Fundamentals Level – Skills Module

# Performance Management

Monday 3 June 2013

**Time allowed**
Reading and planning: 15 minutes
Writing: 3 hours

ALL FIVE questions are compulsory and MUST be attempted.

**Formulae Sheet is on page 8.**

**Do NOT open this paper until instructed by the supervisor.**

**During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.**

**This question paper must not be removed from the examination hall.**

**The Association of Chartered Certified Accountants**

Paper F5

ACCA

**ALL FIVE questions are compulsory and MUST be attempted**

**1** Gym Bunnies (GB) is a health club. It currently has 6,000 members, with each member paying a subscription fee of $720 per annum. The club is comprised of a gym, a swimming pool and a small exercise studio.

A competitor company is opening a new gym in GB's local area, and this is expected to cause a fall in GB's membership numbers, unless GB can improve its own facilities. Consequently, GB is considering whether or not to expand its exercise studio in a hope to improve its membership numbers. Any improvements are expected to last for three years.

Option 1
No expansion. In this case, membership numbers would be expected to fall to 5,250 per annum for the next three years. Operational costs would stay at their current level of $80 per member per annum.

Option 2
Expand the exercise studio. The capital cost of this would be $360,000.The expected effect on membership numbers for the next three years is as follows:

| Probability | Effect on membership numbers |
|---|---|
| 0·4 | Remain at their current level of 6,000 members per annum |
| 0·6 | Increase to 6,500 members per annum |

The effect on operational costs for the next three years is expected to be:

| Probability | Effect on operational costs |
|---|---|
| 0·5 | Increase to $120 per member per annum |
| 0·5 | Increase to $180 per member per annum |

**Required:**

**(a) Using the criterion of expected value, prepare and fully label a decision tree that shows the two options available to GB. Recommend the decision that GB should make.**

Note: Ignore time value of money. (12 marks)

**(b) Calculate the maximum price that GB should pay for perfect information about the expansion's exact effect on MEMBERSHIP NUMBERS.** (6 marks)

**(c) Briefly discuss the problems of using expected values for decisions of this nature.** (2 marks)

**(20 marks)**

**2** Squarize is a large company which, for many years, operated solely as a pay-tv broadcaster. However, five years ago, it started product bundling, offering broadband and telephone services to its pay-tv customers. Customers taking up the offer were then known in the business as 'bundle customers' and they had to take up both the broadband and telephone services together with the pay-tv service. Other customers were still able to subscribe to pay-tv alone but not to broadband and telephone services without the pay-tv service.

All contracts to customers of Squarize are for a minimum three-month period. The pay-tv box is sold to the customer at the beginning of the contract; however, the broadband and telephone equipment is only rented to them.

In the first few years after product bundling was introduced, the company saw a steady increase in profits. Then, Squarize saw its revenues and operating profits fall. Consequently, staff bonuses were not paid, and staff became dissatisfied. Several reasons were identified for the deterioration of results:

1. In the economy as a whole, discretionary spending had been severely hit by rising unemployment and inflation. In a bid to save cash, many pay-tv customers were cancelling their contracts after the minimum three-month period as they were then able to still keep the pay-tv box. The box comes with a number of free channels, which the customer can still continue to receive free of charge, even after the cancellation of their contract.
2. The company's customer service call centre, which is situated in another country, had been the cause of lots of complaints from customers about poor service, and, in particular, the number of calls it sometimes took to resolve an issue.
3. Some bundle customers found that the broadband service that they had subscribed to did not work. As a result, they were immediately cancelling their contracts for all services within the 14 day cancellation period permitted under the contracts.

In a response to the above problems and in an attempt to increase revenues and profits, Squarize made the following changes to the business:

1. It made a strategic decision to withdraw the pay-tv–broadband–telephone package from the market and, instead, offer each service as a standalone product.
2. It guaranteed not to increase prices for a 12-month period for each of its three services.
3. It transferred its call centre back to its home country and increased the level of staff training given for call centre workers.
4. It investigated and resolved the problem with customers' broadband service.

It is now one year since the changes were made and the finance director wants to use a balanced scorecard to assess the extent to which the changes have been successful in improving the performance of the business.

