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Introduction

There are different study materials and modes for you to prepare for ACCA professional exams.

You can prepare the exam through self-study mode by reading textbooks and practicing revision tests from Approved Content Providers

Or you can go directly to the classes offered by ACCA Approved Learning Partners and stick into their notes.

However, no matter you are choosing which modes of study or which textbook, you need to know the technical articles published by ACCA for each paper is one of the best materials to prepare for your exams that you cannot miss.

In general, the articles are published by ACCA exam team and the contents are updated on a regular basis.

They highlight the core concepts or important areas that a lot of students cannot do well in the past exams.

The most important part is technical articles are generally the guidance to which question to be seen in upcoming exam.

Here are June 2018 examiners comments on ACCA Paper P7 (Advanced Audit & Assurance):

Question Five

This was a reporting question and was in two sections. It was noted that this question was favoured by candidates who had obviously read the recently updated relevant article on the student website.

The second requirement was to critically appraise an extract from an auditor's report, which had been incorrectly prepared and needed amendment. As noted above it was clear that the candidates who selected this question had evidently read the relevant article and were able to identify that the sections were in the wrong order, contained inappropriate wording and that the key audit matters and emphasis of matters paragraphs had been incorrectly used. Good candidates were able to explain when an issue should be included as a key audit matter or if the issue would result in a qualification and hence needed to be part of the basis of opinion paragraph. Other candidates correctly commented that it would be inappropriate to include an emphasis of matter paragraph but that the report should include a section headed material uncertainty related to going concern.

Since it help thousands of students to prepare exam, I organized the articles published by ACCA and summarized them according to their topics and syllabus with relevant questions as Supplementary Notes for those who are interested to focus on the key or challenging areas.

Remember these articles are helping you to enhance your knowledge on particular subjects, and not a substitute of approved textbook.

Chapter 1 Effective presentation and communication of information using charts

Executive Summary

It is important to consider the different types of charts available and select an appropriate chart type for the data being presented. Presenting data in an inappropriate chart can convey information which may be misleading.

Column, bar and line charts for a SINGLE DATA SET

Often the data being presented in this type of chart spans a number of time periods such as years, quarters or months.

Simple column charts: The heights of the columns vary to reflect data values but the width of each column on a specific graph will be the same.

Bar charts are similar to column charts and are used to present similar types of information but the data is presented in the form of horizontal bars rather than vertical columns.

Simple line graphs: Give an indication of moving from one period to the next as the points are connected.

Column, bar and line charts for MULTIPLE DATA SETS

This type of graph can be used for comparison of the different data sets in absolute value terms and over multiple periods.

Component/Stacked column and bar charts

A component column (or bar) chart, also referred to as a stacked charts, highlights not only an overall total value for multiple time periods, but also provides an analysis of the components of that total.

Pie Charts

A pie chart also shows the breakdown of the components of a total figure but each pie chart can only show the components of a total for one period. To show multiple periods requires multiple pie charts.

100% stacked column or bar charts

100% stacked column and bar charts respectively and these provide similar information to that shown in a pie chart as the components of a total can be viewed but the actual total amounts are shown as 100%

Scatter diagram or XY chart

Scatter diagrams can be used to plot two sets of numbers as one series on the chart with one number becoming the x coordinate and the second number becoming the y coordinate. The scatter diagram has two numerical axes representing two variables.

Accounting data is often presented in the form of tables of numbers, sometimes simply as a print out from a spreadsheet or reports from an accounting software package. While this style of presentation provides detailed figures, it may not always be the most effective way to present and communicate information. It may be that some key information should be highlighted, perhaps relationships between certain figures should be emphasised, or trends identified. Appropriate presentation of data in the form of graphs or charts can be a useful analysis tool and if the data is then effectively interpreted this can facilitate the decision-making process. The syllabus for Papers MA2 and F2/FMA require that candidates should be able to describe the key features of different charts, identify suitable charts in particular situations and interpret data presented in charts. The material in this article is also relevant for candidates sitting Paper MA1.

There are many software packages that allow the user to create charts that look very professional but it is important to consider the different types of charts available and select an appropriate chart type for the data being presented. Presenting data in an inappropriate chart can convey information which may be misleading. The term 'chart' is generally considered to include all types of graphs and any other type of chart used to give a pictorial presentation of the data. Some types of charts tend to be described as graphs while others use the term chart, eg it is more common to hear the term line *graph*but the term bar *chart*. The words 'chart' and 'graph' are considered to be interchangeable for the purposes of this article.

A variety of chart types will be reviewed in this article, and the features that make a particular chart type appropriate for the type of data being presented will be highlighted. Some useful tips on presentation will also be provided, together with guidance on interpreting the data presented in the charts. To illustrate the point of ensuring that an appropriate chart type is selected, some data has been presented using an inappropriate chart type resulting in ineffective communication of information.

COLUMN, BAR AND LINE CHARTS FOR A SINGLE DATA SET (CHARTS 1-5)

In each of the Charts 1-5, a single series of data is represented on the graph. Often the data being presented in this type of chart spans a number of time periods such as years, quarters or months but these types of charts can also be used to represent data from one time period but, for example, from different regions or perhaps for different output levels. These charts are drawn with two axes, with the **independent variable** being shown on the x-axis and the **dependent variable** shown on the y-axis.

Charts 1 and 2 are examples of simple column charts. The columns represent the value of the data vertically and each column will be of a uniform width. Note that the heights of the columns vary to reflect the data values but the width of each column on a specific graph will be the same. Although the two charts are the same basic chart type, there are some minor differences in style that are worth pointing out. Chart 1 shows data for total sales over a five-year period with the years being shown on the x-axis and the $ amounts on the y-axis. A key or legend is displayed emphasising that the data relates to Total Sales and while a legend is often included automatically by the charting software it is not necessary when there is only one data series as long as the chart has an appropriate title. Chart 2 is also a simple column chart but the data relates to one year only and each column represents a division of the business so the x-axis is not years but the divisions, North, South, East and West. Notice also that the style of the chart has slightly changed as it is presented in a 3D format, the legend has been removed and the y-axis scale is in round thousands with the axis label having been changed appropriately.

Chart 1

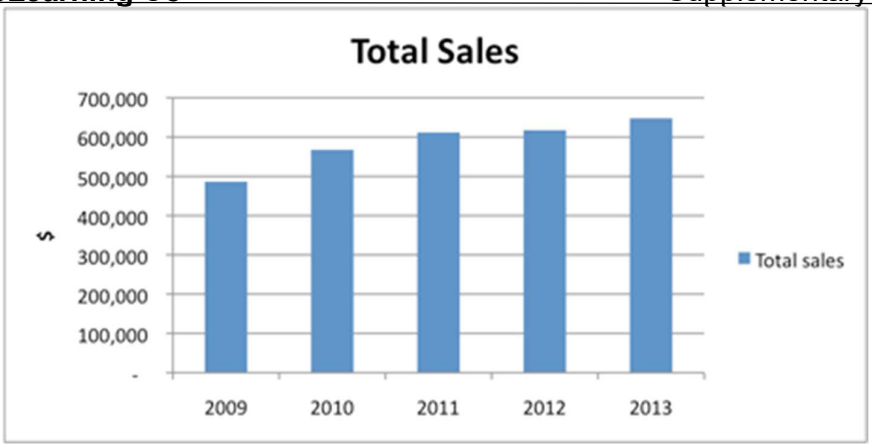


Chart 2

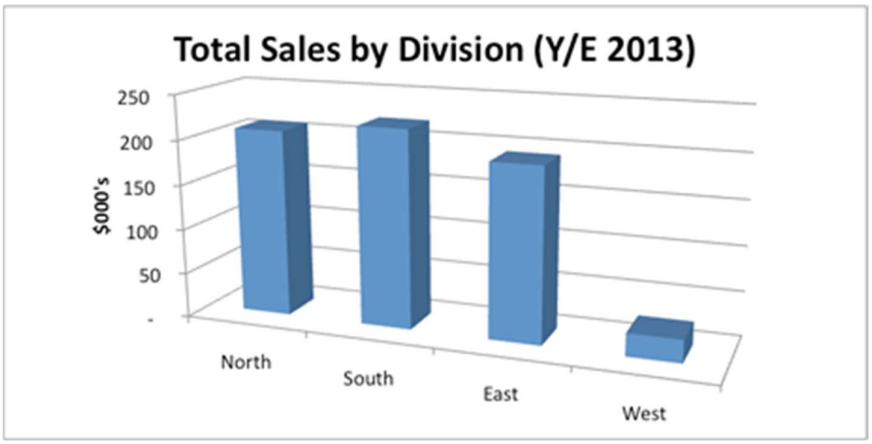
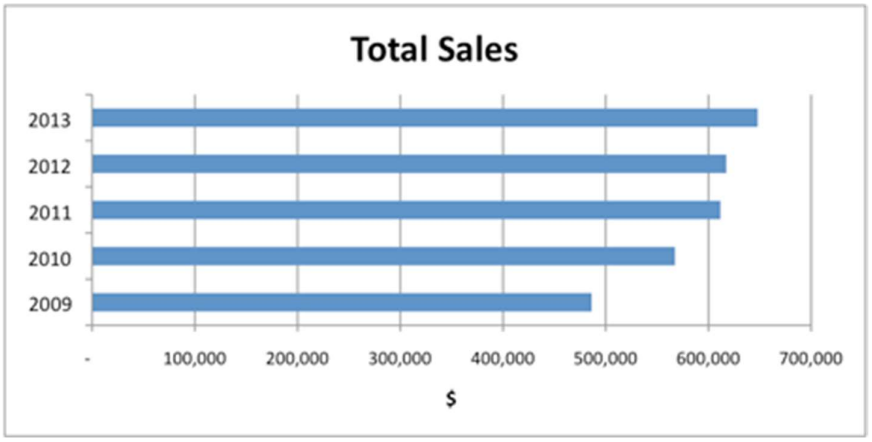


Chart 3 is an example of a simple bar chart. Bar charts are similar to column charts and are used to present similar types of information but the data is presented in the form of horizontal bars rather than vertical columns, so the years are still the independent variables and therefore are still represented on the x-axis but this is now shown on the vertical axis rather than the horizontal axis.

Chart 3



Charts 4 and 5 are simple line graphs. This is a very common style of graph particularly when showing variation over time. To the reader, these give an indication of moving from one period to

the next as the points are connected and for Charts 4 and 5 this gives a good sense of change and can help the reader identify a trend. In fact both of these charts show identical data but due to changes in the y-axis scale, the reader might interpret the information differently.

Chart 4

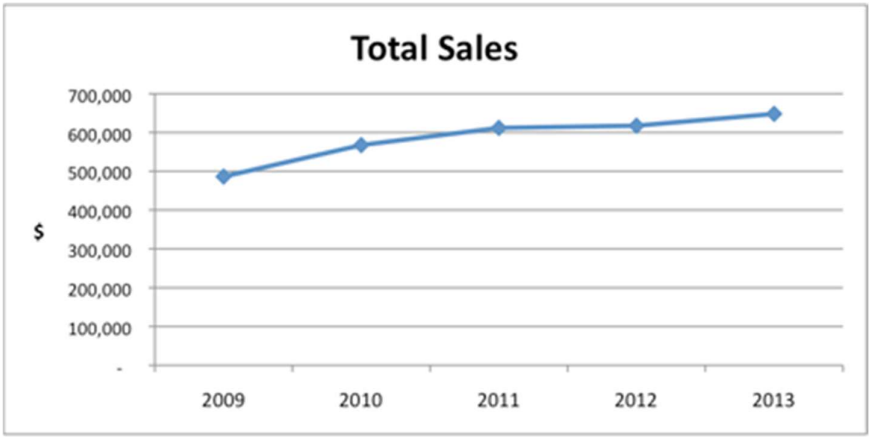
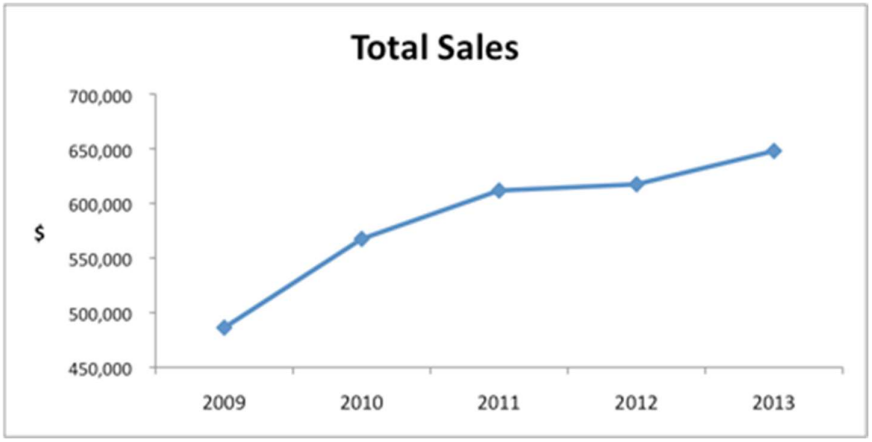


Chart 5



How will the reader interpret the data in Charts 1–5?

Charts 1 and 3 show identical data presented in similar chart formats (column and bar). Both of these chart types provide the reader with a clear indication of the fairly gradual increasing trend in total sales and with the help of the gridlines, the approximate sales values achieved each year can be read from the chart. This trend may be more visually obvious to the reader in the line graphs shown in Charts 4 and 5. In Chart 4, the vertical y-axis scale begins at zero so the first point plotted appears high on the scale. The reader of this graph may interpret the sales trend as one of fairly gradual and modest growth over the five-year period. Contrast this with the message that is communicated by Chart 5. This chart uses the same data but the message conveyed here is one of sharp increases in the period 2009–2011 and the increase between 2012 and 2013 appears more significant than it did in Chart 4. This is a result of changing the scale so that the vertical axis scale begins at a value just below the first data value. Chart 2 provides the reader with a clear picture of the breakdown of sales by division for one particular year and highlights that the West division makes a much smaller contribution to the total sales than the other three divisions. It is worth noting that some care should be taken when reading the values from a 3D chart of this type. It is the back wall of the column that provides the accurate value. In Chart 2 the sales for North division are

actually over $200,000 but if we were to read off from the front wall of the column it would appear that sales are below the $200,000 gridline.

