling and administrative expenses</td>
<td>35,000</td>
</tr>
<tr>
<td>Sales (35,000 - 20,000)</td>
<td>$(15,000)</td>
</tr>
<tr>
<td>In the company's accounting system all fixed expenses of the company are fully allocated to products. Further investigation has revealed that $34,000 of the fixed manufacturing expenses and $20,000 of the fixed selling and administrative expenses are avoidable if product R97C is discontinued. What would be the effect on the company's overall net operating income if product R97C were dropped?</td>
<td></td>
</tr>
</tbody>
</table>
A. Overall net operating income would increase by $20,000.
B. Overall net operating income would decrease by $10,000.
C. Overall net operating income would increase by $10,000.
D. Overall net operating income would decrease by $20,000.
E. None of the above.

Answer C: Cash saved: Variable expenses $56,000, Avoidable fixed manufacturing expenses $34,000, Avoidable fixed S&A expenses $20,000, Cash lost: Lost sales revenues $(130,000)

$270,000
28. Products A, B, and C are produced from a single raw material input. The raw material costs $90,000, from which 5,000 units of A, 10,000 units of B, and 15,000 units of C can be produced each period. Product A can be sold at the split-off point for $2 per unit, or it can be processed further at a cost of $12,500 and then sold for $5 per unit. Product A should be:
A. sold at the split-off point, since further processing would result in a loss of $0.50 per unit.
B. processed further, since this will increase profits by $2,500 each period.
C. sold at the split-off point, since further processing will result in a loss of $2,500 each period.
D. processed further, since this will increase profits by $12,500 each period.
E. Answer B

Answer B

Product A can be sold at the split-off point for $2/unit for a total of ($2/unit)(5,000 units) = $10,000, or A can be processed further earning ($5/unit)(5,000 units) - $12,500 = $12,500. Hence, A should be processed further, increasing profits by $2,500.

29. Slosh Cleaning Corporation services both residential and commercial customers. Slosh expects the following operating results next year for each type of customer:

<table>
<thead>
<tr>
<th></th>
<th>Residential</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price per unit</td>
<td>$60.00</td>
<td>$200.00</td>
</tr>
<tr>
<td>Variable cost per unit</td>
<td>$30.00</td>
<td>$140.00</td>
</tr>
<tr>
<td>Units sold</td>
<td>1,000 units</td>
<td>500 units</td>
</tr>
</tbody>
</table>

Slosh expects to have $18,000 in fixed expenses next year. What would Slosh's total dollar sales have to be next year in order to generate a profit of $90,000?
A. $240,000
B. $345,000
C. $331,200
D. $288,000
E. None of the above

Answer D

New Price per unit | Residential | Commercial |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CM/minute</td>
<td></td>
<td>$140.00</td>
</tr>
</tbody>
</table>
| Weighted average CM = (2/3)($30) + (1/3)($40) = $30/unit on average
| Residential = (2/3)(2,700) = 1,800 units or (1/3)(2,700) = 900 units
| Total sales = $108,000 + $180,000 = $288,000

30. Britman Corporation makes three products: IP, NI and YD. The company has a limited amount of machine time, so it cannot make all of these products. Data concerning those products appear below:

<table>
<thead>
<tr>
<th></th>
<th>IP</th>
<th>NI</th>
<th>YD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price per unit</td>
<td>$183.57</td>
<td>$207.74</td>
<td>$348.15</td>
</tr>
<tr>
<td>Variable cost per unit</td>
<td>$144.42</td>
<td>$155.04</td>
<td>$269.50</td>
</tr>
<tr>
<td>Fixed cost per unit</td>
<td>$72.21</td>
<td>$77.52</td>
<td>$134.75</td>
</tr>
<tr>
<td>Machine hours (in minutes)</td>
<td>2.90</td>
<td>3.40</td>
<td>5.50</td>
</tr>
</tbody>
</table>

Rank the products in order of their current profitability from most profitable to least profitable. In other words, rank the products in the order in which they should be emphasized.
A. IP, YD, NI
B. YD, NI, IP
C. YD, IP, NI
D. NI, YD, IP
E. Some other order should be emphasized.

Answer D

For IP: CM/minute = ($183.57 - $144.42)/(2.90 minutes) = $13.50/minute
For NI: CM/minute = ($207.74 - $155.04)/(3.40 minutes) = $15.50/minute
For YD: CM/minute = ($348.15 - $269.50)/(5.50 minutes) = $14.30

Thus, the company wants the following order: NI, YD, IP