Cost & Management Accounting
Bachelors of Business (Specialized in Finance) – Study Notes & Tutorial Questions
Chapter 5: Marginal Costing
Introduction

Marginal costing is an alternative method of costing to absorption costing. In marginal costing, only variable costs are charged as a cost of sale and a contribution is calculated (sales revenue minus variable cost of sales). Closing inventories of work in progress or finished goods are valued at marginal (variable) production cost. Fixed costs are treated as a period cost, and are charged in full to the profit and loss account of the accounting period in which they are incurred.

The marginal production cost per unit of an item usually consists of the following.

- Direct materials
- Variable production overheads
- Direct labour

Direct labour costs might be excluded from marginal costs when the work force is a given number of employees on a fixed wage or salary. Even so, it is not uncommon for direct labour to be treated as a variable cost, even when employees are paid a basic wage for a fixed working week. If in doubt, you should treat direct labour as a variable cost unless given clear indications to the contrary. Direct labour is often a step cost, with sufficiently short steps to make labour costs act in a variable fashion.

The marginal cost of sales usually consists of the marginal cost of production adjusted for inventory movements plus the variable selling costs, which would include items such as sales commission, and possibly some variable distribution costs.

"If someone offers you an amazing opportunity and you are not sure you can do it, say yes. Then learn how to do it later."
-- Richard Branson.

www.facebook.com/RichardBranson
The principles of Marginal Costing

The principles of marginal costing are as follows.

a) Period fixed costs are the same, for any volume of sales and production (provided that the level of activity is within the ‘relevant range’). Therefore, by selling an extra item of product or service the following will happen.
   (i) Revenue will increase by the sales value of the item sold.
   (ii) Costs will increase by the variable cost per unit.
   (iii) Profit will increase by the amount of contribution earned from the extra item.

b) Similarly, if the volume of sales falls by one item, the profit will fall by the amount of contribution earned from the item.

c) Profit measurement should therefore be based on an analysis of total contribution. Since fixed costs relate to a period of time, and do not change with increases or decreases in sales volume, it is misleading to charge units of sale with a share of fixed costs. Absorption costing is therefore misleading, and it is more appropriate to deduct fixed costs from total contribution for the period to derive a profit figure.

d) When a unit of product is made, the extra costs incurred in its manufacture are the variable production costs. Fixed costs are unaffected, and no extra fixed costs are incurred when output is increased. It is therefore argued that the valuation of closing inventories should be at variable production cost (direct materials, direct labour, direct expenses (if any) and variable production overhead) because these are the only costs properly attributable to the product.

Break Even Point (BEP)

At this point there is neither profit nor loss; that is, the activity breaks even. Where the volume of activity is below BEP, a loss will be incurred because total cost exceeds total sales revenue. Where the business operates at a volume of activity above BEP, there will be a profit because total sales revenue will exceed total cost. The further below BEP, the higher the loss: the further above BEP, the higher the profit.
Deducing BEPs by graphical means is a laborious business. Since the relationships in the graph are all linear (that is, the lines are all straight), however, it is easy to calculate the BEP.

We know that at BEP (but not at any other point):

\[
Total \ sales \ revenue = Total \ cost
\]

If we call the number of units of output at BEP \( b \), then

\[
b = \frac{Fixed \ cost}{Sales \ revenue \ per \ unit - Variable \ cost \ per \ unit}
\]

\[
BEP \ (unit) = FC / Contribution \ per \ unit \ (SP – VC)
\]

\[
BEP \ ($) = FC + Target \ Profit / C.S \ Ratio
\]

\[
C/S \ Ratio = (sales \ revenue - cost of sales) / sales \ revenue \times 100.
\]

The sloping line starting at zero represents the sales revenue at various volumes of activity. The point at which this finally catches up with the sloping total cost line, which starts at \( F \), is the break-even point (BEP). Below this point a loss is made, above it a profit.
If we look back at the break-even chart above, this formula seems logical. The total cost line starts off at point F, higher than the starting point for the total sales revenues line (zero) by amount F (the amount of the fixed cost). Because the sales revenue per unit is greater than the variable cost per unit, the sales revenue line will gradually catch up with the total cost line. The rate at which it will catch up is dependent on the relative steepness of the two lines. Bearing in mind that the slopes of the two lines are the variable cost per unit and the selling price per unit, the above equation for calculating b looks perfectly logical.

Though the BEP can be calculated quickly and simply without resorting to graphs, this does not mean that the break-even chart is without value. The chart shows the relationship between cost, volume and profit over a range of activity and in a form that can easily be understood by non-financial managers. The break-even chart can therefore be a useful device for explaining this relationship.

**Contribution**

Contribution is an important measure in marginal costing, and it is calculated as the difference between sales value and marginal or variable cost of sales.

Contribution is of fundamental importance in marginal costing, and the term 'contribution' is really short for 'contribution towards covering fixed overheads and making a profit'.

**TIME & KARMA.**

When a bird is alive... it eats ants.

When the bird has died... ants eat it.

One tree can be made in to a million matchsticks... but only one match is needed to burn a million trees!

Circumstances can change at any time... Don't devalue or hurt anyone in this life...

You may be powerful today but time is more powerful than you!

fb/the idealist
**Contribution margin ratio**

The contribution margin ratio is the contribution from an activity expressed as a percentage of the sales revenue, thus:

\[
\text{Contribution margin ratio} = \frac{\text{Contribution}}{\text{Sales revenue}} \times 100\%
\]

The ratio can provide an impression of the extent to which sales revenue is eaten away by variable cost.

**Profit or contribution information**

The main advantage of contribution information (rather than profit information) is that it allows an easy calculation of profit if sales increase or decrease from a certain level. By comparing total contribution with fixed overheads, it is possible to determine whether profits or losses will be made at certain sales levels. Profit information, on the other hand, does not lend itself to easy manipulation but note how easy it was to calculate profits using contribution information in the question entitled Marginal costing principles. Contribution information is more useful for decision making than profit information.

**Margin of safety**

The margin of safety is the extent to which the planned volume of output or sales lies above the BEP. The margin of safety can be used as a partial measure of risk.

**Achieving a target profit**

In the same way as we can derive the number of units of output necessary to break even, we can calculate the volume of activity required to achieve a particular level of profit.
**Profit–volume charts**

A slight variant of the break-even chart is the profit–volume (PV) chart. A typical PV chart is shown below:

![Profit–volume chart diagram](image)

The PV chart is obtained by plotting loss or profit against volume of activity. The slope of the graph is equal to the contribution per unit, since each additional unit sold decreases the loss, or increases the profit, by the sales revenue per unit less the variable cost per unit. At zero volume of activity there are no contributions, so there is a loss equal to the amount of the fixed cost. As the volume of activity increases, the amount of the loss gradually decreases until BEP is reached. Beyond BEP a profit is made, which increases as activity increases.

As we can see, the PV chart does not tell us anything not shown by the break-even chart. It does, however, highlight key information concerning the profit (loss) arising at any volume of activity. The break-even chart shows this as the vertical distance between the total cost and total sales revenue lines. The PV chart, in effect, combines the total sales revenue and total variable cost lines, which means that profit (or loss) is directly readable.
**The economist’s view of the break-even chart**

So far in this chapter we have treated all the relationships as linear – that is, all of the lines in the graphs have been straight. This is typically the approach taken in management accounting, though it may not be strictly valid.

Consider, for example, the variable cost line in the break-even chart; accountants would normally treat this as being a straight line. Strictly, however, the line should probably not be straight because at high levels of output economies of scale may be available to an extent not available at lower levels. For example, a raw material (a typical variable cost) may be able to be used more efficiently with higher volumes of activity. Similarly, buying large quantities of material and services may enable the business to benefit from bulk discounts and so lower the cost.

There is also a tendency for sales revenue per unit to reduce as volume is increased. To sell more of a particular product or service, it will usually be necessary to lower the price per unit. Economists recognise that, in real life, the relationships portrayed in the break-even chart are usually non-linear. The typical economist’s view of the chart is shown in Figure below.