COLUMN, BAR AND LINE CHARTS FOR MULTIPLE DATA SETS (CHARTS 6-8)

Column, bar and line charts can all be used to show multiple data sets provided that the numerical range of the data is similar. (Note that it is possible to plot two sets of data with significantly different data values on the same chart but this type of graph is out of the scope of the syllabus).

Charts 6 and 7 show the data for both total sales and total costs plotted on the same chart, with Chart 6 displaying the data as a column chart and Chart 7 as a line graph. Chart 8 shows the total sales for each of four divisions for each of the five years 2009–2013. Column/bar charts showing multiple data sets are sometimes called compound column/bar charts, though Excel uses the term 'clustered'. Note that in all three of these charts the legend or key becomes an important element of the graph so that the data sets can be distinguished.

Chart 6

Chart 7

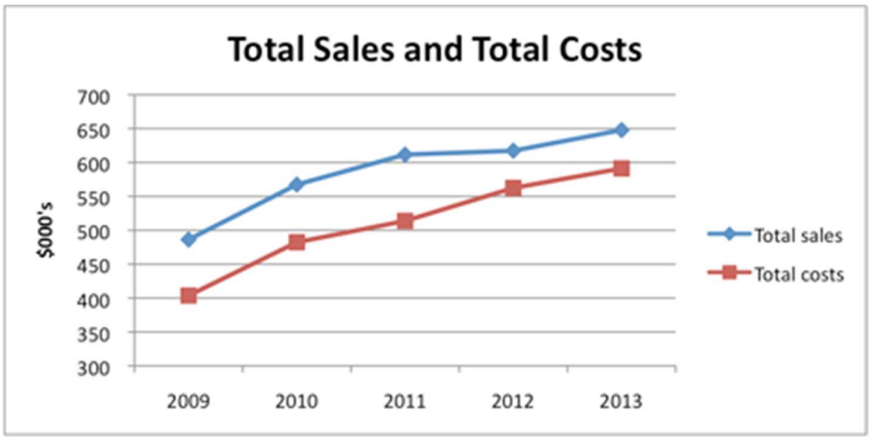
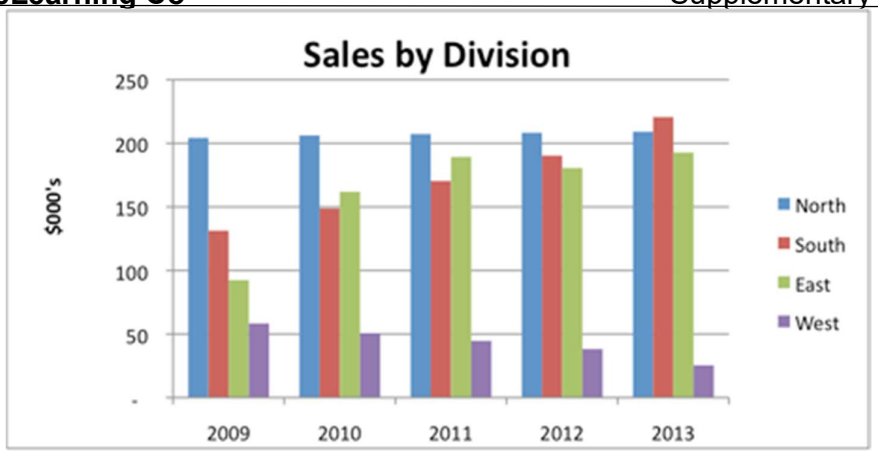


Chart 8



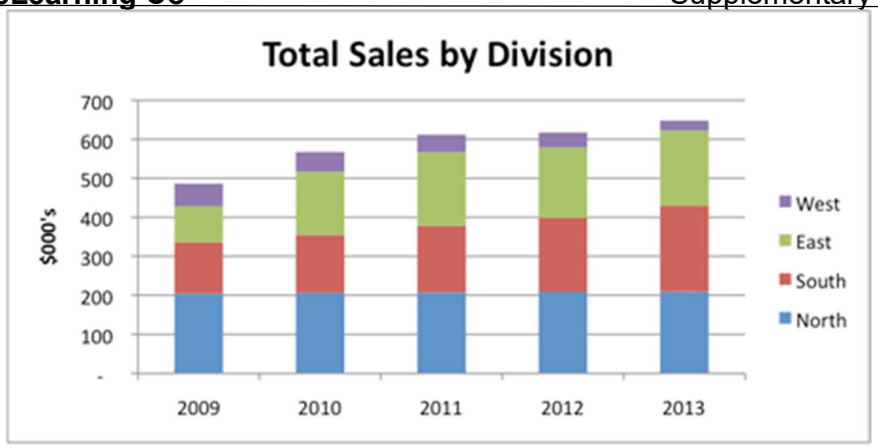
How will the reader interpret the data in Charts 6–8?
This type of graph can be used for comparison of the different data sets in absolute value terms and over multiple periods. In Charts 6 and 7, the reader can compare the relationship of total costs to total sales over the five-year period and will notice that in 2012 and 2013 the level of costs compared to sales has increased. In Chart 6 this is clear as the step down between the columns for total sales and total costs has reduced. In Chart 7 the visual representation of the two lines coming closer together makes it particularly clear to the reader that the total costs are rising at a faster rate than total sales. In Chart 8, the reader is faced with a lot of data on one chart with four data sets for each of five years resulting in a total of 20 columns on this chart. While the data presented is still clear, care should be taken not to overload one chart with too much data. The reader can interpret this information by either considering the composition of sales by division for any one year or by selecting each division in turn and considering the change in sales levels for each division over the five-year period. This chart does allow the reader to compare the components of sales each year in actual sales value terms (later we will look at other charts which provide this analysis in percentage terms). Note that this type of chart does *not* provide the reader with the figure for total sales (unless the reader adds up the totals of the four columns). Chart 8 shows that while the sales of North division have remained fairly constant over the period, there is an upward trend in sales for South and East (except for a small dip in East division sales in 2012) and a downward trend in sales for West division.

COMPONENT/STACKED COLUMN AND BAR CHARTS (CHART 9)

A component column (or bar) chart, also referred to as a stacked chart, highlights not only an overall total value for multiple time periods (or products, or locations etc), but also provides an analysis of the components of that total. The total figure is represented by the height of the column (or length of the bar), and the column or bar is divided into the various components of the total with each component being identified by different colours, patterns or shading. Pie charts, which will be discussed later, can also show an analysis of a total by its component parts but this can only be shown for one period (or product/location etc) at a time.

Chart 9 is an effective example of this type of stacked column chart. The top of the vertical columns reflect the total sales but the four components shown by the different colours show the changing composition by division of the total sales over the five-year period. The same information could also be presented in the form of a stacked bar chart with the data being represented by component horizontal bars rather than columns.

Chart 9



How will the reader interpret the data in Chart 9?
By reviewing the height of the columns, the reader can clearly identify that there is a trend of gradual growth in total sales over the period 2009–2013. On closer inspection of the components of each of the columns it appears that the level of sales for North Division has remained fairly constant (at just over $200,000) each year while South Division has experienced fairly significant increases in sales each year. East Division also appears to have had increased sales each year, with the exception of 2012. Finally, West Division, which accounts for the smallest level of sales in each of the five years, is actually facing a reduction in its sales over the period. This chart provides useful information for decision making as it highlights both overall figures but also provides useful analysis of the totals by division. The reader may choose to investigate the breakdown further to discover the exact percentage that each component contributes to the overall sales figures.

PIE CHARTS (CHARTS 10 AND 11)

A pie chart also shows the breakdown of the components of a total figure but each pie chart can only show the components of a total for one period (or one product/location etc). To show multiple periods requires multiple pie charts. In preparing a pie chart the charting software will automatically calculate the percentage of each component in relation to the total. The percentages are then shown on a circle or pie with the entire circle representing 100%. This can, of course, be done manually using a protractor to mark the required number of degrees for each segment. As the full circle is 360 degrees then a component that represents a quarter of the total would be drawn as a 90 degrees slice on the pie.

Charts 10 and 11 are examples of simple pie charts showing the breakdown of total sales by division for two years, 2009 and 2013. By comparing the sizes of the slices on the pie (the % values are usually shown on the pie, though these can be shown outside the pie itself or replaced with absolute values) these charts clearly communicate the change in the divisional sales relative to each other over this five year period. Note that there are slight variations in style between the two graphs as the data labels appear on the pie in Chart 10 but are shown as a legend in Chart 11.

Chart 10

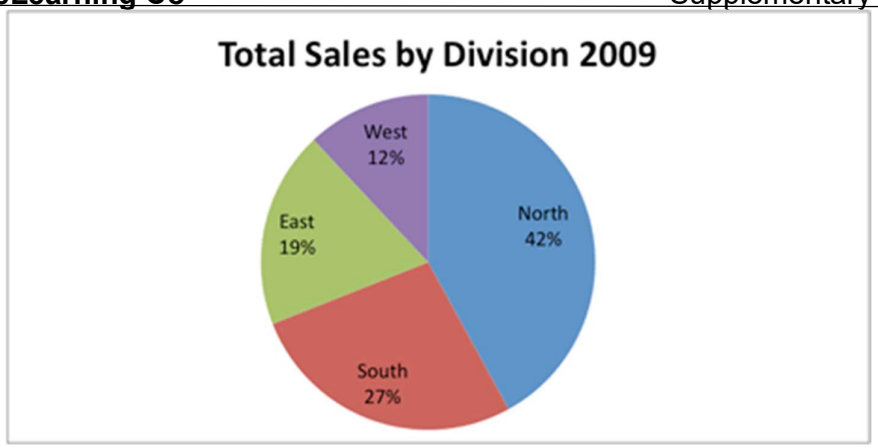
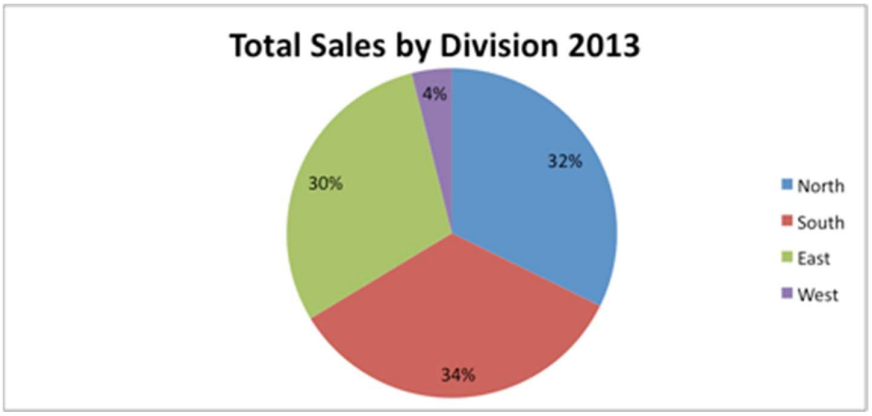


Chart 11



How will the reader interpret the data in Charts 10 and 11?
By reviewing the single pie chart for 2013 (Chart 11), the reader can clearly see that North, South and East divisions have all achieved fairly similar levels of sales with South accounting for 34%, North 32% and East 30% of the total sales for the year. It is also immediately obvious that West division at just 4% of the total sales is significantly underperforming compared to the other divisions. Looking at this year in isolation, however, does not give the entire story. Could it be that West is a newly opened division and has yet to make an impact in the market? By looking at the same data for 2009 (Chart 10) and comparing the percentages it is clear that is not the case. In 2009 West contributed 12% of the total sales. That doesn't necessarily mean that absolute sales of West have fallen (although in fact we know that **is** the case from the data as it is presented in Charts 8 and 9) but certainly it does mean that as a percentage of the total they have become much less significant. South and East divisions have both increased their share of the total while, like West, North division has also reduced its share of the total from 42% in 2009 to 32% in 2013, although in absolute sales value terms, North's sales have remained consistent as shown in Charts 8 and 9.

It is important to remember that a pie chart does not show the total values but only a breakdown of those values. It is quite possible that certain components of the pie chart could increase in percentage terms when compared to a similar pie chart for an earlier period but if the overall total had fallen then the absolute number could still be lower.

100% STACKED COLUMN OR BAR CHARTS (CHARTS 12 AND 13)

Charts 12 and 13 show 100% stacked (or component) column and bar charts respectively and these provide similar information to that shown in a pie chart as the components of a total can be

viewed but the actual total amounts are shown as 100%. This provides similar information to what could be achieved by producing five separate pie charts. Although percentages may not be automatically shown for each component for this type of chart, there is usually an option to allow these percentages to be displayed on the columns or bars.

Chart 12

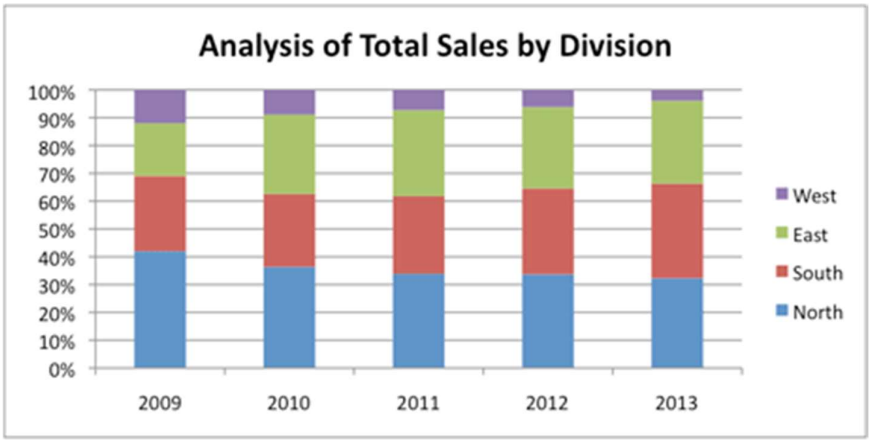
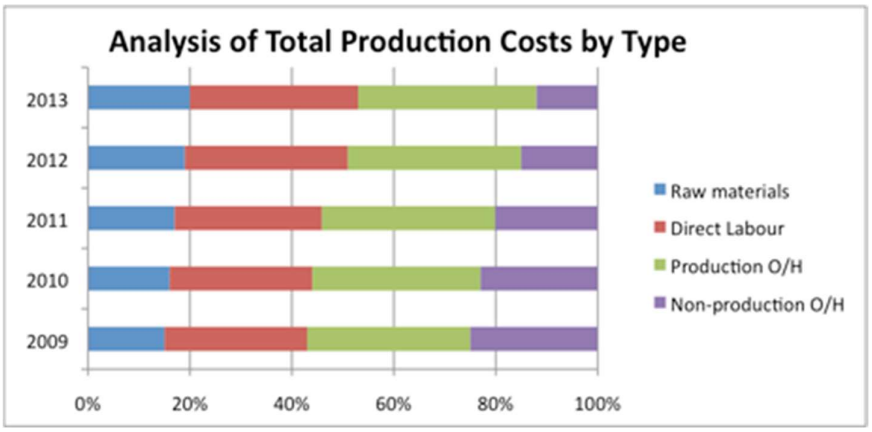


Chart 13



How will the reader interpret the data in Charts 12 and 13?

