Multiple Choice Questions

1. A mixed cost
   a) is fixed over a wider range of activity than a variable cost.
   b) is a fixed cost over the relevant range and a variable cost everywhere else.
   c) contains both fixed and variable components.
   d) always increases on a per unit basis.

2. The per-unit amount of three different production costs for Jones, Inc., are as follows:

<table>
<thead>
<tr>
<th>Production</th>
<th>Cost A</th>
<th>Cost B</th>
<th>Cost C</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,000</td>
<td>$12.00</td>
<td>$15.00</td>
<td>$20.00</td>
</tr>
<tr>
<td>80,000</td>
<td>$12.00</td>
<td>$11.25</td>
<td>$5.00</td>
</tr>
</tbody>
</table>

   What type of cost is each of these three costs?
   a) Cost A is mixed, Cost B is variable, Cost C is mixed
   b) Cost A is fixed, Cost B is mixed, Cost C is variable.
   c) Cost A is fixed, Cost B is variable, Cost C is mixed.
   d) Cost A is variable, Cost B is mixed, Cost C is fixed.

3. An activity level the company expects to operate at is called a
   a) Margin of Safety
   b) Relevant range
   c) Contribution margin
   d) Target net income

4. Buddy uses the high-low method of estimating costs. Bud had total costs of $50,000 at its lowest level of activity, when 5,000 units were sold. When, at its highest level of activity, sales equaled 12,000 units, total costs were $78,000. Bud would estimate variable cost per unit as
   a) $10.00
   b) $6.50
   c) $4.00
   d) $7.53
5. Buddy uses the high-low method of estimating costs. Bud had total costs of $50,000 at its lowest level of activity, when 5,000 units were sold. When, at its highest level of activity, sales equaled 12,000 units, total costs were $78,000. Bud would estimate the fixed cost to be
   a) $20,000
   b) $30,000
   c) $40,000
   d) $50,000

6. ABC company sells shoes for $450. The variable cost is $200 per unit. The fixed costs are $750,000. What is the breakeven in sales dollars?
   a) $750,000
   b) $937,500
   c) $1,350,000
   d) $1,687,500

7. ABC company sells shoes for $450. The variable cost is $200 per unit. The fixed costs are $750,000. The company wants to have a profit of $250,000. How many units do they have to sell to achieve this goal?
   a) 3,000
   b) 4,000
   c) 5,000
   e) 6,000

8. According to the graph below, what is the break-even point in units?

![Graph showing Total Sales, Total Expenses, and Fixed Expenses with a break-even point marked at (100 units, $100,000 of sales)]
9. Determine the margin of safety ratio from the following data:

Sales: $30 per unit
Variable Cost: $10 per unit
Units Sold: 750 units
Fixed Costs: $10,000

a) 20%
b) 33%
c) 45%
d) 75%

10. Determine fixed costs using the high-low method from the following data:

<table>
<thead>
<tr>
<th>Total Costs</th>
<th>Level of Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>$65,000</td>
<td>11,250</td>
</tr>
<tr>
<td>$52,000</td>
<td>8,000</td>
</tr>
<tr>
<td>$86,000</td>
<td>16,500</td>
</tr>
</tbody>
</table>

a) 45,000
b) 20,000
c) 16,500
d) 9,500

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**Practice Problems**

**Practice Problem #1**

A Company accumulated the following data for a delivery truck.

<table>
<thead>
<tr>
<th>Miles Driven</th>
<th>Total Cost</th>
<th>Miles Driven</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>10,000</td>
<td>March</td>
<td>9,000</td>
</tr>
<tr>
<td>February</td>
<td>8,000</td>
<td>April</td>
<td>7,500</td>
</tr>
<tr>
<td></td>
<td>$15,000</td>
<td>$14,500</td>
<td>$12,500</td>
</tr>
<tr>
<td></td>
<td>$14,500</td>
<td></td>
<td>$13,000</td>
</tr>
</tbody>
</table>