As volume increases, economies of scale have a favourable effect on variable cost, but this effect is reversed at still higher levels of output. At the same time, sales revenue per unit will tend to decrease at higher levels to encourage additional buyers.
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Note, above figure, that the total variable cost line starts to rise quite steeply with volume but, around point A, economies of scale start to take effect. With further increases in volume, total variable cost does not rise as steeply because the variable cost for each additional unit of output is lowered. These economies of scale continue to have a benign effect on cost until a point is reached where the business is operating towards the end of its efficient range. Beyond this range, problems will emerge that adversely affect variable cost. For example, the business may be unable to find cheap supplies of the variable-cost elements or may suffer production difficulties, such as machine breakdowns. As a result, the total variable cost line starts to rise more steeply.

At low levels of output, sales may be made at a relatively high price per unit. To increase sales output beyond point B, however, it may be necessary to lower the average sales price per unit. This will mean that the total revenue line will not rise as steeply, and may even curve downwards.

Note how this ‘curvilinear’ representation of the break-even chart can easily lead to the existence of two break-even points.
Accountants justify their approach to this topic by the fact that, though the lines may not, in practice, be perfectly straight, this defect is probably not worth taking into account in most cases. This is partly because all of the information used in the analysis is based on estimates of the future. As this will inevitably be flawed, it seems pointless to be pedantic about the minor approximation of treating the total cost and total revenue lines as straight when strictly this is not so. Only where significant economies or diseconomies of scale are involved should the non-linearity of the variable cost be taken into account. Also, for most businesses, the range of possible volumes of activity at which they are capable of operating (the relevant range) is pretty narrow. Over very short distances, it may be perfectly reasonable to treat a curved line as being straight.

**Failing to break even**

Where a business fails to reach its BEP, steps must be taken to remedy the problem: there must be an increase in sales revenue or a reduction in cost, or both of these. Below case discusses how Ford’s subsidiary Volvo is struggling to reach its BEP. Ford has recently disposed of its three UK luxury brands (Aston Martin, Jaguar and Land Rover) and is thought to be considering the possibility of selling off Volvo as well.

"The biggest risk is not taking any risk... In a world that changing really quickly, the only strategy that is guaranteed to fail is not taking risks."

- Mark Zuckerberg

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Weaknesses of break-even analysis

As we have seen, break-even analysis can provide some useful insights concerning the important relationship between fixed cost, variable cost and the volume of activity. It does, however, have its weaknesses. There are three general problems:

Non-linear relationships

The management accountant’s normal approach to breakeven analysis assumes that the relationships between sales revenues, variable cost and volume are strictly straight-line ones. In real life, this is unlikely to be the case. This is probably not a major problem, since, as we have just seen:

- Break-even analysis is normally conducted in advance of the activity actually taking place. Our ability to predict future cost, revenue and so on is somewhat limited, so what are probably minor variations from strict linearity are unlikely to be significant, compared with other forecasting errors; and
Most businesses operate within a narrow range of volume of activity; over short ranges, curved lines tend to be relatively straight.

**Stepped fixed cost**

Most types of fixed cost are not fixed over all volumes of activity. They tend to be ‘stepped’ fixed cost. This means that, in practice, great care must be taken in making assumptions about fixed cost. The problem is heightened because most activities will probably involve various types of fixed cost (for example rent, supervisory salaries, administration cost), all of which are likely to have steps at different points.

**Multi-product businesses**

Most businesses do not offer just one product or service. This is a problem for break-even analysis since it raises the question of the effect of additional sales of one product or service on sales of another of the business’s products or services. There is also the problem of identifying the fixed cost of one particular activity. Fixed cost tends to relate to more than one activity – for example, two activities may be carried out in the same rented premises. There are ways of dividing the fixed cost between activities, but these tend to be arbitrary, which calls into question the value of the break-even analysis and any conclusions reached.
Marginal costing and absorption costing and the calculation of Profit

In marginal costing, fixed production costs are treated as period costs and are written off as they are incurred. In absorption costing, fixed production costs are absorbed into the cost of units and are carried forward in inventory to be charged against sales for the next period. Inventory values using absorption costing are therefore greater than those calculated using marginal costing.

Marginal costing as a cost accounting system is significantly different from absorption costing. It is an alternative method of accounting for costs and profit, which rejects the principles of absorbing fixed overheads into unit costs.

<table>
<thead>
<tr>
<th>Marginal costing</th>
<th>Absorption costing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing inventories are valued at marginal production cost.</td>
<td>Closing inventories are valued at full production cost.</td>
</tr>
<tr>
<td>Fixed costs are period costs.</td>
<td>Fixed costs are absorbed into unit costs.</td>
</tr>
<tr>
<td>Cost of sales does not include a share of fixed overheads.</td>
<td>Cost of sales does include a share of fixed overheads (see note below).</td>
</tr>
</tbody>
</table>

Note

The share of fixed overheads included in cost of sales are from the previous period (in opening inventory values). Some of the fixed overheads from the current period will be excluded by being carried forward in closing inventory values.

In marginal costing, it is necessary to identify the following.

- Variable costs
- Fixed costs
- Contribution

In absorption costing (sometimes known as full costing), it is not necessary to distinguish variable costs from fixed costs.
Reconciling profits

Reported profit figures using marginal costing or absorption costing will differ if there is any change in the level of inventories in the period. If production is equal to sales, there will be no difference in calculated profits using the costing methods.

If inventory levels increase between the beginning and end of a period, absorption costing will report the higher profit. This is because some of the fixed production overhead incurred during the period will be carried forward in closing inventory (which reduces cost of sales) to be set against sales revenue in the following period instead of being written off in full against profit in the period concerned.

If inventory levels decrease, absorption costing will report the lower profit because as well as the fixed overhead incurred, fixed production overhead which had been carried forward in opening inventory is released and is also included in cost of sales.

Reconciling profits – a shortcut

A quick way to establish the difference in profits without going through the whole process of drawing up the income statements is as follows.

\[ \text{Difference in profits} = \text{change in inventory level} \times \text{overhead absorption rate per unit} \]

If inventory levels have gone up (that is, closing inventory > opening inventory) then absorption costing profit will be greater than marginal costing profit.

If inventory levels have gone down (that is, closing inventory < opening inventory) then absorption costing profit will be less than marginal costing profit.

Marginal costing versus absorption costing

Absorption costing is most often used for routine profit reporting and must be used for financial accounting purposes. Marginal costing provides better management information for planning and decision making. There are a number of arguments both for and against each of the costing systems.
The following diagram summarises the arguments in favour of both marginal and absorption costing.

I'm not a HANDSOME guy, but I can give my HAND-TO-SOME one who needs help. Beauty is in heart, not in face.

Dr. A. P. J. Abdul Kalam
Practice Questions

Question 1

Cottage Industries Ltd makes baskets. The fixed costs of operating the workshop for a month totals £500. Each basket requires materials that cost £2 and takes one hour to make. The business pays the basket makers £10 an hour. The basket makers are all on contracts such that if they do not work for any reason, they are not paid. The baskets are sold to a wholesaler for £14 each.

What is the BEP for basket making for the business?
The BEP (in number of baskets) is:

Question 2

Can you think of reasons why the managers of a business might find it useful to know the BEP of some activity that they are planning to undertake?

Question 3

In practice, relationships between costs, revenues and volumes of activity are not necessarily straight-line ones. Can you think of at least three reasons, with examples, why this may be the case?
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Question 4

Motormusic Ltd makes a standard model of car radio, which it sells to car manufacturers for £60 each. Next year the business plans to make and sell 20,000 radios. The business’s costs are as follows:

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Cost per Unit or Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td>Variable materials</td>
<td>£20 per radio</td>
</tr>
<tr>
<td>Variable labour</td>
<td>£14 per radio</td>
</tr>
<tr>
<td>Other variable costs</td>
<td>£12 per radio</td>
</tr>
<tr>
<td>Fixed cost</td>
<td>£80,000 per year</td>
</tr>
<tr>
<td>Administration and selling</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>£3 per radio</td>
</tr>
<tr>
<td>Fixed</td>
<td>£60,000 per year</td>
</tr>
</tbody>
</table>

Required:
(a) Calculate the break-even point for next year, expressed both in quantity of radios and sales value.
(b) Calculate the margin of safety for next year, expressed both in quantity of radios and sales value.

Question 5

A company wishes to make a profit of $150,000. It has fixed costs of $75,000 with a C/S ratio of 0.75 and a selling price of $10 per unit.