Charts 12 and 13 do **not** provide the reader with any information regarding the level of total sales or total production costs and so it is not possible to comment on any trend as to whether total sales and total costs are rising or falling over this five-year period. They do however provide useful analysis of the breakdown of sales by division (Chart 12) and the breakdown of total production costs by type (Chart 13) over this period and this can be useful information for decision making. We can clearly see from Chart 12 that there has been a gradual change in the composition of sales by division over the period. Again it is important to remember that a falling (or increasing) percentage does not necessarily mean that absolute figures are falling (or increasing). Chart 13 also shows that raw materials, direct labour and production overheads have gradually been accounting for a larger portion of the total costs while non-production costs have significantly reduced as a percentage of the total.

SCATTER DIAGRAM OR XY CHART (CHARTS 14 AND 15)

Scatter diagrams can be used to plot two sets of numbers as one series on the chart with one number becoming the x coordinate and the second number becoming the y coordinate. The scatter diagram has two numerical axes representing two variables.

The data provided in the table below has been used to create a scatter diagram showing the relationship between output levels and total costs. Output levels vary each month but some months have the same output level but different costs.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Output (units)	100	110	90	100	100	130	110	90	120	130	140	100
Total cost ($)	2,500	2,600	2,200	2,600	2,550	3,000	2,650	2,300	2,800	2,900	2,950	2,400

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Output (Units)	100	110	90	100	100	130	110	90	120	130	140	100
Total Costs ($)	2,500	2,600	2,200	2,600	2,550	3,000	2,650	2,300	2,800	2,900	2,950	2,400

This information has been presented in Chart 14 as a scatter diagram. Notice that the points may be clustered around a particular output level. The scatter diagram points can be used to estimate a trend and a trend line, or line of best fit, can be added to the chart to provide useful information for forecasting as shown in Chart 15.

Chart 14

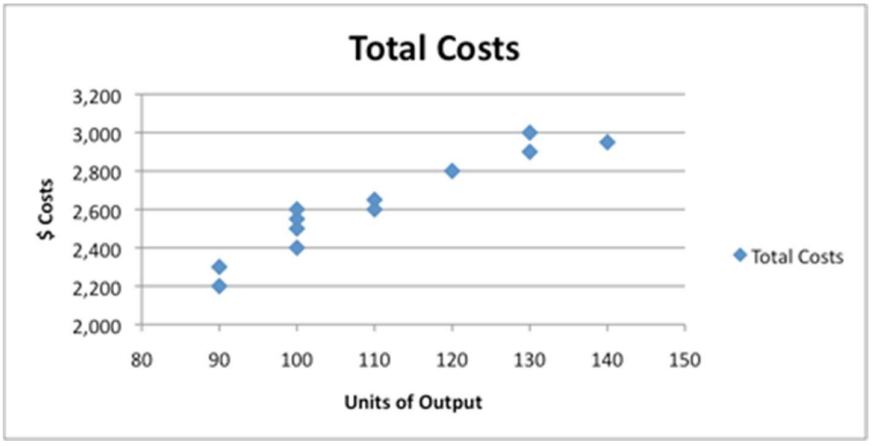
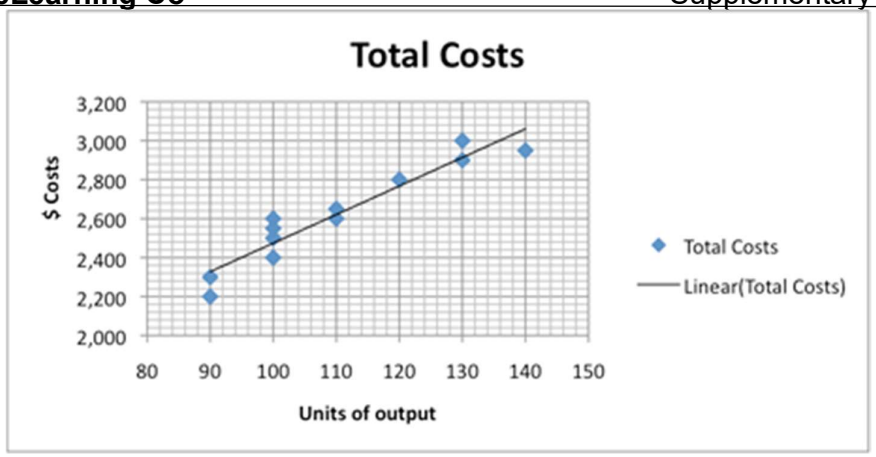


Chart 15



WHEN DATA PRESENTATION GOES WRONG

Having considered a variety of charts that present information that aids decision making, it is worth considering some situations where choosing the wrong type of graph, or perhaps an inappropriate scale can produce results that do not provide useful analysis of the data or perhaps even provide incorrect information. To avoid confusion with other appropriate graph types within the article which have been labelled numerically, these inappropriate chart types have been labelled as Charts A through D.

Chart A uses the same data as Chart 2 but the line graph is less effective for this type of information as each division's performance is not necessarily connected to the previous division's performance but by connecting the points on the line this graph seems to suggest this type of flow. Notice also that the chart title does not tell the reader what data is being presented (sales/costs/profits?) and the y-axis has no title, so, again, the reader does not know what these figures represent. This is, therefore, an example of a graph which does not communicate information effectively. Chart 2 provides a clearer presentation than Chart A for that particular data set.

Chart A

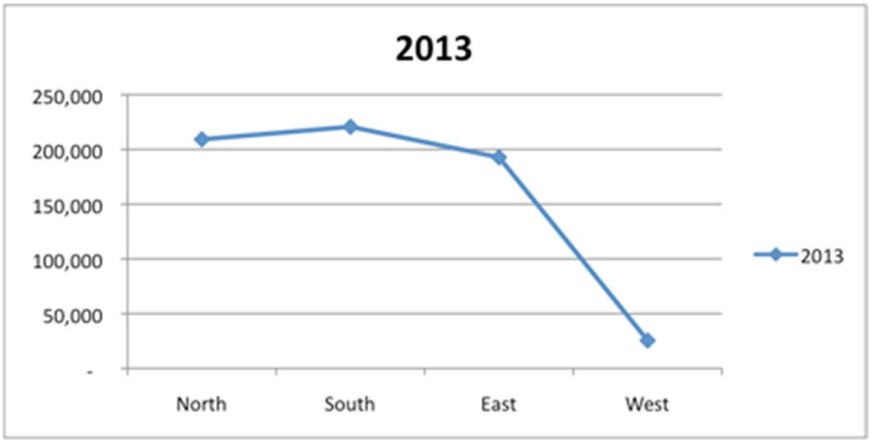


Chart B is an example of a multiple line chart but here the scaling is a problem. The raw material costs per kg of A fluctuate around $4–5, B costs fluctuate between $6–7 and C between $8–9. In order to show the data for all three materials on the same graph the scale must extend from around $3 up to $9. As a result any small variations in price are not being clearly communicated on this graph. This is therefore an inappropriate graph type for this data. Chart 16 shows a single line chart using the same data but for raw material A only and the reader can now clearly see the fluctuations

in the raw material unit cost and consider the impact of this on product costing.

Chart B

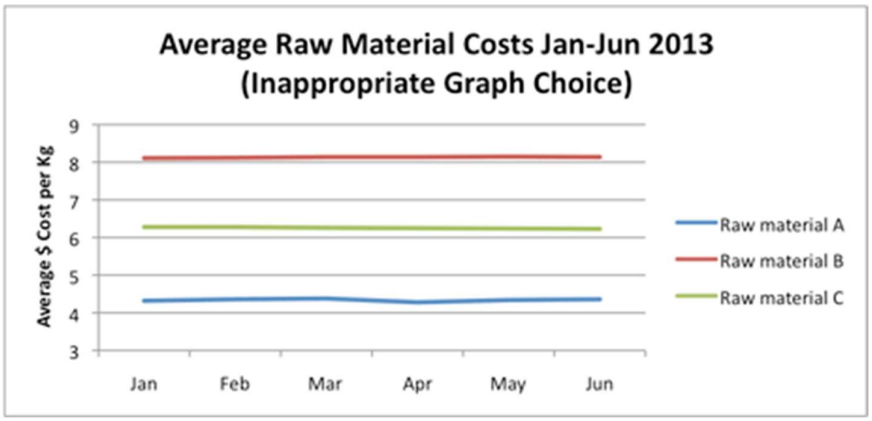


Chart 16

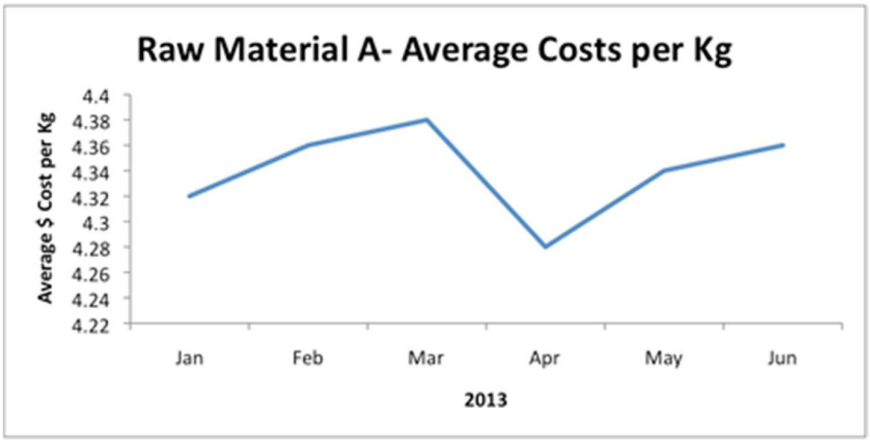


Chart C is an interesting example. Here, a stacked column chart has been prepared combining the 2 data sets of total sales AND total costs which were shown in Charts 6 and 7. This is in fact an inappropriate chart type for this data. We should ask ourselves, what is the figure called that is the result of adding together total sales plus total costs? This is a meaningless figure and this data should NOT be presented in the form of a stacked column or bar chart. Chart D shows a 100% stacked column chart but like Chart C it is attempting to show a breakdown of a meaningless total figure and so is an inappropriate use of the 100% stacked column chart type. Care must always be taken to select an appropriate chart for the data being presented.

Chart C

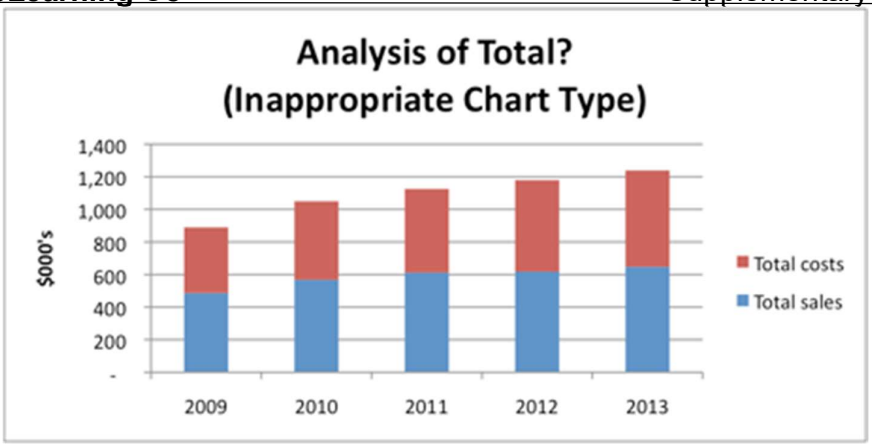
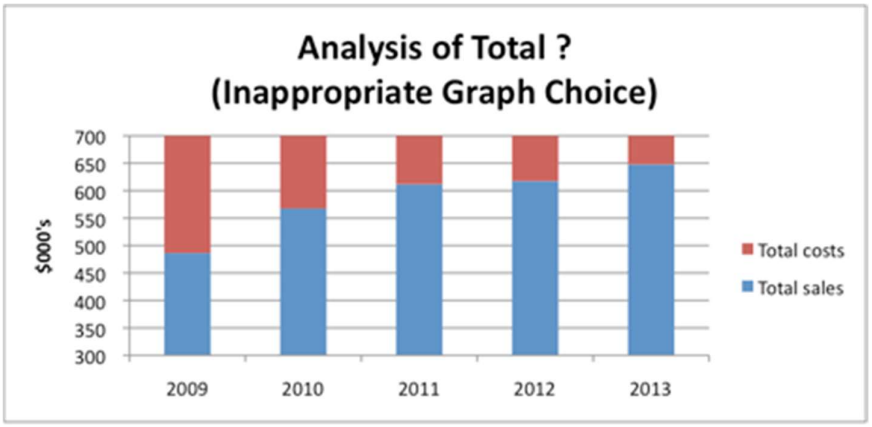


Chart D



CONCLUSION

With so many different types of charts and graphs available (and those shown here are just some of the most commonly used charts), care must always be taken to ensure that an appropriate chart type is chosen to effectively present and communicate the information to the user. We also saw the effects of an inappropriate scale being used in Chart B so even when an appropriate chart type is selected, issues such as scaling, suitable titles and legend types must be carefully considered to ensure effective communication of the data so that it can be interpreted to aid decision making.

Questions

(1)

Which of the following would best present how an organisation spent its income for one year?

A Line graph
B Bar chart
C Pie chart
D Scatter diagram

Answer: C

A pie chart would best show the proportion of each expense for one year. A bar chart is more suitable for making comparisons (so would need to be for more than one year. A line graph would not be suitable as this connects pairs of successive data (which may reveal trends). A scatter diagram would be wholly unsuitable.

Chapter 2 Inventory Control

Executive Summary

Inventory control covered:

- Determining an economic order quantity (EOQ)
- Finding an optimal re-order level (optimal ROL)
- Discussions of various practical aspects of inventory management

Total inventory costs: Purchase cost; Inventory holding cost; Ordering cost.