**Required:**

**(a) For each perspective of the balanced scorecard, identify two goals (objectives) together with a corresponding performance measure for each goal which could be used by the company to assess whether the changes have been successful. Justify the use of each of the performance measures that you choose.** (16 marks)

**(b) Discuss how the company could reduce the problem of customers terminating their pay-tv service after only three months.** (4 marks)

**(20 marks)**

**3** Cam Co manufactures webcams, devices which can provide live video and audio streams via personal computers. It has recently been suffering from liquidity problems and hopes that these will be eased by the launch of its new webcam, which has revolutionary audio sound and visual quality. The webcam is expected to have a product life cycle of two years. Market research has already been carried out to establish a target selling price and projected lifetime sales volumes for the product. Cost estimates have also been prepared, based on the current proposed product specification. Cam Co uses life cycle costing to work out the target costs for its products, believing it to be more accurate to use an average cost across the whole lifetime of a product, rather than potentially different costs for different years. You are provided with the following relevant information for the webcam:

| | |
|---|---|
| Projected lifetime sales volume | 50,000 units |
| Target selling price per unit | $200 |
| Target profit margin (35% selling price) | $70 |
| Target cost per unit | $130 |
| Estimated lifetime cost per unit (see note below for detailed breakdown) | $160 |

**Note: Estimated lifetime cost per unit:**

| | $ | $ |
|---|---|---|
| **Manufacturing costs** | | |
| Direct material (bought in parts) | 40 | |
| Direct labour | 26 | |
| Machine costs | 21 | |
| Quality control costs | 10 | |
| Rework costs | 3 | |
| | | 100 |
| **Non-manufacturing costs** | | |
| Product development costs | 25 | |
| Marketing costs | 35 | |
| | | 60 |
| Estimated lifetime cost per unit | | 160 |

The average market price for a webcam is currently $150.

The company needs to close the cost gap of $30 between the target cost and the estimated lifetime cost. The following information has been identified as relevant:

1. Direct material cost: all of the parts currently proposed for the webcam are bespoke parts. However, most of these can actually be replaced with standard parts costing 55% less. However, three of the bespoke parts, which currently account for 20% of the estimated direct material cost, cannot be replaced, although an alternative supplier charging 10% less has been sourced for these parts.
2. Direct labour cost: the webcam uses 45 minutes of direct labour, which costs $34·67 per hour. The use of more standard parts, however, will mean that whilst the first unit would still be expected to take 45 minutes, there will now be an expected rate of learning of 90% (where 'b' = –0·152). This will end after the first 100 units have been completed.
3. Rework cost: this is the average rework cost per webcam and is based on an estimate of 15% of webcams requiring rework at a cost of $20 per rework. With the use of more standard parts, the rate of reworks will fall to 10% and the cost of each rework will fall to $18.

**Required:**

**(a) Recalculate the estimated lifetime cost per unit for the webcam after taking into account points 1 to 3 above.** (12 marks)

**(b) Explain the 'market skimming' (also known as 'price skimming') pricing strategy and discuss, as far as the information allows, whether this strategy may be more appropriate for Cam Co than charging one price throughout the webcam's entire life.** (8 marks)

**(20 marks)**

**4** Block Co operates an absorption costing system and sells three types of product – Commodity 1, Commodity 2 and Commodity 3. Like other competitors operating in the same market, Block Co is struggling to maintain revenues and profits in face of the economic recession which has engulfed the country over the last two years. Sales prices fluctuate in the market in which Block Co operates. Consequently, at the beginning of each quarter, a market specialist, who works on a consultancy basis for Block Co, sets a budgeted sales price for each product for the quarter, based on his expectations of the market. This then becomes the 'standard selling price' for the quarter. The sales department itself is run by the company's sales manager, who negotiates the actual sales prices with customers. The following budgeted figures are available for the quarter ended 31 May 2013.

| Product | Budgeted production and sales units | Standard selling price per unit | Standard variable production costs per unit |
|---|---|---|---|
| Commodity 1 | 30,000 | $30 | $18 |
| Commodity 2 | 28,000 | $35 | $28·40 |
| Commodity 3 | 26,000 | $41·60 | $26·40 |

Block Co uses absorption costing. Fixed production overheads are absorbed on the basis of direct machine hours and the budgeted cost of these for the quarter ended 31 May 2013 was $174,400. Commodity 1, 2 and 3 use 0·2 hours, 0·6 hours and 0·8 hours of machine time respectively.