How many units would the company need to sell in order to achieve the required level of profit?

If you fail, never give up because F.A.I.L. means “First Attempt In Learning”
End is not the end, if fact E.N.D. means “Effort Never Dies”
If you get No as an answer, remember N.O. means “Next Opportunity”

Dr. Abdul Kalam

alam-quotes.blogspot.in
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**Question 6**

1. What is marginal costing?
2. What is a period cost in marginal costing?
3. Sales value – marginal cost of sales = .................

**Question 7**

Marginal costing and absorption costing are different techniques for assessing profit in a period. If there are changes in inventory during a period, marginal costing and absorption costing give different results for profit obtained.

Which of the following statements are true?

I. If inventory levels increase, marginal costing will report the higher profit.
II. If inventory levels decrease, marginal costing will report the lower profit.
III. If inventory levels decrease, marginal costing will report the higher profit.
IV. If the opening and closing inventory volumes are the same, marginal costing and absorption costing will give the same profit figure.

A. All of the above
B. I, II and IV
C. I and IV
D. III and IV

5. Which of the following are arguments in favour of marginal costing?
   (a) Closing inventory is valued in accordance with IAS 2.
   (b) It is simple to operate.
   (c) There is no under or over absorption of overheads.
   (d) Fixed costs are the same regardless of activity levels.
   (e) The information from this costing method may be used for decision making.

“When KFC came to China.... 24 people went for the job, 23 people were accepted – I was the only guy who wasn't.”

- Jack Ma
  Executive Chairman, Alibaba

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**Question 8**

Mill Stream makes two products, the Mill and the Stream. Information relating to each of these products for April 2012 is as follows.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Mill</th>
<th>Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening inventory</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Production (units)</td>
<td>15,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Sales (units)</td>
<td>10,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Sales price per unit</td>
<td>$20</td>
<td>$30</td>
</tr>
<tr>
<td>Unit cost</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Direct materials</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Direct labour</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Variable production OH</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Variable sales OH</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fixed cost for the month</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>Production cost</td>
<td>40,000</td>
<td></td>
</tr>
<tr>
<td>Administration cost</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>Sales &amp; distribution costs</td>
<td>25,000</td>
<td></td>
</tr>
</tbody>
</table>

**Required**

a. Using marginal costing principles calculate April 2012 profit.

b. Calculate the profit if sales had been 15,000 units of Mills and 6,000 units of Stream

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*Nothing should stand in the way of providing every boy and girl in America the permanent, loving home each of them deserves. Children are, after all, our country’s most precious resource and our most important responsibility.*

*William J. Clinton, Oct. 29, 1996*
Chapter 5: Marginal Costing

Question 9

Big Woof Co manufactures a single product, the Bark, details of which are as follows.

<table>
<thead>
<tr>
<th>Per unit</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price</td>
<td>180,000</td>
</tr>
<tr>
<td>Direct materials</td>
<td>40,000</td>
</tr>
<tr>
<td>Direct labour</td>
<td>16,000</td>
</tr>
<tr>
<td>Variable OH</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Annual fixed production OH are budgeted to be $1,600,000 and Big Woof expects to produce 1,280,000 units of the Bark each year. OH are absorbed on a per unit basis. Actual OH are $1,600,000 for the year.

Budgeted fixed selling costs are $320,000 per quarter.

Actual sales and production units for the first quarter of 2012 are given below.

<table>
<thead>
<tr>
<th>January – March</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
</tr>
<tr>
<td>Production</td>
</tr>
</tbody>
</table>

There is no opening inventory at the beginning of January.

Prepare income statement for the quarter, using

a. Marginal costing
b. Absorption costing

Question 10

When opening inventories were 8,500 litres and closing inventories 6,750 litres, a firm has a profit of $62,100 using marginal costing.

Assuming that the fixed OH absorption rate was $3 per litre, what would be the profit using absorption costing?
Question 11

Last month a manufacturing company’s profit was $2,000, calculated using absorption costing principles. If marginal costing principles has been used, a loss of $3,000 would have occurred. The company’s fixed production cost is $2 per unit. Sales last month were 10,000 units.

What was last month’s production (in units)?

Question 12

In a period where opening inventory were 16,000 units and closing inventories were 21,000 units, a firm had a profit of $140,000 using absorption costing. If the fixed OAR was $8.50 per unit. Calculate profit using marginal costing method.

Question 13

A company had opening inventory of 49,300 units and closing inventory of 44,900 units. Profit based on marginal costing were $320,350 and on absorption costing were $298,650. What is the fixed OAR per unit?
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Question 14

A company produces and sells a single product whose variable cost is $7 per unit.

Fixed costs have been absorbed over the normal level of activity of 250,000 units and have been calculated as $2.50 per unit.

The current selling price is $11 per unit.

How much profit is made under marginal costing if the company sells 300,000 units?

Question 15

HMF Co produces a single product. The budgeted fixed production OH for the period are $550,000. The budgeted output for the period is 3,500 units. Opening inventory at the start of the period consisted of 950 units and closing inventory at the end of the period consisted of 350 units. If absorption costing principles were applied, calculate the profit for the period compared to the marginal costing profit.

Question 16

A company manufactures and sells a single product. In two consecutive months the following levels of production and sales (in units) occurred:

<table>
<thead>
<tr>
<th></th>
<th>Month 1</th>
<th>Month 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>3,800</td>
<td>4,400</td>
</tr>
<tr>
<td>Production</td>
<td>3,900</td>
<td>4,200</td>
</tr>
</tbody>
</table>

The opening inventory for Month 1 was 400 units. Profits or losses have been calculated for each month using both absorption and marginal costing principles.

Which of the following combination of profits and losses for the two months is consistent with the above data?

<table>
<thead>
<tr>
<th></th>
<th>Absorption costing profit/(loss)</th>
<th>Marginal costing profit/(loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Month 1 $</td>
<td>Month 2 $</td>
</tr>
<tr>
<td>A</td>
<td>200</td>
<td>4,400</td>
</tr>
<tr>
<td>B</td>
<td>(400)</td>
<td>4,400</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
<td>3,200</td>
</tr>
<tr>
<td>D</td>
<td>(400)</td>
<td>3,200</td>
</tr>
</tbody>
</table>

(2 marks)
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**Question 17**

An organisation manufactures a single product which is sold for $80 per unit. The organisation's total monthly fixed costs are $99,000 and it has a contribution to sales ratio of 45%. This month it plans to manufacture and sell 4,000 units.

What is the organisation's margin of safety this month (in units)?

A. 1,250  
B. 1,750  
C. 2,250  
D. 2,750  

(2 marks)

**Question 18**

The following budgeted information relates to a manufacturing company for next period:

<table>
<thead>
<tr>
<th>Units</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>14,000</td>
</tr>
<tr>
<td>Sales</td>
<td>12,000</td>
</tr>
</tbody>
</table>

The normal level of activity is 14,000 units per period.
Using absorption costing the profit for next period has been calculated as $36,000.

What would the profit for next period be using marginal costing?

A. $25,000  
B. $27,000  
C. $45,000  
D. $47,000  

(2 marks)

**Question 19**

A company manufactures a single product which it sells for $20 per unit. The product has a contribution to sales ratio of 40%. The company's weekly break-even point is sales revenue of $18,000.

What would be the profit in a week when 1,200 units are sold?

A. $1,200  
B. $2,400  
C. $3,600  
D. $6,000  

(2 marks)
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**Question 20**

A company has established the following information for the costs and revenues at an activity level of 500 units:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>2,500</td>
</tr>
<tr>
<td>Direct labour</td>
<td>5,000</td>
</tr>
<tr>
<td>Production overheads</td>
<td>1,000</td>
</tr>
<tr>
<td>Selling costs</td>
<td>1,250</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>9,750</td>
</tr>
<tr>
<td>Sales revenue</td>
<td>17,500</td>
</tr>
<tr>
<td><strong>Profit</strong></td>
<td>7,750</td>
</tr>
</tbody>
</table>

20% of the selling costs and 50% of the production overheads are fixed over all levels of activity.

**What would be the profit at an activity level of 1,000 units?**

A  £15,500  
B  £16,250  
C  £16,500  
D  £17,750  

**Question 21**

A company has calculated its margin of safety as 20% on budgeted sales and budgeted sales are 5,000 units per month.