EOQ is calculated is based on certain assumptions, including:

- Constant purchase price
- Constant demand and constant lead-time
- Holding-cost dependent on average inventory
- Order costs independent of order quantity

Use of EOQ formula:

- Relevant costs – only include those costs affected by order quantity
- Consistent units – ensure that figures inserted have consistent units

Bulk discounts

- A common twist to exam questions is to ask students to evaluate whether bulk discounts are worth taking.

In inventory management, the term ‘lead time’ is the interval between placing an order with a supplier and that order arriving.

Inventory control features in the syllabuses of several ACCA examination papers. The areas usually tested in these papers are:

- determining an economic order quantity (EOQ) – calculations to assess how many units of a particular inventory item to order at a time
- finding an optimal re-order level (optimal ROL) – providing some idea of the level to which inventories can be allowed to fall before placing an order for more
- discussions of various practical aspects of inventory management – often referred to by students with no practical experience as 'theory'.

ADVANTAGES AND DISADVANTAGES OF HOLDING INVENTORY

The basis of the theoretical calculations of an EOQ and an optimal ROL is that there are advantages and disadvantages of holding inventory (of buying inventory in large or small quantities). The advantages include:

- the need to meet customer demand
- taking advantage of bulk discounts
- reducing total annual re-ordering cost

The disadvantages include:

- storage costs
- cost of capital tied up in inventory
- deterioration, obsolescence, and theft

The aim behind the calculations of EOQ and ROL is to weigh up these, and other advantages and disadvantages and to find a suitable compromise level.

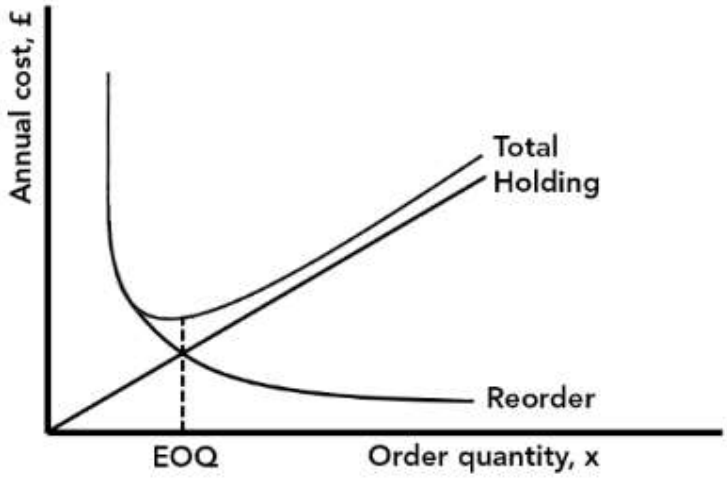
EOQ

When determining how much to order at a time, an organisation will recognise that:

- as order quantity rises, average inventory rises and the total annual cost of holding inventory rises
- as order quantity rises, the number of orders decreases and the total annual re-order costs decrease.

The total of annual holding and re-order costs first decreases, then increases. The point at which cost is minimised is the EOQ. This cost behaviour is illustrated by the graph in Figure 1.

Figure 1

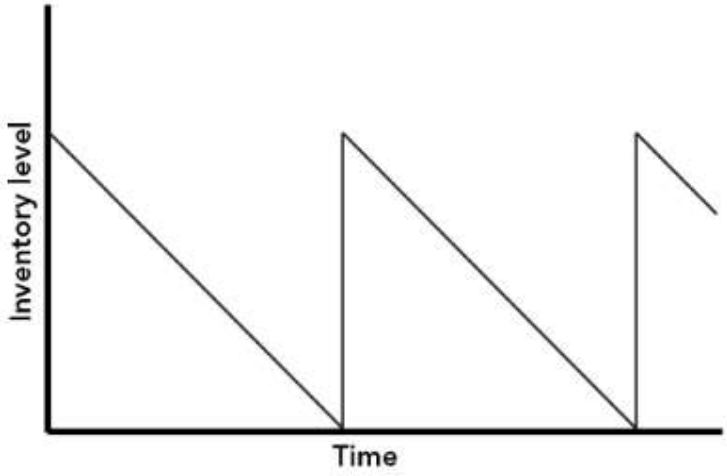


The way in which this EOQ is calculated is based on certain assumptions, including:

- constant purchase price
- constant demand and constant lead-time
- holding-cost dependent on average inventory
- order costs independent of order quantity

The assumptions result in a pattern of inventory that can be illustrated graphically as shown in Figure 2.

Figure 2



The formula

Using the standard ACCA notation in which:
CH = cost of holding a unit of inventory for a year
CO = cost of placing an order
D = annual demand

also:
TOC = total annual re-ordering cost
THC = total annual holding cost
x = order quantity

then:
average inventory = x/2

THC = x/2 × CH

and:
number of orders in a year = D/x

TOC = D/x × CO

The total annual cost (affected by order quantity) is:
C = THC + TOC = x/2 × CH + D/x × CO

This formula is not supplied in exams – it needs to be understood (and remembered).

The value of x, order quantity, that minimises this total cost is the EOQ, given by an easily remembered formula:

$$EOQ = \sqrt{\frac{2 \times C_o \times D}{C_H}}$$

USE OF EOQ FORMULA

You need to take care over which figures you put into the formula, particularly in multiple-choice questions. The areas to beware of fall into two categories:

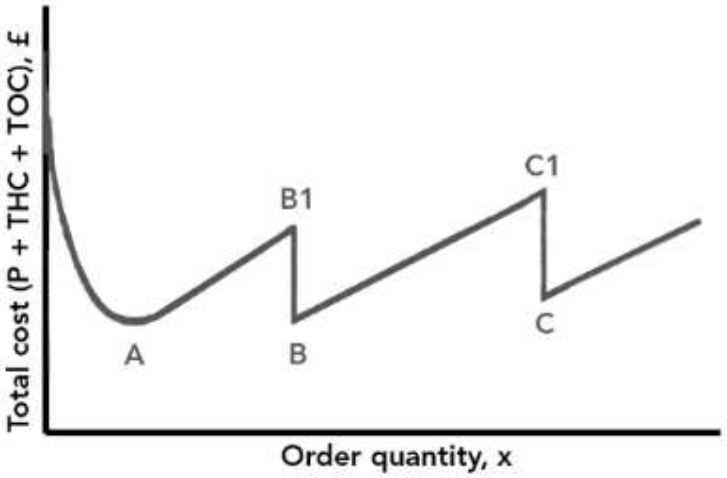
1. Relevant costs – only include those costs affected by order quantity. Only include those holding costs which (in total in a year) will double if you order twice as much at a time. Only include those order costs which (in total in a year) will double if you order twice as often. (Thus, fixed salaries to storekeepers or buying department staff will be excluded.)
2. Consistent units – ensure that figures inserted have consistent units. Annual demand and cost of holding a unit for a year. Both holding costs and re-ordering costs should be in £, or both in pence.

BULK DISCOUNTS

A common twist to exam questions is to ask students to evaluate whether bulk discounts are worth taking. While prices reduce, total annual holding costs will increase if more inventory is ordered at a time, so the matter needs a little thought.

The common approach is one of trial and error. This involves finding the total annual cost (holding cost, re-ordering cost and purchasing cost) at the level indicated by the EOQ and at the level(s) where discount first becomes available.
Figure 3 shows total costs (now including cost of purchasing the inventory) plotted against order quantity with discount incorporated.

Figure 3



Point A represents the cost at the order quantity indicated by the EOQ. If inventory is ordered in larger quantities, total costs will increase to point B1, at which stage bulk discounts are available, bringing the costs down to point B. Any calculations will involve finding which cost out of A, B or C is the lowest, as Example 1 will show.

Example 1
Moore Limited uses 5,000 units of its main raw material per month. The material costs £4 per unit to buy, supplier's delivery costs are £25 per order and internal ordering costs are £2 per order. Total annual holding costs are £1 per unit. The supplier has offered a discount of 1% if 4,000 units of the material are bought at a time.
Required:

1. Establish the economic order quantity (EOQ) ignoring the discount opportunities.
2. Determine if the discount offer should be accepted.

Example 1 solutions

$$EOQ = \sqrt{\frac{2 \times C_o \times D}{C_h}}$$

where:

C_o = £25 + £2 = £27
D = 12 × 5,000 units = 60,000 units
C_h = £1

$$EOQ = \sqrt{\frac{2 \times 27 \times 60{,}000}{1}} = \underline{1{,}800} \text{ units}$$

RE-ORDER LEVELS

As important as how much to order at a time is the question of when to order more inventory. If an order is placed too late, when inventories have been allowed to run too low, a 'stock-out' will occur, resulting in either a loss of production or loss of sales, or possibly both.

If orders are placed too soon, when there are still substantial supplies in inventory, then inventory levels and holding costs will be unnecessarily high. The re-order level as explained below should not be confused with the inventory control levels referred to in textbooks – this article ignores these. When it comes to calculating re-order levels, three sets of circumstances can be envisaged.

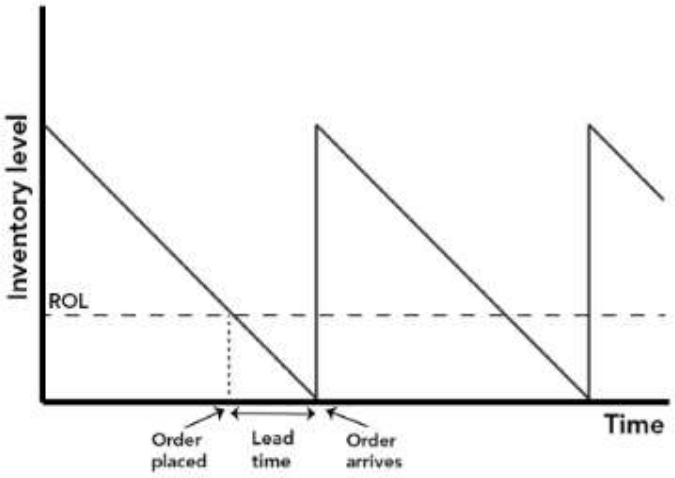
LEAD-TIME IS ZERO

'Lead-time' is the interval between placing an order with a supplier and that order arriving. It is unlikely that this could be reduced to zero – it would require astonishingly co-operative and efficient suppliers. If it were possible, a re-order level of zero could be adopted. An organisation could simply wait until it ran out of inventory, click its corporate fingers, and inventory would arrive instantaneously.

CONSTANT DEMAND, FIXED FINITE LEAD-TIME

The assumption of constant demand is consistent with the assumptions underlying the EOQ formula. If suppliers take some time to provide goods, orders need to be placed in advance of running out. Figure 4 illustrates the problem and its solution.

Figure 4



If the lead-time is, say, five days, an order has to be placed before inventories have been exhausted. Specifically, the order should be placed when there is still sufficient inventory to last five days, ie:

Re-order level (ROL) = Demand in lead-time

So, if lead-time for a particular inventory item is five days and daily demand is 30 units, the re-order level would be five days at 30 units per day, 150 units.

VARIABLE DEMAND IN THE LEAD-TIME

If demand in lead-time varied, it could be described by means of some form of probability distribution. Taking the previous example of the demand in lead-time being 150 units, we're considering the possibility of demand being more than 150 or less than that.

Note: This aspect of inventory control produces a few problems. The EOQ formula requires that demand (and lead-time) for a inventory item be constant. Here the possibility of demand varying or lead-time varying or both varying is introduced. Setting that problem aside, most ACCA syllabuses at the lower levels avoid any discussion of uncertainty or probability distributions. However, uncertainty in lead-time demand in inventory control has featured in exams.

In these circumstances, a firm could place an order with a supplier when the inventory fell to 150 units (the average demand in the lead-time). However, there's a 33% chance (0.23 + 0.08 + 0.02 = 0.33) that demand would exceed this re-order level, and the organisation would be left with a

problem. It is therefore advisable to increase the re-order level by an amount of 'buffer inventory' (safety inventory).

BUFFER INVENTORY

Buffer inventory is simply the amount by which ROL exceeds average demand in lead-time. It is needed when there is uncertainty in lead-time demand to reduce the chance of running out of inventory and reduce the cost of such shortages.

If a ROL of 160 units was adopted, this would correspond to a buffer inventory of 10 units (and reduce the chance of running out of inventory to 0.08 + 0.02 = 0.1, or 10%). A ROL of 170 is equivalent to a buffer inventory of 20 and reduces the chance of running out to 2%, and a ROL of 180 implies 30 units of buffer inventory (and no chance of running short).

OPTIMAL RE-ORDER LEVELS

This leaves the problem of how to calculate the optimal ROL. There are two common ways in which one could determine a suitable re-order level (if the information was available):

1. A tabular approach – Calculate, for each possible ROL (each level of buffer inventory) the cost of holding different levels of buffer inventory and the cost incurred if the buffer is inadequate ('stock-out' costs). The optimal re-order level is that level at which the total of holding and stock-out costs are a minimum.
2. A 'service level' approach – An organisation has to determine a suitable level of service (an acceptably small probability that it would run out of inventory), and would need to know the nature of the probability distribution for lead-time demand. These two would be used to find a suitable ROL.

Questions

(1)

A company determines its order quantity for a component using the Economic Order Quantity (EOQ) model. What would be the effects on the EOQ and the total annual ordering cost of an increase in the annual cost of holding one unit of the component in inventory?

	EOQ	Total annual ordering cost
A	Lower	Higher
B	Higher	Lower
C	Lower	No effect
D	Higher	No effect

Answer: A

Chapter 3 Fixed Overhead Absorption

Executive Summary

A. There is no UNDER or OVER absorption only if:

1. Actual activity = budgeted activity, and
2. Actual overhead = budgeted overhead.

However, if either of these conditions are broken then under or over absorption of overhead occur.

B. FOAR based upon labour hours

FOAR = Fixed Overhead Absorption Rate, e.g.

- (Budgeted fixed production overhead) / (Budgeted units)

When budgeted units is labour hours, it's FOAR based upon labour hours.

C. Standard costing fixed overhead expenditure and volume variances

A similar approach may be used to understand standard costing fixed overhead variances. You simply need to remember that an over absorption of overhead is equivalent to a favourable variance (because it is added back to profit) and by similar logic an under absorption of overhead is equivalent to an adverse variance.