Required:  

a) Determine the equation to predict total costs for the delivery truck.
b) Calculate the total costs be if 12,187 miles were driven.
**Practice Problem #2**

Data concerning N Company's activity for the first six months of the year appear below:

<table>
<thead>
<tr>
<th>Month</th>
<th>Machine Hours</th>
<th>Electrical Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>4,000</td>
<td>$3,120</td>
</tr>
<tr>
<td>February</td>
<td>6,000</td>
<td>4,460</td>
</tr>
<tr>
<td>March</td>
<td>4,800</td>
<td>3,500</td>
</tr>
<tr>
<td>April</td>
<td>5,800</td>
<td>5,040</td>
</tr>
<tr>
<td>May</td>
<td>3,600</td>
<td>2,900</td>
</tr>
<tr>
<td>June</td>
<td>4,200</td>
<td>3,200</td>
</tr>
</tbody>
</table>

Required: Using the high-low method of analysis, estimate the variable electrical cost per machine hour.

**Practice Problem #3**

P Company has provided the following data:

- Sales Price per unit: $50
- Variable Cost per unit: $30
- Fixed Cost: $135,000
- Expected Sales: 20,000 units

a) What is the breakeven point in sales dollars?

b) What is the current margin of safety?

c) If the company wants to have net income of $70,000, how many units must they sell?
Solutions

1. C
2. D
3. B
4. C
5. B
6. C
7. B
8. A
9. B
10. B

Practice Problem #1

a)

\[
\begin{array}{cccc}
\text{Cost $} & \text{High Point} & \text{Low Point} & \text{Change} \\
\text{Activity} & 10,000 & 7,500 & 2,500 \\
\end{array}
\]

\[
\frac{\text{Change in Cost $}}{\text{Change in Activity}} = \frac{2,000}{2,500} = 0.80 \text{ variable cost/unit}
\]

Using either the high point or low point, total fixed cost is calculated next:

Fixed Cost = Total Cost - Variable Cost

\[
\begin{align*}
\text{OR} \\
\text{OR}
\end{align*}
\]

\[
\begin{align*}
\text{Fixed Cost} & = 15,000 - 8,000 = 7,000 (10,000) \\
\text{Fixed Cost} & = 13,000 - 6,000 = 7,000 (7,500)
\end{align*}
\]

The equation is: \( Y = 7,000 + 0.80(X) \)

b)

\[
Y = a + b(X)
\]

\[
Y = 7,000 + 9,750 = 0.80 (12,187)
\]

Practice Problem #2:

\[
\text{High Point} - \text{Low Point} = \text{Change}
\]
<table>
<thead>
<tr>
<th>Cost $</th>
<th>$4,460</th>
<th>$2,900</th>
<th>$1,560</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>6,000</td>
<td>3,600</td>
<td>2,400</td>
</tr>
</tbody>
</table>

\[
\frac{\text{Change in Cost $}}{\text{Change in Activity}} = \frac{1,560}{2,400} = 0.65 \text{ variable cost/unit}
\]

**Practice Problem #3:**

a)

<table>
<thead>
<tr>
<th></th>
<th>unit</th>
<th>ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>sales</td>
<td>50</td>
<td>100%</td>
</tr>
<tr>
<td>Variable cost</td>
<td>30</td>
<td>60%</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>20</td>
<td>40%</td>
</tr>
</tbody>
</table>

Fixed cost/contribution margin ratio = breakeven in sales dollars

\[135,000/ 40% = \$337,500\]

b) Find current margin of safety

Current Income:

Sales (20,000* $50) $1,000,000
Variable Cost (20,000* 30) 600,000
Contribution Margin 400,000
Fixed Expenses 135,000
Net Income 265,000

Sales - Breakeven Sales = Margin of Safety

\[1,000,000 - 337,500 = \$662,500\]

c) \((\text{Fixed Costs + Target Profit})/ \text{contribution margin per unit}\)

\[\frac{135,000 + 500,000}{20} = 31,750\]