**What would be the budgeted fixed costs if the budgeted contribution was £25 per unit?**

**Question 22**

A company has established a marginal costing profit of £72,300. Opening stock was 300 units and closing stock is 750 units. The fixed production overhead absorption rate has been calculated as £5/unit.

**What was the profit under absorption costing?**
Chapter 5: Marginal Costing

Question 23

A company wishes to make a profit of £150,000. It has fixed costs of £75,000 with a C/S ratio of 0.75 and a selling price of £10 per unit.

How many units would the company need to sell in order to achieve the required level of profit?

Question 24

A company which uses marginal costing has a profit of £37,500 for a period. Opening stock was 100 units and closing stock was 350 units.

The fixed production overhead absorption rate is £4 per unit.

What is the profit under absorption costing?

Question 25

A company manufactures and sells a single product. For this month the budgeted fixed production overheads are £48,000, budgeted production is 12,000 units and budgeted sales are 11,720 units.

The company currently uses absorption costing.

If the company used marginal costing principles instead of absorption costing for this month, what would be the effect on the budgeted profit?

Question 26

Last month, when a company had an opening stock of 16,500 units and a closing stock of 18,000 units, the profit using absorption costing was £40,000. The fixed production overhead rate was £10 per unit.

What would the profit for last month have been using marginal costing?

No one is born hating another person because of the color of his skin, of his background, or his religion. People must learn to hate, and if they can learn to hate, they can be taught to love, for love comes more naturally to the human heart than its opposite.

— Nelson Mandela
Chapter 5: Marginal Costing

**Question 27**

A company enjoyed a contribution to sales margin [CS margin] of 40% last year. Its total variable costs in that period amounted to €75,000 and the total fixed costs amounted to €30,000.

How much was the company’s net profit for the year?

**Question 28**

A company has the following budgeted data:

- Breakeven level of sales: 12,000 units
- Margin of safety: 20%
- Budgeted annual variable costs: €100,000
- Budgeted annual fixed costs: €40,000
- Budgeted annual net profit: €10,000

What is the budgeted unit selling price?

**Question 29**

Donegal Ltd has just completed its budget for 2012. An extract from the budget is as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>€1,000,000</td>
</tr>
<tr>
<td>Variable costs</td>
<td>€450,000</td>
</tr>
<tr>
<td>Fixed production overheads</td>
<td>€275,000</td>
</tr>
<tr>
<td>Fixed selling overheads</td>
<td>€55,000</td>
</tr>
</tbody>
</table>

What is the break-even revenue value?

"The people who are crazy enough to think they can change the world, are the ones who do."

– Steve Jobs

www.facebook.com/learningworks
Chapter 5: Marginal Costing

**Question 30**

Ballagh Ltd use marginal costing principles for the purpose of preparing management accounts. For the period just ended the company recorded a profit of €75,000. Opening inventory was 200 units and closing inventory was 700 units. If absorption costing principles were used, the fixed production overhead absorption rate would equal €8 per unit.

What profit would Ballagh Ltd have recorded using absorption costing principles?

**Question 31**

Surat is a small business which has the following budgeted marginal costing profit and loss account for the month ended 31 December 2001:

<table>
<thead>
<tr>
<th>Description</th>
<th>£'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>48</td>
</tr>
<tr>
<td>Cost of sales</td>
<td></td>
</tr>
<tr>
<td>Opening stock</td>
<td>3</td>
</tr>
<tr>
<td>Production costs</td>
<td>36</td>
</tr>
<tr>
<td>Closing stock</td>
<td>(7)</td>
</tr>
<tr>
<td></td>
<td>(32)</td>
</tr>
<tr>
<td>Other variable costs</td>
<td></td>
</tr>
<tr>
<td>Selling</td>
<td>(3-2)</td>
</tr>
<tr>
<td>Contribution</td>
<td>12.8</td>
</tr>
<tr>
<td>Fixed costs</td>
<td></td>
</tr>
<tr>
<td>Production overheads</td>
<td>(4)</td>
</tr>
<tr>
<td>Administration</td>
<td>(3-6)</td>
</tr>
<tr>
<td>Selling</td>
<td>(1-2)</td>
</tr>
<tr>
<td>Net profit</td>
<td>4-0</td>
</tr>
</tbody>
</table>

The standard cost per unit is:

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials (1 kg)</td>
<td>8</td>
</tr>
<tr>
<td>Direct labour (3 hours)</td>
<td>9</td>
</tr>
<tr>
<td>Variable overheads (3 hours)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Budgeted selling price per unit</td>
<td>30</td>
</tr>
</tbody>
</table>

The normal level of activity is 2,000 units per month. Fixed production costs are budgeted at £4,000 per month and absorbed on the normal level of activity of units produced.

**Required:**

(a) Prepare a budgeted profit and loss account under absorption costing for the month ended 31 December 2001. 
(6 marks)

(b) Reconcile the profits under these two methods and explain why a business may prefer to use marginal costing rather than absorption costing. 
(4 marks)
Question 32

Oathall Limited, which manufactures a single product, is considering whether to use marginal or absorption costing to report its budgeted profit in its management accounts.

The following information is available:

<table>
<thead>
<tr>
<th></th>
<th>£/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>4</td>
</tr>
<tr>
<td>Direct labour</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Selling price</td>
<td>50</td>
</tr>
</tbody>
</table>

Fixed production overheads are budgeted to be £300,000 per month and are absorbed on an activity level of 100,000 units per month.

For the month in question, sales are expected to be 100,000 units although production units will be 120,000 units.

Fixed selling costs of £150,000 per month will need to be included in the budget as will the variable selling costs of £2 per unit.

There are no opening stocks.

**Required:**

(a) Prepare the budgeted profit and loss account for a month for Oathall Limited using absorption costing. Clearly show the valuation of any stock figures.

(6 marks)

(b) Prepare the budgeted profit and loss account for a month for Oathall Limited using marginal costing. Clearly show the valuation of any stock figures.

(4 marks)
Chapter 5: Marginal Costing

Question 33

Despard Ltd manufactures and sells a single product. The following data have been extracted from the current year’s budget:

Sales and production (units) 5,000
Variable cost per unit £50
Fixed cost per unit £70
Contribution to sales ratio 75%

The selling price per unit for next year is to be 8% above the current year’s budgeted figure, whereas both the variable cost per unit and the total fixed costs are forecast to increase by 12% above their budgeted level in the current year.

The target for next year is that total profit should remain the same as that budgeted for the current year.

Required:

(a) Calculate for the CURRENT YEAR the budgeted:
   (i) contribution per unit;
   (ii) total profit.

(b) Calculate the number of units which the company should produce and sell next year in order to achieve the target level of profit.

(c) Explain, with an example, the term semi-variable (mixed) cost. How would such a cost be dealt with in undertaking the analysis in (a)?

The strong person is not the good wrestler. Rather, the strong person is the one who controls himself when he is angry.

The Prophet Muhammad
Question 34

Pinafore Ltd manufactures and sells a single product. The budgeted profit statement for this month, which has been prepared using marginal costing principles, is as follows:

<table>
<thead>
<tr>
<th></th>
<th>£’000</th>
<th>£’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (24,000 units)</td>
<td></td>
<td>864</td>
</tr>
<tr>
<td>Less Variable production cost of sales:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening stock (3,000 units)</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Production (22,000 units)</td>
<td>506</td>
<td></td>
</tr>
<tr>
<td>Closing stock (1,000 units)</td>
<td>(23)</td>
<td>(552)</td>
</tr>
<tr>
<td>Less Variable selling cost</td>
<td></td>
<td>312</td>
</tr>
<tr>
<td>Less Fixed overhead costs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Selling and administration</td>
<td>40</td>
<td>(165)</td>
</tr>
<tr>
<td>Contribution</td>
<td></td>
<td>252</td>
</tr>
<tr>
<td>Net profit</td>
<td></td>
<td>87</td>
</tr>
</tbody>
</table>

The normal monthly level of production is 25,000 units and stocks are valued at standard cost.

Required:

(a) Prepare in full a budgeted profit statement for this month using absorption costing principles. Assume that fixed production overhead costs are absorbed using the normal level of activity.  