D. Standard costing capacity volume efficiency and variances

In standard costing systems where overheads are absorbed on direct labour hours, companies sometimes analyse the fixed overhead volume variance into capacity and volume efficiency elements.

Objective testing questions involving the under or over absorption of overhead and fixed overhead volume variances commonly cause difficulties for F2/FMA candidates. This article looks at a graphical explanation of fixed overhead absorption

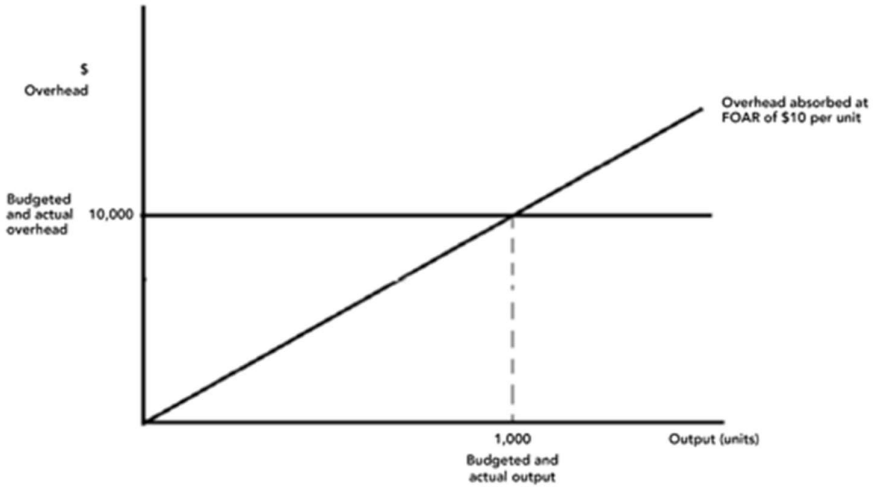
UNDER OR OVER ABSORPTION

Consider a company with budgeted fixed production overheads of $10,000 for the coming year. **Graph 1** represents the behaviour of this cost with respect to volume of output.

If budgeted output (activity) for the year was 1,000 units, the company could use a fixed production overhead absorption rate (FOAR) of:

$$\frac{\text{Budgeted fixed production overhead}}{\text{Budgeted units}} = \frac{\$10{,}000}{1{,}000} = \$10 \text{ per unit}$$

Graph 2 shows this FOAR being used to absorb overhead into production, in a situation where output and expenditure are as budgeted.



The graph shows that absorption costing takes what is a fixed cost ($10,000 per year), and converts it to a cost per unit of activity, effectively treating it as a variable cost ($10 per unit).

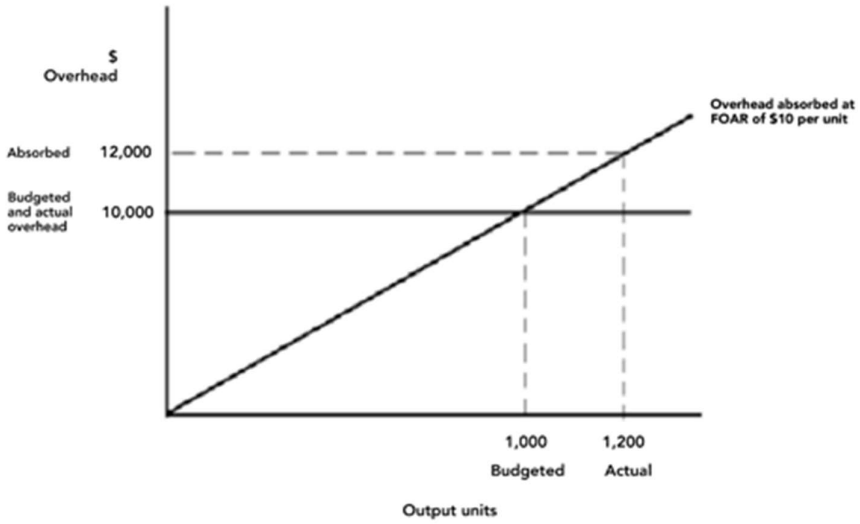
This approach will lead to the correct amount of overhead being absorbed, if

1. Actual activity = budgeted activity, and
2. Actual overhead = budgeted overhead.

However if either of these conditions are broken then under or over absorption of overhead can occur.

Graph 3 shows a situation where actual activity is greater than budgeted activity and actual overhead expenditure is as budgeted. This results in $12,000 of overhead being absorbed and consequent over absorption of overhead by $2,000.

Absorbed overhead = Actual units x FOAR = 1,200 units x $10 per unit =	$12,000
Actual overhead =	$10,000
Over/(under)absorbed overhead	$2,000

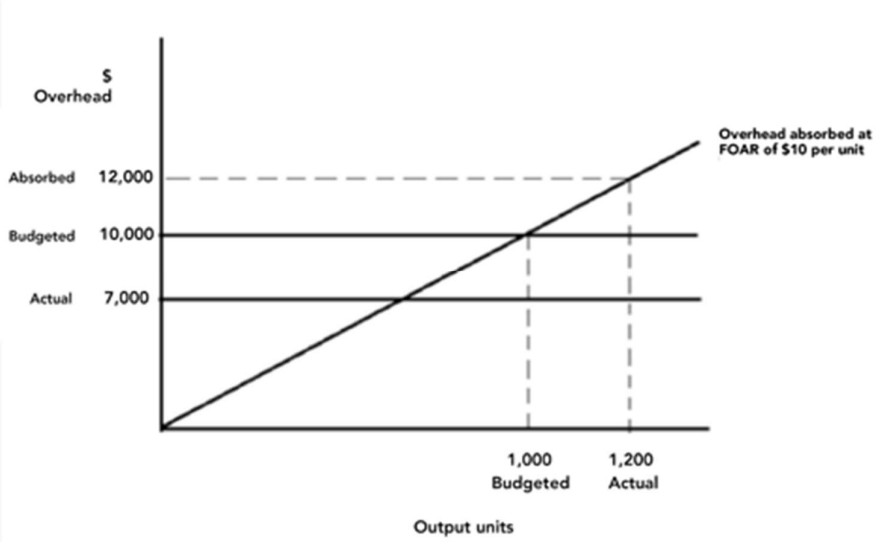


Graph 4 shows a situation where both actual activity and actual overhead expenditure differ from budget.

In this case actual activity is greater than budgeted, leading to over absorption. At the same time actual overhead is lower than budgeted, also leading to over absorption. The total over absorption is $5,000.

Absorbed overhead = Actual units x FOAR = 1,200 units x $10 per unit =	$12,000
Actual overhead =	$7,000
Over/(under)absorbed overhead	$5,000

The graph shows that of the $5,000 over absorption, $2,000 is due to increased activity ($12,000 absorbed being greater than $10,000 budgeted) and $3,000 being due to reduced expenditure (actual expenditure being $7,000 as compared to $10,000 budgeted.



FOAR BASED UPON LABOUR HOURS

So far the examples have used FOARs based upon units of output. In practice other measures of activity, in particular direct labour hours (DLHs), are used as an absorption base.

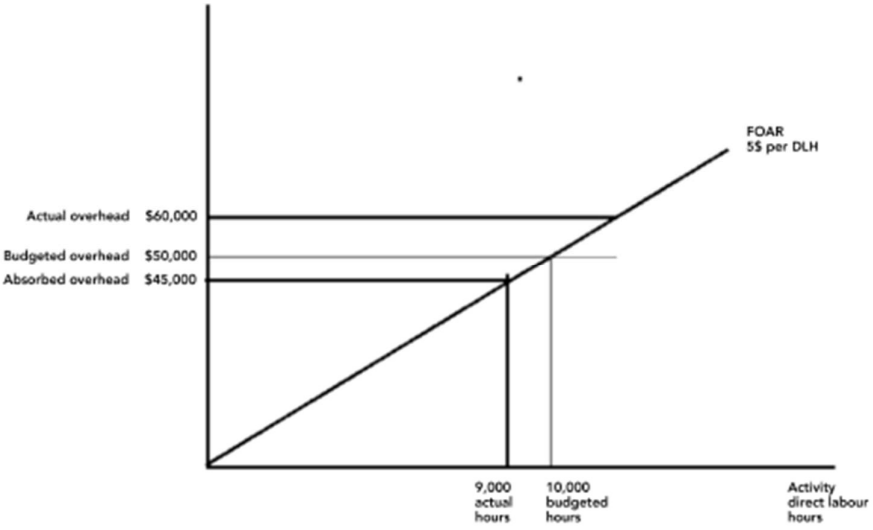
Assume a company budgeted to work 10,000 direct labour hours in the coming year. If budgeted fixed production overhead was $50,000 the FOAR would be:

Budgeted overhead	$50,000	= $5 per hour
Budgeted activity	10,000 DLH	

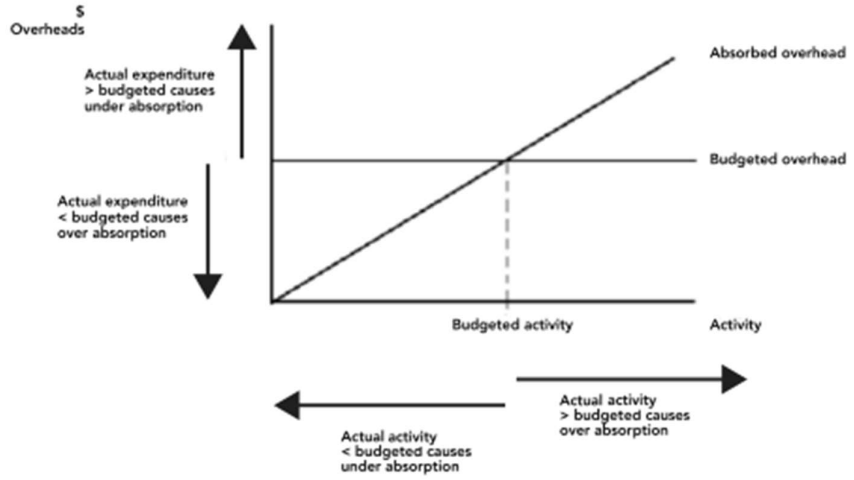
If in the year actual overhead was $60,000 and actual direct labour hours were 9,000 the following under absorption would occur:

Absorbed overhead = Actual hours x FOAR = 9,000 x $5 per unit =	$45,000
Actual overhead =	$60,000
Over/ (under)absorbed overhead	($15,000)

Graph 5 shows this situation



Graph 6 shows the general drivers of under or over absorption we have discussed so far.



Now try a question

The following question was identified as being badly answered in a previous F2 Examiner's report.

> A company uses absorption costing with a predetermined hourly fixed overhead absorption rate. Last year, the following situations arose:
>
> 1. Actual overhead expenditure was less than the budgeted expenditure.
> 2. Actual hours worked were less than the budgeted hours used to set the predetermined overhead absorption rate.
>
> **Which of the following statements is correct?**
>
> 1. Both situations would cause the overheads to be under absorbed
> 2. Both situations would cause the overheads to be over absorbed
> 3. Situation (1) would cause the overheads to be under absorbed and situation (2) would cause the overheads to be over absorbed
> 4. Situation (1) would cause the overheads to be over absorbed and situation (2) would cause the overheads to be under absorbed

(Hint: Use graph 6)

The correct answer is 4.

Answer 2 was the most popular of the wrong answers, which suggests that candidates understood that situation (1) leads to over absorption and that it was situation (2) that caused the problem. If actual hours worked are below budget then by applying the predetermined absorption rate (which is based on budgeted hours) to this lower number of actual hours will lead to under absorption.

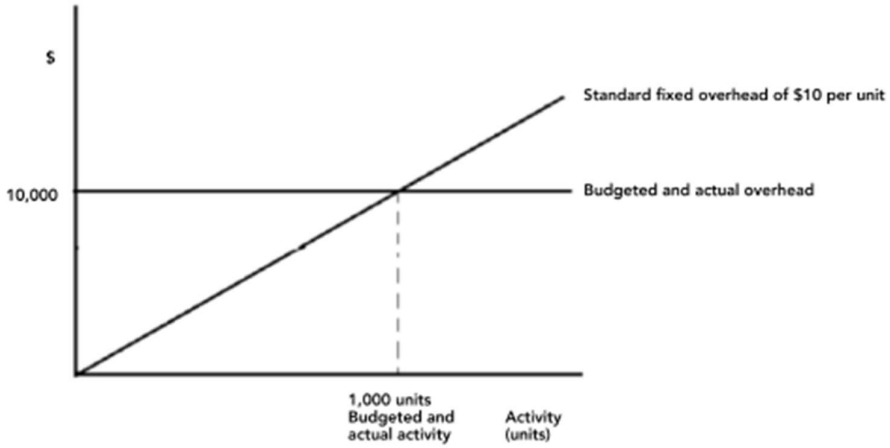
Answers 1 and 3 were chosen by a significant number of candidates, indicating a general lack of understanding of the topic. Interestingly, when a calculation question is a set on this topic the performance is better.

STANDARD COSTING FIXED OVERHEAD EXPENDITURE AND VOLUME VARIANCES

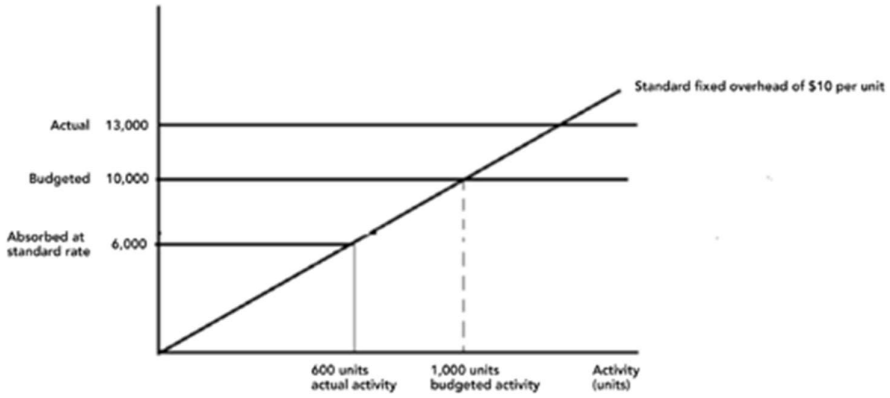
A similar approach may be used to understand standard costing fixed overhead variances. You simply need to remember that an over absorption of overhead is equivalent to a favourable variance (because it is added back to profit) and by similar logic an under absorption of overhead is equivalent to an adverse variance.

Assume that the standard fixed overhead absorption rate for a product is $10 per unit, based upon a budgeted output of 1,000 units, and budgeted fixed overhead expenditure of $10,000.

If everything goes according to budget then no variances will occur. This situation is shown in **graph 7** where actual overhead expenditure is the same as budgeted and actual production is 1,000 units.



However if actual expenditure is $13,000 and 600 units are produced the following situation will arise (**graph 8**)



Actual activity being lower than budgeted causes an under absorption effect of $4,000. This is known as an adverse volume variance. Actual expenditure being higher than budgeted will also result in further under absorption of $3,000, making $7,000 in total. The standard cost variance calculation would look like this

Actual overhead	$13,000	
Fixed Overhead expenditure variance		>$3,000 adv
Budgeted overhead	$10,000	
Fixed Overhead volume variance		>$4,000 adv
Actual units x standard FOAR 600 units x $10/unit	$6,000	

STANDARD COSTING CAPACITY VOLUME EFFICIENCY AND VARIANCES

In standard costing systems where overheads are absorbed on direct labour hours, companies sometimes analyse the fixed overhead volume variance into capacity and volume efficiency elements.

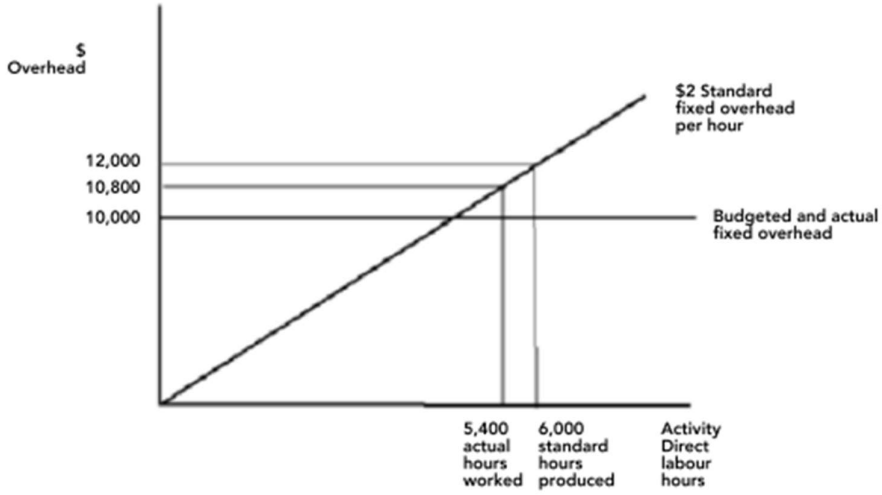
Assume a company budgeted to produce 1,000 units of product in 5,000 labour hours (each unit therefore taking 5 standard hours of labour). Budgeted fixed production overhead for the period was $10,000.

If overhead was absorbed on labour hours this would result in a standard fixed overhead cost of

Budgeted overhead $10,000 = $2.00 per direct labour hour
Budgeted activity 5,000 hrs
In the period 1,200 units were produced taking 5,400 labour hours.

For simplicity assume that there was no fixed overhead expenditure variance, that is that actual overhead expenditure was as budgeted.

Graph 9 shows the outcome of this situation



Because the company works at above budgeted capacity (5,400 labour hours as compared to 5,000 budgeted hours) a favourable variance (over absorption of overhead) of $800 is recorded. This is the capacity variance.

However, output in a standard costing system production will be costed at standard cost. This means that when production enters finished goods we will value it as if it was made at standard cost. This means that as far as fixed overheads go it will be assumed to have been made in 5 hours costing $2 per hour.

Thus our 1,200 units produced should have taken 6,000 hours (1.200 x 5 hours, and should have cost $12,000. (6,000 hours x $2 standard FOAR). Consequently a further favourable variance of $1,200 is recorded for efficiency reasons (the company was efficient because it produced 6,000 standard hours worth of product in 5,400 hours). This is known as the volume efficiency variance.

Together the capacity and volume efficiency variance sum to the fixed overhead volume variance.

In a standard costing variance calculation the calculation would look like this:

Actual overhead	$10,000	
Fixed Overhead expenditure variance		**>$zero**
Budgeted overhead	$10,000	
Fixed Overhead capacity variance		**>$800 fav**
Actual hours x standard FOAR (5,400 hours x $2/hour	$10,800	
Fixed Overhead volume efficiency variance		**>$1,200 fav**
Standard hours for actual production (1,200 units x 5 hours x $2 per hour)	$12,000	

Questions

(1)

A company uses an overhead absorption rate of $3·50 per machine hour, based on 32,000 budgeted machine hours for the period. During the same period the actual total overhead expenditure amounted to $108,875 and 30,000 machine hours were recorded on actual production. By how much was the total overhead under or over absorbed for the period?

A Under absorbed by $3,875
B Under absorbed by $7,000
C Over absorbed by $3,875
D Over absorbed by $7,000

Answer: A

		$
Actual overhead		108,875
Absorbed overhead	(30,000 ÷ 3·50)	105,000
Under absorption		3,875

(2)

A company uses an overhead absorption rate of $4.50 per machine hour, based on 22,000 budgeted machine hours for the period. During the last period the actual total overhead expenditure amounted to $95,000 and 20,000 machine hours were recorded. By how much was the total overhead under or over absorbed for the last period?

A Under absorbed by $5,000
B Under absorbed by $4,000
C Over absorbed by $5,000
D Over absorbed by $4,000

Answer: A

	$
Actual cost	95,000
Absorbed cost ($4.50 × 20,000)	90,000
Under absorbed	5,000

Chapter 4 Process Costing

Executive Summary

Process costing is a method of costing used mainly in manufacturing where units are continuously mass-produced through one or more processes.

Key terms in this chapter:

Normal loss, abnormal loss, abnormal gain, work in progress (WIP), scrap value, equivalent units

Steps to approach process accounting questions:

1. *Draw up a T account for the process account*
2. *Calculate the normal loss in units and enter on to the process account*
3. *Calculate the abnormal loss or gain*
4. *Calculate the scrap value (if any) and enter it on to the process account*
5. *Calculate the equivalent units and cost per unit*
6. *Repeat the above if there is a second process*

Process costing is a method of costing used mainly in manufacturing where units are continuously mass-produced through one or more processes. Examples of this include the manufacture of erasers, chemicals or processed food.

In process costing it is the process that is costed (unlike job costing where each job is costed separately). The method used is to take the total cost of the process and average it over the units of production.

$$\text{Cost per unit} = \frac{\text{Cost of inputs}}{\text{Expected output in units}}$$

Important terms to understand
In a manufacturing process the number of units of output may not necessarily be the same as the number of units of inputs. There may be a loss.

Normal loss
This is the term used to describe normal expected wastage under usual operating conditions. This may be due to reasons such as evaporation, testing or rejects.

Abnormal loss
This is when a loss occurs over and above the normal expected loss. This may be due to reasons such as faulty machinery or errors by labourers.

Abnormal gain
This occurs when the actual loss is lower than the normal loss. This could, for example, be due to greater efficiency from newly-purchased machinery.

Work in progress (WIP)
This is the term used to describe units that are not yet complete at the end of the period. Opening WIP is the number of incomplete units at the start of a process and closing WIP is the number at the end of the process.

Scrap value
Sometimes the outcome of a loss can be sold for a small value. For example, in the production of screws there may be a loss such as metal wastage. This may be sold to a scrap merchant for a fee.

Equivalent units
This refers to a conversion of part-completed units into an equivalent number of wholly-completed units. For example, if 1,000 cars are 40% complete then the equivalent number of completed cars would be 1,000 x 40% = 400 cars. Note: If 1,000 cars are 60% complete on the painting, but 40% complete on the testing, then equivalent units will need to be established for each type of cost. (See numerical example later.)

How to approach process accounting questions

Step 1 Draw up a T account for the process account. (There may be more than one process, but start with the first one initially.) Fill in the information given in the question.

Process account

	Units	$		Units	$
Opening WIP	X	X	Normal loss	X	X
Materials		X	Transfer to Process 2 or Finished goods	X	X
Labour		X	Abnormal loss	X	X
Overheads		X	Closing WIP	X	X
Abnormal gain	X	X			

Step 2 Calculate the normal loss in units and enter on to the Process account. (The value will be zero unless there is a scrap value – see Step 4).

Step 3 Calculate the abnormal loss or gain (there won't be both). Enter the figure on to the Process account and open a T account for the abnormal loss or gain.

Step 4 Calculate the scrap value (if any) and enter it on to the Process account. Open a T account for the scrap and debit it with the scrap value.

Step 5 Calculate the equivalent units and cost per unit.

Step 6 Repeat the above if there is a second process.

Note: Although this proforma includes both losses and WIP, the Paper F2/FMA syllabus specifically excludes situations where both occur in the same process. Therefore, don't expect to have to complete all of the steps in the questions.

Normal loss example Mr Bean's chocolate Wiggly bars pass through two processes. The data for the month just ended are:

		$	kg			$
Process 1	Ingredients	5,000	4,000	Process 2	Packaging	10,000
	Labour and overhead	6,000			Labour and overhead	9,000

Mr Bean allows the staff to eat 5% of the chocolate as they work on Process 1. There was no work in progress at the month end. Prepare the two process accounts and calculate the cost per kg.

Process 1 account

	kg	$		kg	$
Ingredients	4,000	5,000	Normal loss (W1)	200	
Labour and overheads		6,000	Transfer to Process 2 (W2)	3,800	11,000
	4,000	11,000		4,000	
					11,000

Q = figure taken straight from the information given in the question.

Workings

1. The staff normally eat 5% of the chocolate, so the normal loss is 4,000 x 5% = 200kg

   There is no work in progress or scrap value or abnormal losses or gains, so we can now balance the account to obtain the amounts transferred to Process 2.

2. Number of kg transferred = kg input less normal loss = 4,000 – 200 = 3,800kg

Process 2 account

	kg	$		kg	$
Transfer from Process 1 (above)	3,800	11,000	Finished goods (balancing figure)	3,800	30,000
Packaging		10,000			
Labour and overheads		9,000			
	3,800	30,000		3,800	30,000

Cost per kg = $\frac{\text{Total costs}}{\text{Number of expected kg}} = \frac{\$30,000}{3,800} = \$7.89$ per kg

Abnormal gain example

There is a heat wave and staff have eaten less chocolate. At the end of Process 1, 3,810 units are transferred to Process 2.

Process 1 account

	kg	$		kg	$
Ingredients	4,000	5,000	Normal loss	200	
Labour and overheads		6,000	Transfer to Process 2 (W2)	3,810	11,029
Abnormal gain (W1+2)	10	29			
	4,010	11,029		4,010	11,029

Workings

(1) As the T account should balance, the abnormal gain = 4,010kg – 4,000kg = 10kg

(2) Cost per kg = $\frac{\text{Costs incurred}}{\text{Expected output in kgs}} = \frac{11,000}{4,000 \times 95\%} = \$2.89$

Cost of units transferred to Process 2 = $2.89 x 3,810 = $11,029 (using $2.894736842 to avoid rounding differences).
Cost of abnormal gain = $2.89 x 10 = $29.
[Remember to open an abnormal gain T account and credit it with $29]

Process 2 account

	kg	$		kg	$
Transfer from Process 1 (above)	3,810	11,029	Finished goods (balancing figure)	3,810	30,029
Packaging		10,000			
Labour and overheads		9,000			
	3,810	30,029		3,810	30,029

Cost per kg = $\frac{\$30,029}{3,810} = \$7.88$/kg

Scrap value example
Mr Bean can no longer afford to give his staff 5% of the bars. He decides to offer the bars to his staff at a discount. They pay 40c for every kg that they eat. As a result of this, there is another abnormal gain of 10kg, so 3,810 units are transferred to Process 2.

Process 1 account

	kg	$		kg	$
Ingredients	4,000	5,000	Normal loss (W1)	200	80
Labour and overheads		6,000	Transfer to Process 2	3,810	10,949
Abnormal gain (11,000 – 80) / 4,000*0.95	10	29			
	4,010	11,029		4,010	11,029

Workings

Here we need to calculate the scrap value. The value of units transferred to Process 2 is a balancing figure.

1. Number of kg of normal loss scrap amount per kg = 200 x 0.4 = $80 [Dr Scrap A / C $80, Cr Process A / C $80]

Be careful here! The scrap value also affects the abnormal gain or loss accounts. Since the staff didn't eat the number of bars that they were entitled to, the scrap value (the 40c per bar) is lower than 200 40c. In fact, it is 10 x 40c = $4 lower (the abnormal gain). This needs to be reflected in the scrap account and the abnormal gain account.

Scrap account

Process 1	80	Abnormal gain	4
		Bank	76
	80		80

Abnormal gain A/C

Scrap A/C	4	Process 1	29
Income statement	25		
	29		29

Process 2 account

	kg	$		kg	$
Transfer from Process 1 (above)	3,810	10,949	Finished goods (balancing figure)	3,810	29,949
Packaging		10,000			
Labour and overheads		9,000			
	3,810	29,949		3,810	29,949

Cost per kg = $\frac{\$29,949}{3,810}$ = 7.86/kg

Work in progress example

Assuming at the month end there are now part-completed bars (work- in-progress). Assuming also that he stopped charging staff for the bars that they had eaten. The data for Process 2 was as follows:

Opening WIP	$235 Materials (Ingredients)	100%	100kgs
	$520 Labour and overheads	60%	
Input	$8,405 Materials (Packaging)		3,500kgs
	$6,200 Labour and overheads		
Transferred to finished goods			3,100kgs
Closing WIP	Materials	100%	500kgs
	Labour and overheads	20%	

For questions that include WIP, we need to calculate equivalent units. First, we need to choose the method of valuing WIP. In an exam, use the first in first out (FIFO) method if the percentage completion of each element of opening WIP is given. Use the weighted average (WA) method if the value of each element of opening WIP is given. [Note that the two methods give different valuations for the closing WIP.]

In the weighted average method, no distinction is made between units of opening inventory and new units introduced to the process during the accounting period.

Step 1 Prepare a statement of equivalent units. Note that opening inventory units count as a full equivalent unit of production when the weighted average cost system is applied.