(b) Prepare a statement that reconciles the net profit calculated in (a) with the net profit using marginal costing.

(c) Which of the two costing principles (absorption or marginal) is more relevant for short-run decision-making, and why?
Chapter 5: Marginal Costing

Question 35

Marco Ltd manufactures and sells a single product. The budgeted profit and loss statement for next year, which has been drawn up using absorption costing principles, is as follows:

<table>
<thead>
<tr>
<th>£000</th>
<th>£000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (40,000 units)</td>
<td>4,400</td>
</tr>
<tr>
<td>Less Cost of sales:</td>
<td></td>
</tr>
<tr>
<td>Production cost (45,000 units):</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>1,800</td>
</tr>
<tr>
<td>Fixed</td>
<td>1,476</td>
</tr>
<tr>
<td></td>
<td>3,276</td>
</tr>
<tr>
<td>Less Closing stock (5,000 units)</td>
<td>(364)</td>
</tr>
<tr>
<td></td>
<td>(2,912)</td>
</tr>
<tr>
<td>Gross profit</td>
<td></td>
</tr>
<tr>
<td>Less Non-production expenses:</td>
<td></td>
</tr>
<tr>
<td>Variable selling costs</td>
<td>360</td>
</tr>
<tr>
<td>Fixed selling, administration and distribution costs</td>
<td>598</td>
</tr>
<tr>
<td></td>
<td>(958)</td>
</tr>
<tr>
<td>Net profit</td>
<td></td>
</tr>
</tbody>
</table>

There will be no stock at the beginning of next year.

Required:

(a) Using marginal costing principles, calculate the following for next year:
   (i) the total budgeted contribution from sales; and
   (ii) the budgeted net profit.  

   (4 marks)

(b) Calculate the break-even point (in units) for next year.  

   (2 marks)

(c) Explain clearly why Marco Ltd’s net profit for next year using marginal costing principles differs from that under absorption costing. Under what conditions would the two net profits be the same?  

   (3 marks)

Confidence and Hard-work is the best medicine to kill the disease called failure. It will make u a successful person.
Chapter 5: Marginal Costing

Question 36

The following data is available for period 9.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening inventory</td>
<td>10,000</td>
</tr>
<tr>
<td>Closing inventory</td>
<td>8,000</td>
</tr>
<tr>
<td>Absorption costing profit</td>
<td>$280,000</td>
</tr>
</tbody>
</table>

The profit for period 9 using marginal costing would be:

A $278,000
B $280,000
C $282,000
D Impossible to calculate without more information

(2 marks)

Question 37

The overhead absorption rate for product T is $4 per machine hour. Each unit of T requires 3 machine hours. Inventories of product T last period were:

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening inventory</td>
<td>2,400</td>
</tr>
<tr>
<td>Closing inventory</td>
<td>2,700</td>
</tr>
</tbody>
</table>

Compared with the marginal costing profit for the period, the absorption costing profit for product T will be:

Question 38

In a period where opening inventories were 15,000 units and closing inventories were 20,000 units, a firm had a profit of $130,000 using absorption costing. If the fixed overhead absorption rate was $8 per unit, the profit using marginal costing would be:

"The common question that gets asked in business is, 'why?' That's a good question, but an equally valid question is, 'why not?'"

— Jeff Bezos, chief executive officer, Amazon.com

www.facebook.com/learningnotes
Chapter 5: Marginal Costing

Question 39

Cost and selling price details for product Z are as follows.

<table>
<thead>
<tr>
<th></th>
<th>$ per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>6.00</td>
</tr>
<tr>
<td>Direct labour</td>
<td>7.50</td>
</tr>
<tr>
<td>Variable overhead</td>
<td>2.50</td>
</tr>
<tr>
<td>Fixed overhead absorption rate</td>
<td>5.00</td>
</tr>
<tr>
<td><strong>Profit</strong></td>
<td><strong>9.00</strong></td>
</tr>
<tr>
<td><strong>Selling price</strong></td>
<td><strong>30.00</strong></td>
</tr>
</tbody>
</table>

Budgeted production for the month was 5,000 units although the company managed to produce 5,800 units, selling 5,200 of them and incurring fixed overhead costs of $27,400.

The marginal costing profit for the month is:

The absorption costing profit for the month is:

Question 40

In a period, a company had opening inventory of 31,000 units and closing inventory of 34,000 units. Profits based on marginal costing were $850,500 and on absorption costing were $955,500.

If the budgeted total fixed costs for the company was $1,837,500, what was the budgeted level of activity in units?

Question 41

A company had opening inventory of 48,500 units and closing inventory of 45,500 units. Profits based on marginal costing were $315,250 and on absorption costing were $288,250. What is the fixed overhead absorption rate per unit?

Question 42

A company has established a marginal costing profit of $72,300. Opening inventory was 300 units and closing inventory is 750 units. The fixed production overhead absorption rate has been calculated as $5/unit.

What was the profit under absorption costing?
Chapter 5: Marginal Costing

**Question 43**

A company produces and sells a single product whose variable cost is $6 per unit. Fixed costs have been absorbed over the normal level of activity of 200,000 units and have been calculated as $2 per unit. The current selling price is $10 per unit. How much profit is made under marginal costing if the company sells 250,000 units?

**Question 44**

A company which uses marginal costing has a profit of $37,500 for a period. Opening inventory was 100 units and closing inventory was 350 units. The fixed production overhead absorption rate is $4 per unit. What is the profit under absorption costing?

**Question 45**

A company manufactures and sells a single product. For this month the budgeted fixed production overheads are $48,000, budgeted production is 12,000 units and budgeted sales are 11,720 units. The company currently uses absorption costing. If the company used marginal costing principles instead of absorption costing for this month, what would be the effect on the budgeted profit?

"I would like to see anyone be able to achieve their dreams, and that's what this organization does."

– Sergey Brin

www.facebook.com/learningpoint
**Question 46**

Last month, when a company had an opening inventory of 16,500 units and a closing inventory of 18,000 units, the profit using absorption costing was $40,000. The fixed production overhead rate was $10 per unit.

What would the profit for last month have been using marginal costing?

**Question 47**

Last month a manufacturing company’s profit was $2,000, calculated using absorption costing principles. If marginal costing principles has been used, a loss of $3,000 would have occurred. The company’s fixed production cost is $2 per unit. Sales last month were 10,000 units.

What was last month’s production (in units)?

**Question 48**

HMF Co produces a single product. The budgeted fixed production overheads for the period are $500,000. The budgeted output for the period is 2,500 units. Opening inventory at the start of the period consisted of 900 units and closing inventory at the end of the period consisted of 300 units. If absorption costing principles were applied, the profit for the period compared to the marginal costing profit would be:
Question 49

Granta Ltd is planning to make a fluid for use in the contract cleaning industry. The fluid is expected to sell for £10 per litre and the following unit costs are expected to apply to the production of the fluid during the year ending 31 December 2011:

Chemical DS: 0.30 litres at £2.50 per litre
Chemical DT: 0.70 litres at £3.50 per litre
Direct labour: 0.25 hours at £6.00 per hour

Variable factory overheads are absorbed at the rate of £5.00 per direct labour hour. Fixed factory overheads are forecast to be £8,632 per year. They are expected to accrue evenly over the year and will be absorbed on a unit basis, over the anticipated annual production of 10,400 litres.

Planned production and sales for the first quarter of 2011 are as follows:

**January to March 2011**

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>2,600 litres</td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>2,300 litres</td>
<td></td>
</tr>
</tbody>
</table>

There is no loss or wastage during the production process.

**Required:**

(a) Produce a detailed forecast income statement for the three-month period ending 31 March 2011 using each of the following:

(i) Absorption costing

(ii) Marginal costing

Calculations should clearly show the cost of production, the value of closing inventory for each method, and the contribution if relevant. Individual accounts for each month are not required.
(b) Prepare a statement reconciling the profit calculated in (a) (i) with that calculated in (a) (ii). (3 marks)

(c) For each of the following, name the type of costing system which would be most appropriate for use in each example and give two reasons for your choice in each case:

(i) A mechanic undertaking a full car service (6 marks)
(ii) The paint manufacturing industry (Total 25 marks)

“Failure is an option here. If things are not failing, you are not innovating enough.”
~ Elon Musk

www.facebook.com/learningmetals
**Chapter 5: Marginal Costing**

**Question 50**

Norton Ltd manufactures a single product, which is sold for $136 per unit.