Kilograms

Weighted average	**Material**	**Lab and O/hd**	**FIFO**	**Material**	**Lab and O/hd**
	kg	kg		kg	kg
Opening WIP	100	100	Opening WIP (100 x 40%)		40
Started and completed (3,100 less op WIP)	3,000	3,000	Started and completed (3,100 less op WIP)	3,000	3,000
Closing WIP 500 × 100% 500 × 20%	500	100	Closing WIP	500	100
Equivalent units	3,600	3,200	Equivalent units	3,500	3,140

Step 2 Prepare a statement of **costs** per equivalent unit

Costs

Weighted average	**Material**	**Lab and O/hd**	**FIFO**	**Material**	**Lab and O/hd**
	$	$		$	$
Op WIP	235	520			
Input	8,405	6,200	Input	8,405	6,200
	8,640	6,720		8,405	6,200
Cost per equivalent unit	8,640/3,600	6,720/3,200	Cost per equivalent unit	8,405/3,500	6,200/3,140
	= $2.40	= $2.10		= $2.40	= $1.975
Total cost per kg = $4.50			Total cost per kg = $4.375		

Step 3 Prepare a statement of evaluation

Weighted average		**FIFO**	
Completed kgs		Op WIP cost + Lab + O/h to finish op WIP:	
3,100 x $4.50	$13,950	755 + ($1.975 x 100 x 40%)	$834
		Current production $4.375 x 3,000	$13,128*
Closing WIP		Closing WIP	
500 x 20% x $2.10		500 x 20% x $1.975	
500 x $2.40	$1,410	500 x $2.40	$1,398
	$15,360		$15,360

* Slight difference due to rounding $4.375 × 3,000 = $13,125

Step 4 Prepare the Process 2 accounts

Weighted average
Process 2 account

	kg	$		kg	$
Opening WIP	100	755	Completed output (3,100 x $4.50)	3,100	13,950
Materials	3,500	8,405	Closing WIP	500	
Labour and overheads		6,200			1,410
	3,600	15,360		3,600	
					15,360

FIFO
Process 2 account

	kg	$		kg	$
Opening WIP	100	755	Completed output (834 + 13,128)	3,100	13,962
Materials	3,500	8,405	Closing WIP	500	1,398
Labour and overheads		6,200			
	3,600	15,360		3,600	
					15,360

Questions

(1)

A company operates a process costing system using the first in, first out (FIFO) method of valuation. No losses occur in the process. The following data relate to last month:

	Units	Degree of completion	Value
Opening work in progress	100	60%	$680
Completed during the month	900		
Closing work in progress	150	48%	

The cost per equivalent unit of production for last month was $12.
What was the value of the closing work in progress?

A $816
B $864
C $936
D $1,800

Answer: B

(150 × 0·48) equivalent units × $12 = $864

Chapter 5 Re-appointment of Service Cost Centre Costs

Executive Summary

Service cost centres are those that exist to provide services to other cost centres in the organisation. They do not work directly on producing the final product. Consequently, their costs must be re-apportioned to production cost centres so that their overheads can be absorbed into the final product.

A Direct method

This is the simplest method and is ideal to use when service cost centres provide services to production cost centres, but not to each other.

B Step down method

This approach is best used where some service cost centres provide services to other service cost centres, but these services are not reciprocated.

C Reciprocal method

This approach is used where some service cost centres provide services to other service cost centres, and the service is reciprocated.

a. Repeated distribution approach
b. Algebraic approach (frequently seen in exam)

This article looks at the various methods of re-apportioning service cost centre costs
When calculating unit costs under absorption costing principles each cost unit is charged with its direct costs and an appropriate share of the organisation's total overheads (indirect costs). An appropriate share means an amount that reflects the time and effort that has gone into producing the cost unit.

Service cost centres are those that exist to provide services to other cost centres in the organisation. They do not work directly on producing the final product. Consequently, their costs must be re-apportioned to production cost centres so that their overheads can be absorbed into the final product. This article looks at the various methods of re-apportioning service cost centre costs.

THE DIRECT METHOD

This is the simplest method and is ideal to use when service cost centres provide services to production cost centres, but not to each other. Example 1 considers such a situation.

Example 1
A company's overheads have been allocated and apportioned to its five cost centres as shown below.

	Prod. cost centre A	Prod. cost centre B	Prod. cost centre C	Prod. cost centre D	Prod. cost centre E
Apportioned and Allocated overhead ($)	80,000	100,000	10,000	20,000	4,000

Usage of service cost centres is as follows:

Cost centre	A	B
Use of C's services	40%	60%

Cost centre	A	B
Use of D's services	75%	25%
Use of E's services	30%	70%

In this situation, service cost centre overheads are simply ‘shared out’ on the basis of usage. For example, production cost centre A should be charged with 40%, 75% and 30% respectively of cost centre C and D and E’s overhead costs. This would result in the following re-apportionment.

		Prod. cost centre A	Prod. cost centre B	Service cost centre C	Service cost centre D	Service cost centre E
Apportioned and Allocated overhead ($)		80,000	100,000	10,000	20,000	4,000
Cost centre C	re-apportionment ($)	4,000	6,000	(10,000)		
Cost centre D	re-apportionment ($)	15,000	5,000		(20,000)	
Cost centre E	re-apportionment ($)	1,200	2,800			(4,000)

	Prod. cost centre A	Prod. cost centre B	Service cost centre C	Service cost centre D	Service cost centre E
TOTAL OVERHEADS	100,200	113,800	nil	nil	nil

Tip: To check that you have not made any arithmetic errors, check that overhead 'going in' ($80,000 + $100,000+ $10,000 + $20,000 +$4,000 = $214,000) equals overhead 'going out' ($100,200 + $113,800 =$214,000)

THE STEP DOWN METHOD

This approach is best used where some service cost centres provide services to other service cost centres, but these services are not reciprocated. Example 2 considers this situation. Cost centre C serves centres D and E, but D and E do not reciprocate by serving C. In these circumstances the costs of the service cost centre that serves most other service cost centres should be reapportioned first. We then 'step down' to the service cost centre that provides the second most service, and so on.

Example 2

Data as Example 1 apart from usage of C, D and E's services has changed.
Usage of service cost centres is as follows:

Cost centre	A	B	C	D	E
Use of C's services	40%	50%	nil	8%	2%
Use of D's services	75%	20%	nil	nil	5%
Use of E's services	30%	70%	nil	nil	nil

Cost centre	A	B	C	D	E
	Prod. cost centre A	Prod. cost centre B	Service cost centre C	Service cost centre D	Service cost centre E
Apportioned and Allocated overhead ($)	80,000	100,000	10,000	20,000	4,000
Cost centre C re-apportionment ($)	4,000	5,000	(10,000)	800	200
Cost centre D re-apportionment ($)	15,600	4,160		(20,800)	1,040
Cost centre E re-apportionment ($)	1,572	3,668			5,240
TOTAL OVERHEADS ($)	101,172	112,828	nil	nil	nil

THE RECIPROCAL METHOD

This approach is used where some service cost centres provide services to other service cost centres, *and* the service is reciprocated. In Example 3, cost centre C serves centre D, and vice versa. In reality, an organisation may choose to ignore this reciprocal service and re-apportion overheads by using the direct or step down approach. In Example 3, the direct approach would involve re-apportioning C's overhead on the basis of 40/90 and 50/90 to A and B respectively and ignoring the reciprocal service to D. D's overheads would be similarly reapportioned on the basis of 75/95 and 20/95.

However, if we choose to fully reflect the reciprocal services between C and D, one of two methods are possible – the repeated distribution approach or the algebraic approach. Both are methods of solving a simultaneous equation and should give the same result. Example 3 demonstrates both methods. In the exam, the examiner will indicate that he wants you to use one or either of these methods by asking for a method that 'fully reflects the reciprocal services involved'. Practically in the Paper F2 exam, where this topic would be examined by two-mark questions, the focus will be on the algebraic approach as repeated distribution would be too time consuming.

Example 3

Data as Example 1 apart from usage of C and D's services has again changed.

Usage of service cost centres is as follows:

Cost centre	A	B	C	D	E
Use of C's services	40%	50%	nil	10%	nil
Use of D's services	75%	20%	5%	nil	nil
Use of E's services	30%	70%	nil	nil	nil

REPEATED DISTRIBUTION APPROACH

	Prod. cost centre A	Prod. cost centre B	Service cost centre C	Service cost centre D	Service cost centre E
Apportioned and Allocated overhead ($)	80,000	100,000	10,000	20,000	4,000

		Prod. cost centre A	Prod. cost centre B	Service cost centre C	Service cost centre D	Service cost centre E
Cost centre E	re-apportionment ($) (note 1)	1,200	2,800			(4,000)
Cost centre C	re-apportionment ($) (note 2)	4,000	5,000	(10,000)	1,000	
Cost centre D	re-apportionment ($)	15,750	4,200	1,050	(21,000)	
Cost centre C	re-apportionment ($)	420	525	(1,050)	105	
Cost centre D	re-apportionment (note 3)	83	22	nil	(105)	
TOTAL OVERHEADS ($)		101,453	112,547	nil	nil	nil

Note 1 E's costs are apportioned directly as no reciprocal service is involved.
Note 2 It doesn't really matter which of the two remaining cost centres you start with.
Note 3 On the last reapportionment, D's overheads are apportioned on the basis of 75/95 to A and 20/95 to B. The reciprocal service to C is ignored as, by now, it is not material.

ALGEBRAIC APPROACH
Firstly, we can setup the overhead re-apportionment process as a set of equations.

Let:
A = the total overhead $ apportioned to department A
B = the total overhead $ apportioned to department B, etc

Then:
A = 80,000 + 0.40 C + 0.75 D + 0.30 E
B = 100,000 + 0.50 C + 0.20 D + 0.70 E
C = 10,000 + 0.05 D
D = 20,000 + 0.10 C
E = 4,000

If you remember your school maths, you will note that the equations for C and D are simultaneous – ie C is a function of D, and D is a function of C. These two equations must be solved first. Various approaches are possible to solve simultaneous equations but substitution is probably quickest.

Substituting the D equation into the C equation:
C = 10,000 + 0.05 (20,000 + 0.10 C)

Multiplying out the bracket:
C = 10,000 + 1000 + 0.005 C

Collecting terms:
0.995 C = 11,000
C = 11,055.3

Substituting into the D equation:
D = 20,000 + 0.10 × 11,055.3
D = 21,105.5

Finally, plugging these values into the equations for A and B, the total overhead apportioned to each of the production cost centres is:

A = 80,000 + 0.40 × 11,055.3 + 0.75 × 21,105.5 + 0.3 × 4,000
A = 101,451.2

B = 100,000 + 0.50 × 11,055.3 + 0.20 × 21,105.5 + 0.7 × 4,000
B = 112, 548.8

These results, as they should be, are quite close to the repeated distribution approach.

TEST YOUR UNDERSTANDING
The following question is representative of questions on this topic that you might experience in the Paper F2 exam.

A company has two production cost centres (V and W) and two service cost centres (X and Y). The following overheads have been apportioned and allocated to the four cost centres.

Cost centre	V	W	X	Y
Apportioned and Allocated overhead ($)	6,000	8,000	4,000	10,000

The company has calculated the following usage of X and Y's services.

Cost centre	V	W	X	Y
Use of X's services	60%	30%	nil	10%
Cost of Y's services	80%	20%	nil	nil

How much would cost centre V's total overhead cost be if the company used the step-down approach to re-apportion service cost centre overhead?
A $10,400
B $10,720
C $16,400
D $16,720

The correct answer is D ($6,000 + $4,000 × 0.6 + 0.8 × ($10,000 + 0.1 × $4,000))

Questions

(1)

Two joint products A and B are produced in a process. Data for the process for the last period are as follows:

	A Tonnes	B Tonnes
Sales	480	320
Production	600	400

Common production costs in the period were $12,000. There was no opening inventory. Both products had a gross profit margin of 40%. Common production costs were apportioned on a physical basis. What was the gross profit for product A in the period?

A $2,304
B $2,880
C $3,840
D $4,800

Answer: C

There are three steps involved in deriving the correct answer:
(i) Calculate the cost apportioned to product A:
$12,000 × 600 ÷ (600 + 400) = $7,200)
(ii) Calculate how much of (i) is to be charged against A's sales in the period:
$7,200 × 480 ÷ 600 = $5,760
(iii) Calculate gross profit earned on (ii) using the given gross profit margin:
$5,760 × 40/60= $3,840

Chapter 6 Cash Budgets

Executive Summary

A company needs to produce a cash budget in order to ensure that there is enough cash within the business to achieve the operational levels set by the functional budgets.

Sales revenues do not necessarily equal cash inflow. In order to secure the orders the sales team had to negotiate payment terms with the customers.

Healthy profit does not necessarily mean a healthy cash flow.

What use is the cash budget?

1. The company directors need to consider in advance on financing if there is cash deficit projected;
2. The cash budget can also be used to help prepare the budgeted statement of financial position, part of the company's master budget;
3. The cash budget can be used to monitor and assess performance.

A company needs to produce a cash budget in order to ensure that there is enough cash within the business to achieve the operational levels set by the functional budgets
Consider the following sales figures for a newly formed company that makes metal boxes:

	January ($000)	February ($000)	March ($000)
Sales	300	400	550

These figures are based on orders that customers have already placed with the company after considerable hard work by the sales team. ***However, sales revenues do not necessarily equal cash inflow.*** In order to secure the orders the sales team had to negotiate payment terms with the customers. Only 10% of customers agreed to pay immediately for the metal boxes. Of the remaining customers, 60% agreed to pay after one month and 40% after two months. Within the metal box industry it is known that 2% of credit customers never pay (because they go out of business or dispute the invoices) the metal box company has made the decision to reduce the budgeted cash inflow from the credit customers who should pay after two months to reflect this fact (making the percentage who pay after two month 38%). Once the metal box company knows these payment terms and the estimated irrecoverable debt it can produce a cash inflow budget from the sales budget as follows:

	January ($000)	February ($000)	March ($000)	April ($000)	May ($000)
CASH SALES (10% of total sales)	30(w1)	40	55		
CREDIT SALES					
After one month		162(w1)	216	297	
After two months			103(w1)	137	188
TOTAL CASH RECEIPTS	30	202	374	434	188

W1 Of the $300 total January sales, $30 pay cash immediately therefore $270 are credit sales (no cash in for at least one month) of this $270, 60% will be received one month later, ie in February and 38% two months later, ie in March. Remember the 2% irrecoverable debt will never be cash flow.