The standard variable costs per unit of the product are:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Cost per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct material</td>
<td>4 kilos at $7.5 per kilo</td>
<td></td>
</tr>
<tr>
<td>Direct labour</td>
<td>5 hours at $11 per hour</td>
<td></td>
</tr>
<tr>
<td>Production overhead</td>
<td>$2.4 per direct labour hour</td>
<td></td>
</tr>
<tr>
<td>Sales overhead</td>
<td>$5 per unit</td>
<td></td>
</tr>
</tbody>
</table>

The company expects to manufacture and sell 8,000 units in total during the forthcoming year (Year 1).

The fixed overhead costs for the forthcoming year are:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>$60,000</td>
</tr>
<tr>
<td>Administration</td>
<td>$35,000</td>
</tr>
<tr>
<td>Sales</td>
<td>$11,000</td>
</tr>
</tbody>
</table>

**Required:**

(a) Calculate for the forthcoming year (Year 1):
(i) The break-even point in dollars and units
(ii) The margin of safety in dollars and units
(iii) The amount of sales in units that would earn the company a profit of $180,000 (17 marks)

(b) The following cost increases are expected in the following year (Year 2):

<table>
<thead>
<tr>
<th>Cost Item</th>
<th>Percentage Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct material</td>
<td>+5%</td>
</tr>
<tr>
<td>Direct labour</td>
<td>+4%</td>
</tr>
<tr>
<td>Production overhead</td>
<td>+10%</td>
</tr>
<tr>
<td>Sales overhead</td>
<td>+10%</td>
</tr>
<tr>
<td>Production</td>
<td>+3%</td>
</tr>
<tr>
<td>Administration</td>
<td>+8%</td>
</tr>
<tr>
<td>Sales</td>
<td>+10%</td>
</tr>
</tbody>
</table>

**Required:**
Chapter 5: Marginal Costing

Calculate for Year 2:
(i) The selling price that will maintain the company's contribution to sales ratio at the same level as Year 1. (3 marks)

(ii) The break-even point in dollars using the selling price calculated in (i) above. (2 marks)

(iii) The amount of sales in units to earn the company a profit of $180,000 if the selling price was raised to $150. (3 marks)
(Total 25 marks)
Chapter 5: Marginal Costing

**Question 51**

The following details relate to a shop which currently sells 40,000 pairs of shoes annually:

<table>
<thead>
<tr>
<th></th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price per pair of shoes</td>
<td>60</td>
</tr>
<tr>
<td>Buying price per pair of shoes</td>
<td>40</td>
</tr>
</tbody>
</table>

**Total annual fixed costs:**

<table>
<thead>
<tr>
<th></th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and wages</td>
<td>200,000</td>
</tr>
<tr>
<td>Rent and rates</td>
<td>60,000</td>
</tr>
<tr>
<td>Other fixed costs</td>
<td>300,000</td>
</tr>
</tbody>
</table>

**Required:**

(a) Calculate, both in number of units sold and sales value, the:

(i) Breakeven point
(ii) Margin of safety

(8 marks)

**Note:** Required parts (b) to (d) are to be considered individually and are not related to each other.

(b) Calculate the shop’s profit or loss if 26,500 pairs of shoes were sold during a year.

(5 marks)

(c) Calculate how many pairs of shoes would need to be sold if a sales commission of $2 per pair of shoes was paid in addition to other costs and the owner required a net profit of $240,100.

(2 marks)

(d) Calculate how many pairs of shoes would need to be sold to breakeven if an advertising campaign costing $20,000 was undertaken while, at the same time, selling prices were increased by 15%.

(2 marks)

(e) Explain what is meant by each of the following terms and give one example of each:

(i) Fixed cost
(ii) Variable cost

(8 marks)

(Total 25 marks)
Chapter 5: Marginal Costing

Question 52

Graham’s business is selling a particular motor vehicle to the motor trade. Motor traders order these vehicles from Graham in batches of 6, 12 or 18 vehicles and Graham then purchases the vehicles from the manufacturer. Graham’s buying and selling prices are as follows:

<table>
<thead>
<tr>
<th>Number of Vehicles</th>
<th>Buying Price per Vehicle</th>
<th>Selling Price per Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>£10,000</td>
<td>£16,000</td>
</tr>
<tr>
<td>12</td>
<td>£10,000 – 5%</td>
<td>£16,000 – 5%</td>
</tr>
<tr>
<td>18</td>
<td>£10,000 – 10%</td>
<td>£16,000 – 10%</td>
</tr>
</tbody>
</table>

The maximum number of vehicles that Graham can sell is 18 per week given his present premises and sales force.

Graham’s total weekly fixed costs are budgeted at £24,012 including the salesman’s basic wages.

The salesman is also paid a commission of 5% of the selling price for each vehicle that he sells.

Required:

(a) Calculate the total profit per week at each of the sales levels of 6, 12 and 18 vehicles.

(b) Graham is worried about local competition and would like to ensure that he will sell 18 vehicles per week. He is only concerned that the company breaks even until all competition is finally discouraged.

(i) Calculate, to the nearest £, the minimum selling price required for each vehicle in order to achieve break-even point at 18 vehicles per week.

(ii) Using your answer to (i), calculate the minimum selling price required for each vehicle in order to achieve a profit of £209 per vehicle.

(c) Classifying costs as either fixed or variable is not always straightforward.

Identify and describe two methods that may be used to identify the fixed and variable elements of a cost where it does not fall conveniently into a category of either totally fixed or totally variable.

(6 marks)

(6 marks)

(3 marks)

(10 marks)

(Total 25 marks)
Question 53
Chapter 5: Marginal Costing

The Setright Engineering Company (SEC) makes die cast metal chassis components for use in a range of consumer electrical products such as refrigerators and washing machines.

Falcon is a major customer of SEC and they are looking to reduce their own production costs. They currently purchase 20,000 units per year of product SA172 from SEC and are the sole customer for this product. They have approached SEC with an offer of a substantial increase in order size in return for an improved discount on the current price. SEC currently sells product SA172 for £110 per unit.

Product SA172 is produced in one particular section of the factory and the standard cost is as follows:

**Direct Materials**
- Steel 4kgs @ £10.00 per kg
- Fastenings 10 @ £0.50 each

**Direct Labour**
- Skilled 1 hour @ £10.50
- Unskilled 1 hour @ £7.00

Fixed costs for the section total £11,500 per month.

Included in the fixed costs are wages for two supervisors. An additional supervisor would be needed, at a cost of £18,000 per annum (per year), for production volumes in excess of 25,000 units per annum.

Falcon have suggested that for a discount of 5% they would be willing to guarantee orders of 24,000 units per annum and for a discount of 10% they would be willing to guarantee orders of 28,000 units.

SEC does not hold any stock of product SA172.

**Required:**

(a) Calculate the following annual figures for output levels of 20,000, 24,000 and 28,000 units of product SA172:

(i) Sales revenue

(ii) Cost of direct materials

(iii) Cost of direct labour

(iv) Total contribution

(v) Fixed costs

(vi) Total profit
(b) Based on your calculations in part (a), which level of output would you recommend to SEC? Explain your answer. (3 marks)

(c) Outline what other factors SEC would need to consider before deciding whether to offer Falcon a discount in exchange for a guaranteed increased order. (3 marks)

(d) What is the name given to the cost behaviour of the supervisors’ wages? (1 mark)
   (Total 25 marks)

“ If today were the last day of your life, would you want to do what you are about to do today? ”

Steve Jobs
1955 – 2011
Question 54

Trondyme Ltd manufactures and sells the Tron. You are supplied with the following information for May 2007:

<table>
<thead>
<tr>
<th></th>
<th>Per Tron £</th>
<th>Total for May 2007 £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>25.00</td>
<td>200,000</td>
</tr>
<tr>
<td>Direct material</td>
<td>12.00</td>
<td>96,000</td>
</tr>
<tr>
<td>Direct labour</td>
<td>5.00</td>
<td>40,000</td>
</tr>
<tr>
<td>Overheads</td>
<td></td>
<td>36,000</td>
</tr>
</tbody>
</table>

Required:

(a) Define ‘contribution’ and ‘margin of safety’. (4 marks)

(b) Using the information above, calculate unit contribution for the Tron and total contribution for May 2007. (2 marks)

(c) How many Trons will Trondyme Ltd need to sell to break even? (4 marks)

(d) How many Trons will Trondyme Ltd need to sell to make a profit of £80,000? (4 marks)

(e) Calculate the margin of safety, in number of units and sales value, based on the level of sales calculated in part (d). (4 marks)

(f) Calculate the profit/volume ratio. (4 marks)

(g) If overheads increase by £5,000, how many extra units of Tron will the company need to sell to break even? (3 marks) (Total 25 marks)
**Question 55**

Bully Ltd budgets its costs and revenue for product A for the next financial period as follows:

<table>
<thead>
<tr>
<th></th>
<th>$ per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling Price</td>
<td>40</td>
</tr>
<tr>
<td>Direct Material</td>
<td>8</td>
</tr>
<tr>
<td>Direct Labour</td>
<td>6</td>
</tr>
<tr>
<td>Variable Overhead</td>
<td>3</td>
</tr>
</tbody>
</table>

For the period concerned the budgeted fixed overhead is $100,000 and the budgeted sales are 12,000 units.

**Required:**

(a) Calculate the budgeted profit for the period.  

(b) Calculate and explain the significance of

   (i) The Break Even Point in units and dollars

   (ii) The Margin of Safety in units and dollars.

(c) Show by means of a statement, the effect on the budgeted profit of each of the following independent courses of action, and calculate the Break Even Point for each of the three courses of action.

   (i) Reduce the selling price to $35 per unit, this will increase sales by 2,000 units with an increase in fixed overhead of $10,000.

   (ii) Increase the selling price to $45 per unit, this will reduce sales by 4,000 units and increase direct material costs by $2 per unit for all units, with fixed costs being unchanged.

   (iii) Reduce the selling price to $30 per unit, this will increase sales by 5,000 units, increase fixed overhead by $12,000 and decrease direct material costs by $3 per unit for all units.  

   \[ \text{(Total 25 marks)} \]
Question 56

A company produces and sells a single product, the standard unit cost details of which are as follows:

- Direct material: 2 kilos x $4.5 per kilo
- Direct labour: 3 hours x $5 per hour
- Variable overhead: 3 hours x $3 per hour

The total fixed overhead is budgeted at $90,000 per month and is absorbed on a rate per unit basis.

The budgeted output per month is 15,000 units.

The product has a standard selling price of $50 per unit.

The following activity took place during January and February:

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>14,000 units</td>
</tr>
<tr>
<td>Production</td>
<td>16,000 units</td>
</tr>
</tbody>
</table>

There is an opening stock on 1 January of 3,000 units.

Required:

(a) Calculate the standard cost and profit for one unit of output. (5 marks)

(b) Prepare profit statements for each month, using

(i) Marginal costing
(ii) Absorption costing (16 marks)

(c) Prepare a statement reconciling the marginal with the absorption profit for each month. (4 marks)

(Total 25 marks)
Question 57

(a) Holder Ltd, which manufactures four products, has forecast the following results for the forthcoming year:

<table>
<thead>
<tr>
<th></th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>350</td>
<td>500</td>
<td>400</td>
<td>600</td>
<td>1,850</td>
</tr>
<tr>
<td>Material</td>
<td>80</td>
<td>160</td>
<td>168</td>
<td>170</td>
<td>578</td>
</tr>
<tr>
<td>Labour</td>
<td>160</td>
<td>160</td>
<td>100</td>
<td>180</td>
<td>600</td>
</tr>
<tr>
<td>Variable overhead</td>
<td>90</td>
<td>130</td>
<td>110</td>
<td>200</td>
<td>530</td>
</tr>
<tr>
<td>Fixed overhead</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>Profit/(loss)</td>
<td>(5)</td>
<td>25</td>
<td>(3)</td>
<td>25</td>
<td>42</td>
</tr>
</tbody>
</table>

It has been proposed that production of both W and Y is abandoned as both products result in a loss.

You are required to

Advise the company with supporting figures as to whether to cease production of W and Y. (5 marks)

(b) Based on the above figures, calculate:

(i) The contribution to sales ratio, based on the sales mix of the four products above. (2 marks)

(ii) The break-even point in $000. (3 marks)

(iii) The required sales in $000 to earn a profit of $70,000. (3 marks)
### Question 58

A company manufactures two products, Product A and Product B. The following incomplete management report has been prepared in respect of these two products:

<table>
<thead>
<tr>
<th></th>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>£600,000</td>
<td>(vi)</td>
</tr>
<tr>
<td>Variable costs</td>
<td>(i)</td>
<td>(vii)</td>
</tr>
<tr>
<td>Contribution</td>
<td>(ii)</td>
<td>(viii)</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>(iii)</td>
<td>(ix)</td>
</tr>
<tr>
<td>Profit</td>
<td>(iv)</td>
<td>£240,000</td>
</tr>
<tr>
<td>Contribution/Sales ratio</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Break-even point (in sales revenue)</td>
<td>(v)</td>
<td>£320,000</td>
</tr>
<tr>
<td>Margin of Safety (in sales revenue)</td>
<td>£350,000</td>
<td>(x)</td>
</tr>
</tbody>
</table>

**Required:**

(a) Copy the above table into your answer book and complete the missing figures. 
   **(17 marks)**

(b) Discuss two assumptions on which break-even calculations are based. 
   **(4 marks)**

(c) State two examples of situations where marginal costing can be used as a decision-making aid. 
   **(4 marks)**
   **(Total 25 marks)**

---

"I was born to make mistakes, not to fake perfection." 
- Drake
Question 59

For Period 1 Wilson Ltd has produced the following budget figures for Product X:

$ per unit

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling Price</td>
<td>80</td>
</tr>
<tr>
<td>Direct Material</td>
<td>24</td>
</tr>
<tr>
<td>Direct Labour</td>
<td>20</td>
</tr>
<tr>
<td>Variable Overhead</td>
<td>6</td>
</tr>
</tbody>
</table>

For the period, the budgeted fixed overhead is $100,000 and the budgeted sales are 12,000 units.

Required:

(a) Calculate the budgeted profit for Period 1. (4 marks)

(b) Calculate (to the nearest whole unit):

(i) The Break-Even Point in units; (2 marks)

(ii) The Margin of Safety in units. (2 marks)

(c) The sales manager has suggested the following three options for the next period and has asked for an evaluation.

Option 1
Reduce the selling price to $75 per unit. This will increase sales by 2,000 units. Labour costs will increase by $2 per unit and fixed overheads will decrease by $10,000.

Option 2
Increase the selling price to $85 per unit. This will decrease sales by 4,000 units and decrease fixed overheads by $10,000.

Option 3
Reduce the selling price to $70 per unit. This will increase sales by 5,000 units, increase fixed overhead by $12,000 and decrease direct material costs by $3 per unit.
Chapter 5: Marginal Costing

Required:

Calculate, for each of the three options individually:

(i)  The budgeted profit;

(ii) The Break-Even Point in units (work to the nearest whole unit).  

(d)  State which option in (c) should be undertaken in order to provide the highest profit. 

(Total 25 marks)
Chapter 5: Marginal Costing

Question 60

The following details relate to a shop which currently sells 40,000 pairs of shoes annually:

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price per pair of shoes</td>
<td>$</td>
</tr>
<tr>
<td>Buying price per pair of shoes</td>
<td>$40</td>
</tr>
</tbody>
</table>

**Total annual fixed costs:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and wages</td>
<td>$200,000</td>
</tr>
<tr>
<td>Rent and rates</td>
<td>$60,000</td>
</tr>
<tr>
<td>Other fixed costs</td>
<td>$300,000</td>
</tr>
</tbody>
</table>

**Required:**

(a) Calculate, both in number of units sold and sales value, the:

(i) Break-even point
(ii) Margin of safety

(b) Calculate the shop’s profit or loss if 26,500 pairs of shoes were sold during a year.

(c) Calculate how many pairs of shoes would need to be sold if a sales commission of $2 per pair of shoes was paid in addition to other costs and the owner required a net profit of $240,100.