So now the company can see that while the sales revenues figures may be healthy ***there is a delay between making the sale and receiving the cash.*** Why does this matter? It matters if the company needs to pay cash out in order to keep trading. For example, expenses such as labour, materials and overheads may have to be paid out before the cash from the sales arrives. This can lead to serious liquidity issues if not managed properly.

If the metal box company has a labour cost equal to 20% of the sales value a materials cost equal to 25% of the sales value and an overhead cost equal to 15% of the sales value, then the ***functional*** budget would be as follows:

	January ($000)	**February ($000)**	**March ($000)**
Sales	300	400	550
Labour (20%)	60	80	110
Materials usage (25%)	75	100	138
Overheads (15%)	45	60	83
GROSS PROFIT	120	160	219

The company can see that there is a 40% gross profit margin, which is considered good for the metal box industry ***but a healthy profit does not necessarily mean a healthy cash flow.*** Consider that labour is paid weekly one week in arrears and that there are four weeks in both January and February and five weeks in March. The cash outflow for labour would be:

	January ($000)	**February ($000)**	**March ($000)**	**April ($000)**
Labour	45	75	108	22

The material supplier will not allow the metal box company any credit as because it is a newly formed company, it has no track record of paying its debts. The supplier of materials is also aware that new companies often fail and go out of business thus creating irrecoverable debt. Therefore, the supplier is insisting on cash at time of delivery for all materials purchased. However, the metal box company has to buy the materials before they can be made into boxes (therefore the material purchase budget differs from the material usage budget). Half of the materials required for production must be purchased and paid for in the month prior to sale the other 50% can be purchased and paid for in the month that the metal boxes are manufactured and sold. Thus, the cash outflow for material purchases would be:

	December ($000)	**January ($000)**	**February ($000)**	**March ($000)**
Materials	38	88	119	69
Month prior to use	(75 x 50%)	(100 x 50%) +	(138 x 50%) +	
Month of use		(75 x 50%)	(100 x 50%)	(138 x 50%)

Now let us consider the overhead. Overhead is paid for in the month in which it is incurred. Included in the overhead figures above is a $10,000 monthly charge for depreciation. ***Depreciation is a non-cash item*** and should not be included in the cash flow. The company will pay cash out when the non-current asset is purchased and may receive cash when the non-current asset is sold, but depreciation is a book adjustment in the accounts and is not a cash flow that has to be paid out. Therefore, the cash outflow for overheads is:

	January ($000)	**February ($000)**	**March ($000)**
Overheads	35 (45 – 10)	50 (60 – 10)	73 (83 – 10)

The metal box company can now put all of the elements of the cash budget together. We will consider the first three months of trading only. At the start of January the metal box company will have $150,000 cash in the current account.

	January ($000)	**February ($000)**	**March ($000)**
CASH INFLOWS			
Sales	30	202	374
CASH OUTFLOWS			
Labour	45	75	108
Materials	88	119	69
Overheads	35	50	73
NET CASHFLOW	(138)	(42)	124
OPENING CASH BALANCE	150	12	(30)
CLOSING CASH BALANCE	12	(30)	94

WHAT USE IS THE CASH BUDGET?

The metal boxes company now knows that although both the sales forecast and profit margin are healthy during the first three months, in February it will suffer a cash deficit. The company directors can now consider in advance, how this deficit can be financed. In March the company will have quite a substantial cash surplus and the directors will consider investing this cash to maximise the benefit to the company. For example, if the company needed to buy a $60,000 non-current asset during the first three months it would ensure that it could be paid for in March and not February.

The cash budget can also be used to help prepare the budgeted statement of financial position, part of the company's master budget. We already know that the cash balance is budgeted to be $94,000 at the end of the first quarter's trading but the metal box company can also calculate the material inventory, trade receivables and trade payables closing balances. A proportion of materials are purchased before they are required for manufacture and therefore there will be a material inventory at the end of March equal to 50% of April's sales requirements. If April's sales are forecast to be $700,000 then the material inventory will be $87,500 ($700,000 x 0.25 x 0.50). Receivables at the end of March are expected to be $621,900 ($136,800 still due from February's sales plus $297,000

and $188,100 due from March sales) the trade payables will be zero as the company pays cash for all of the purchases.

Finally the cash budget can be used to monitor and assess performance. If the metal box company has $780,000 of outstanding receivables at the end of March as compared to the $621,900 that was budgeted, then this would indicate that customers were taking longer to pay than their agreed terms (assuming that the sales revenues were as budgeted) this in turn may indicate that the person responsible for collecting the debt are less efficient than they should be.

Questions

(1)

Which of the following statements about budgets is false?
A A continuous budget is feasible only for sales projections
B The direct labour budget is specifically dependent on the production budget
C The budgeting process normally begins with preparation of a sales budget
D The cash budget is an element of a master budget

Answer: A

A continuous (“rolling”) budget results in constant monitoring and updating of the budget. They are typically used where costs/revenues/activities cannot be forecast accurately (so not just sales projections).

Chapter 7 Ratio Analysis

Executive Summary

The ability to analyse financial statements using ratios and percentage to assess the performance of organisations is a skill that will be tested in many of ACCA's exam papers.

In ACCA Management Accounting (MA, was F2), it introduces candidates to performance measurement and requires candidates to be able to 'Discuss and calculate measures of financial performance (profitability, liquidity, activity and gearing) and non-financial measures'.

Profitability

Profitability ratios, as their name suggests, measure the organisation's ability to deliver profits.

- Return on capital employed (ROCE)
- Return on sales (ROS)
- Gross margin

Liquidity

This measures the ability of the organisation to meet its short-term financial obligations.

- Current ratio
- Acid test (or Quick ratio)

Activity ratios

Activity ratios measure on organisation's ability to convert balance sheet items into cash or sales.

- Asset turnover
- Receivables days
- Inventory days
- Payable days

Gearing

This relates to an organisation's ability to meet its long-term debts.

- Capital gearing
- Interest cover

The ability to analyse financial statements using ratios and percentages to assess the performance of organisations is a skill that will be tested in many of ACCA's exam papers. It will also be regularly used by successful candidates in their future careers.

The Paper F2/FMA syllabus introduces candidates to performance measurement and requires candidates to be able to 'Discuss and calculate measures of financial performance (profitability, liquidity, activity and gearing) and non-financial measures'. This article will focus on measures of financial performance and will detail the skills and knowledge expected from candidates in the Paper F2/FMA exam.

Paper F2/FMA candidates are expected to be able to calculate key accounting ratios, to know what they measure, and to explain what particular values mean. The syllabus categorises ratios into four headings: profitability, liquidity, activity and gearing.

PROFITABILITY

Profitability ratios, as their name suggests, measure the organisation's ability to deliver profits. Profit is necessary to give investors the return they require, and to provide funds for reinvestment in the business. Three ratios are commonly used.

1. Return on capital employed (ROCE): operating profit ÷ (non current liabilities + total equity) %
2. Return on sales (ROS): operating profit÷ revenue %
3. Gross margin: gross profit÷ revenue %

Return on capital employed

Return on capital employed (sometimes known as return on investment or ROI) measures the return that is being earned on the capital invested in the business. Candidates are sometimes confused about which profit and capital figures to use. What is important is to compare like with like. Operating profit (profit before interest) represents the profit available to pay interest to debt investors and dividends to shareholders. It is therefore compared with the long-term debt and equity capital invested in the business (non current liabilities + total equity). By similar logic, if we wished to calculate return on ordinary shareholders funds (the return to equity holders), we would use profit after interest and tax divided by total equity).

A return on capital is necessary to reward investors for the risks they are taking by investing in the company. Generally, the higher the ROCE figure, the better it is for investors. It should be compared with returns on offer to investors on alternative investments of a similar risk.

Return on sales

Return on sales (sometimes known as operating margin) looks at operating profit earned as a percentage of revenue. Again, in simple terms, the higher the better. Poor performance is often explained by prices being too low or costs being too high.

The ROCE and ROS ratios are often considered in conjunction with the asset turnover ratio. (The asset turnover ratio is discussed later). They are considered at the same time because:

ROCE	= ROS	x	asset turnover
$\frac{\text{operating profit}}{\text{capital employed}}$	= $\frac{\text{operating profit}}{\text{revenue}}$	x	$\frac{\text{revenue}}{\text{capital employed}}$

This relationship can be useful in exam calculations. For example, if you are told that a business has a return on sales of 5% and an asset turnover of 2, then its ROCE will be 10% (5% x 2). This is more than a mathematical trick. It means that any change in ROCE can be explained by either a change in ROS, or a change in asset turnover, or both.

Gross margin

Return on sales looks at profits after charging non-production overheads. Gross margin on the other hand focuses on the organisation's trading activities. Once again, in simple terms, the higher the better, with poor performance often being explained by prices being too low or costs being too high.

LIQUIDITY

This measures the ability of the organisation to meet its short-term financial obligations.

Two ratios are commonly used:

4. Current ratio current assets ÷ current liabilities

5. Acid test (current assets – inventory) ÷ current liabilities

Current ratio

The current ratio compares liabilities that fall due within the year with cash balances, and assets that should turn into cash within the year. It assesses the company's ability to meet its short-term liabilities. Traditionally textbooks tell us that this ratio should exceed 2.0:1 for a company to be able to safely meet its liabilities. However, acceptable current ratios vary between industrial sectors, and many companies operate safely at below the 2:1 level.

A very high current ratio is not necessarily good. It could indicate that a company is too liquid. Cash is often described as an 'idle asset' because it earns no return, and carrying too much cash is considered wasteful. A high ratio could also indicate that the company is not making sufficient use of cheap short-term finance.

Acid test

The acid test (or quick ratio) recognises that inventory often takes a long time to convert into cash. It therefore excludes inventory values from liquid assets. Traditionally textbooks tell us that this ratio should exceed 1:1 but once again many successful companies operate below this level.

In practice a company's current ratio and acid test should be considered alongside the company's operating cashflow. A healthy cashflow will often compensate for weak liquidity ratios.

ACTIVITY RATIOS

6. Asset turnover: revenue ÷ (non current liabilities + total equity) ×

7. Receivables days: receivables ÷ credit sales × 365 days

8. Inventory days: inventory ÷ cost of sales × 365 days

9. Payable days: payables ÷ purchases (or cost of sales) × 365 days

Activity ratios measure an organisation's ability to convert balance sheet items into cash or sales. They measure the efficiency of the business in managing its assets.

Asset turnover

This measures the ability of the organisation to generate sales from its capital employed. A possible variant is non-current asset turnover (revenue ÷ non-current assets). Generally the higher the better, but in later studies you will consider the problems caused by overtrading (operating a business at a

level not sustainable by its capital employed). Commonly a high asset turnover is accompanied with a low return on sales and vice versa. Retailers generally have high asset turnovers accompanied by low margins: Jack Cohen, the founder of Tesco, famously used the motto 'Pile it high and sell it cheap'!

Receivable days
This is also known as debtor days. If a company has average accounts receivable of $20,000 on annual credit sales of $40,000 then on average 50% of its annual credit sales are uncollected. If credit sales are spread evenly over the year, then this represents 50% of a year's sales, equivalent to 183 days, to collect cash from customers. ($20,000/$40,000 ÷ 365 days = 183 days). For liquidity purposes the faster money is collected the better. Also, generally, the longer customers are given to pay, the higher the level of bad debts. However, too much pressure on customers to pay quickly may damage a company's ability to generate sales.

Inventory days
Also known as stock days. This is calculated in a very similar way to receivable days. It measures how long a company carries inventory before it is sold. Again for liquidity purposes the shorter this period the better, as less cash is tied up in inventory. Also long inventory holding periods can result in obsolete inventory. On the other hand, too little inventory can result in production stoppages and dissatisfied customers.

Payable days
Also known as creditor days. Once again this is calculated in a similar way to receivable days. Because the purchases figure is often not available to analysts external to the business, the cost of sales figure is often used to approximate purchases. Payable days measures the average amount of time taken to pay suppliers. Long payment periods are good for the customer's liquidity, but can damage relationships with suppliers.

GEARING
This relates to an organisation's ability to meet its long-term debts. Two ratios are commonly used.

10. Capital gearing: non-current liabilities ÷ ordinary shareholders funds % (this is sometimes described as the debt to equity ratio)
or
non-current liabilities ÷ (ordinary shareholders funds + non current liabilities % (sometimes described as debt to equity + debt)
11. Interest cover: operating profit ÷ finance costs

Capital gearing
Also known as leverage. Capital gearing looks at the proportions of owner's capital and borrowed capital used to finance the business. Many different definitions exist; the two most commonly used ones are given above. When necessary in the exam, you will be told which definition to use.

A large proportion of borrowed capital is risky as interest and capital repayments are legal obligations and must be met if the company is to avoid insolvency. The payment of an annual equity dividend on the other hand is not a legal obligation. Despite its risks, borrowed capital is attractive to companies as lenders accept a lower rate of return than equity investors due to their secured positions. Also interest payments, unlike equity dividends, are corporation tax deductible.

Levels of capital gearing vary enormously between industries. Companies requiring high investment in tangible assets are commonly highly geared. Consequently, it is difficult to generalise about when

capital gearing is too high. However, most accountants would agree that gearing is too high when the proportion of debt exceeds the proportion of equity.

Interest cover
This is sometimes known as income gearing. It looks at how many times a company's operating profits exceed its interest payable. The higher the figure, the more likely a company is to be able to meet its interest payments. Anything in excess of four is usually considered to be safe.

TYPICAL QUESTION
You are unlikely to be asked a question of the nature of 'Current assets are $3,000 and current liabilities are $1,000, what is the current ratio?'

This is considered too low level for Paper F2/FMA. The question (see 'Related link'), from the December 2011 examiner's comments, demonstrates the standard of understanding of ratios that is required.

Questions

(1)

A firm with current assets of $40 million and current liabilities of $20 million buys $5 million of inventory on credit which increases its inventory level to $10 million. What will the effect be on its current ratio and quick (acid test) ratio?

	Current ratio	Liquidity ratio
A	Increase by 25%	Unchanged
B	Reduce by 10%	Unchanged
C	Increase by 25%	Reduce by 20%
D	Reduce by 10%	Reduce by 20%

Answer: D

Current ratio now is $40:$20 = 2:1. Will become $45:$25 = 1.8:1 (i.e. decrease by 10%). Quick ratio now is $35:$20 = 1.75:1 will become $35:$25 = 1.4:1, i.e. decrease by 20%.