(d) Calculate how many pairs of shoes would need to be sold to break-even if an advertising campaign costing $20,000 was undertaken while, at the same time, selling prices were increased by 15%.

(e) Explain what is meant by each of the following terms and give one example of each:

(i) Fixed cost
(ii) Variable cost

(Total 25 marks)
Question 61

I’m selling a product for $15 per unit. My variable cost per unit is $7. My fixed costs are $9,000. How many units do I have to sell to break even?

Question 62

I’m selling a product for $15 per unit. My variable cost per unit is $7. My fixed costs are $9,000. What is my break-even sales dollar figure?

Question 63

Blue Corp shows monthly fixed costs of $1,797 and per-unit cost of $9.28. It sells 411 units in a month. What is the minimum price Blue Corp. must sell each unit for to break even?

Question 64

A start-up company has the following expenses:

Rent = $1,100
Utilities = $265
Material and assembly = $12.65/unit
Monthly labor = $625

If its product sells for $29.99/unit, how many units must it sell to break even?

Live as if you were to die tomorrow. Learn as if you were to live forever.

-Mahatma Gandhi
Chapter 5: Marginal Costing

**Question 65**

I sell a product for $24.75 and fill orders averaging 37 units per day. My cost to produce and assemble each item is $3.11. If I am open for business five days per week, what is my contribution margin per unit?

**Question 66**

What is the break-even sales dollars figure for an operation that sells 615 products at $17.50 if each item costs $7.05 to produce and the fixed costs for the operation are $3,700/month?

**Question 67**

A company sells 900 units/month at $49.99 each, with an $18.12 per-unit cost and $2,175 monthly fixed costs. Is this company making a profit?

**Question 68**

Tandem Trucking spends $11,455 per month to run its business. It makes an average of 420 deliveries per month at a fee of $55 per delivery. Rounded to the nearest percent, what is Tandem’s monthly return on its $11,455 investment?

*Ask not what your country can do for you; ask what you can do for your country.*

- *January 20, 1961*
Chapter 5: Marginal Costing

**Question 69**

I sell a product for $35. My fixed costs for the week are $194, and it costs me $2.10 per unit to produce the product. If I sell only 6 units this week, how am I doing?

**Question 70**

Zyleron Corp. shows monthly fixed costs of $37,210 and a per-unit cost of $34.79. It sells 275 units in a month. What is the minimum price Zyleron Corp. must sell each unit for to break even?

**Question 71**

A start-up company has the following expenses:

- Rent = $875
- Utilities = $115
- Material and assembly = $4.75/unit
- Monthly labor = $480

If its product sells for $18.99/unit, how many units must it sell to break even?

**Question 72**

I sell a product for $21.50 and fill orders averaging 19 units per day. My cost to produce and assemble each item is $8.47. If I am open for business five days per week, what is my contribution margin each week?
Diagram showing costs and revenues over a range of activity levels
Question 74

Z-Boxes sell for £299 and their variable production cost is £99. The research and development, and fixed production overheads for the year are £1.2 million.

a) Calculate the break-even level of sales volume and revenue?
b) Calculate the break-even revenue using C/S ratio?
c) The budget revenue is £2.99 million; calculate the margin of safety in units and as a percentage?
d) Produce a break-even chart and profit-volume chart using the information above?
e) How many Z-Boxes must be sold to achieve £500,000 profit
Chapter 5: Marginal Costing

**Question 75**

Me ole cock spaniel plc makes 3 products, details as follows:

<table>
<thead>
<tr>
<th></th>
<th>Apples (£)</th>
<th>Pears (£)</th>
<th>Cockneys (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price</td>
<td>60</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>Variable cost</td>
<td>(20)</td>
<td>(30)</td>
<td>(20)</td>
</tr>
<tr>
<td>Contribution</td>
<td>40</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Sales (units)</td>
<td>2,000</td>
<td>3,000</td>
<td>5,000</td>
</tr>
</tbody>
</table>

Fixed overhead for the year £800,000

**Calculate the break-even level of sales?**

**Question 76**

A company provides a number of different services to its customers from a single office. The fixed costs of the office, including staff costs, are absorbed into the company’s service costs using an absorption rate of $25 per consulting hour based on a budgeted activity level of 100,000 hours each period.

Fee income and variable costs are different depending on the services provided, but the average contribution to sales ratio is 35%.

**Calculate the breakeven fee income?**

“Success is a lousy teacher. It seduces smart people into thinking they can’t lose.”

–Bill Gates
Chapter 5: Marginal Costing

**Question 77**

Shiverton Community Building sub-contracts labour-only to various building firms at a charge of £10.00 per man-hour. Its overheads per year are £24,600 and the wage bill is £62,000. How many chargeable man-hours would it have to contract for to break even? The business expects to work 48 weeks in a year.

**Question 78**

Sunniside Therapy Collective has an average charge per client of £12.00. Its overheads are £15,956 and the therapists take £8 from every commission/charge. How many clients does the Collective need to serve in a year to break even? The therapists are unavailable five weeks a year and are available to work 47 weeks in the year.

“Have the courage to follow your heart and intuition. They somehow know what you truly want to become.”

- Steve Jobs
Question 79

Rubex Ltd. manufactures plastic storage boxes. The following is a budgeted Income Statement for the business for June 2013:

<table>
<thead>
<tr>
<th></th>
<th>€/£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Revenue</td>
<td>15,000</td>
</tr>
<tr>
<td>Direct Material</td>
<td>5,200</td>
</tr>
<tr>
<td>Direct Labour</td>
<td>2,390</td>
</tr>
<tr>
<td>Production Overhead</td>
<td>3,200</td>
</tr>
<tr>
<td>Selling Overhead</td>
<td>890</td>
</tr>
<tr>
<td></td>
<td>11,680</td>
</tr>
<tr>
<td>Profit</td>
<td>3,320</td>
</tr>
</tbody>
</table>

The following information is also supplied:

1. The monthly budgeted production and sales is 5,000 units.
2. The following breakdown between fixed and variable costs applies:

<table>
<thead>
<tr>
<th></th>
<th>Variable</th>
<th>Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Materials</td>
<td>100%</td>
<td>n/a</td>
</tr>
<tr>
<td>Labour</td>
<td>€/€1,340</td>
<td>€/€1,050</td>
</tr>
<tr>
<td>Production Overhead</td>
<td>€/€2,680</td>
<td>€/€520</td>
</tr>
<tr>
<td>Selling Overhead</td>
<td>100%</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Required:

(a) Calculate the following:

i. Contribution for the year;
ii. Contribution per unit;
iii. Contribution / sales ratio;
iv. Breakeven sales volume;
v. Margin of safety %;
vi. Sales volume required to achieve a profit of €/£2,220.

Note: Each section carries equal marks. 12 Marks

(b) Prepare a clearly labelled breakeven chart, showing the breakeven point, margin of safety and expected profit. 6 Marks

(c) In deciding whether to make or buy the labels which are glued to the storage boxes, list any two qualitative factors that would need to be considered in making this decision. 2 Marks
Chapter 5: Marginal Costing

Question 80

Canning Ltd. budgets to sell 3 products and has provided you with the following selling prices and variable costs:

<table>
<thead>
<tr>
<th>Product</th>
<th>Sales Units</th>
<th>Selling Price per unit €/£</th>
<th>Variable Cost per unit €/£</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>600,000</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Beta</td>
<td>400,000</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Gamma</td>
<td>1,000,000</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Annual fixed costs are budgeted at €/£4,000,000.

Required:

(a) Calculate the total budgeted profit. 3 Marks

(b) Calculate the contribution / sales ratio for each product. 3 Marks

(c) Calculate the breakeven sales volume per product in total. 5 Marks

(d) How many units of each product and in total would Canning Ltd need to sell to earn a total profit of €/£6,000,000? 4 Marks

(e) Management are deciding whether or not to spend an extra €/£400,000 on advertising and sales promotion of Product Alpha. It is considering reducing its selling price to €/£9 per unit, resulting in expected sales of 800,000 units. Advise whether or not it is financially worth while spending €/£400,000 on the advertising and sales promotion. 5 Marks

The Only way to do Great Work is to Love what you do.

Steve Jobs