The following data shows the actual sales prices and volumes achieved for each product by Block Co for the quarter ended 31 May 2013 and the average market prices per unit.

| Product | Actual production and sales units | Actual selling price per unit | Average market price per unit |
|---|---|---|---|
| Commodity 1 | 29,800 | $31 | $32·20 |
| Commodity 2 | 30,400 | $34 | $33·15 |
| Commodity 3 | 25,600 | $40·40 | $39·10 |

The following variances have already been correctly calculated for Commodities 1 and 2:

Sales price operational variances
Commodity 1: $35,760 Adverse
Commodity 2: $25,840 Favourable

Sales price planning variances
Commodity 1: $65,560 Favourable
Commodity 2: $56,240 Adverse

**Required:**

**(a) Calculate, for Commodity 3 only, the sales price operational variance and the sales price planning variance.** (4 marks)

**(b) Using the data provided for Commodities 1, 2 and 3, calculate the total sales mix variance and the total sales quantity variance.** (11 marks)

**(c) Briefly discuss the performance of the business and, in particular, that of the sales manager for the quarter ended 31 May 2013.** (5 marks)

**(20 marks)**

**5** Newtown School's head teacher has prepared the budget for the year ending 31 May 2014. The government pays the school $1,050 for each child registered at the beginning of the school year, which is June 1, and $900 for any child joining the school part-way through the year. The school does not have to refund the money to the government if a child leaves the school part-way through the year. The number of pupils registered at the school on 1 June 2013 is 690, which is 10% lower than the previous year. Based on past experience, the probabilities for the number of pupils starting the school part-way through the year are as follows:

| Probability | No. of pupils joining late |
|---|---|
| 0·2 | 50 |
| 0·3 | 20 |
| 0·5 | 26 |

The head teacher admits to being 'poor with numbers' and does not understand probabilities so, when calculating budgeted revenue, he just calculates a simple average for the number of pupils expected to join late. His budgeted revenue for the year ending 31 May 2014 is therefore as follows:

| | Pupils | Rate per pupil | Total income |
|---|---|---|---|
| Pupils registered at beginning of school year | 690 | $1,050 | $724,500 |
| Average expected number of new joiners | 32 | $900 | $28,800 |
| | | | $753,300 |

The head teacher uses incremental budgeting to budget for his expenditure, taking actual expenditure for the previous year as a starting point and simply adjusting it for inflation, as shown below.

| | Note | Actual cost for y/e 31 May 2013 $ | Inflationary adjustment | Budgeted cost for y/e 31 May 2014 $ |
|---|---|---|---|---|
| Repairs and maintenance | 1 | 44,000 | +3% | 45,320 |
| Salaries | 2 | 620,000 | +2% | 632,400 |
| Capital expenditure | 3 | 65,000 | +6% | 68,900 |
| Total budgeted expenditure | | | | 746,620 |
| Budget surplus | | | | 6,680 |

**Notes**

1. $30,000 of the costs for the year ended 31 May 2013 related to standard maintenance checks and repairs that have to be carried out by the school every year in order to comply with government health and safety standards. These are expected to increase by 3% in the coming year. In the year ended 31 May 2013, $14,000 was also spent on redecorating some of the classrooms. No redecorating is planned for the coming year.
2. One teacher earning a salary of $26,000 left the school on 31 May 2013 and there are no plans to replace her. However, a 2% pay rise will be given to all staff with effect from 1 December 2013.
3. The full $65,000 actual costs for the year ended 31 May 2013 related to improvements made to the school gym. This year, the canteen is going to be substantially improved, although the extent of the improvements and level of service to be offered to pupils is still under discussion. There is a 0·7 probability that the cost will be $145,000 and a 0·3 probability that it will be $80,000. These costs must be paid in full before the end of the year ending 31 May 2014.

The school's board of governors, who review the budget, are concerned that the budget surplus has been calculated incorrectly. They believe that it should have been calculated using expected income, based on the probabilities provided, and using expected expenditure, based on the information provided in notes 1 to 3. They believe that incremental budgeting is not proving a reliable tool for budget setting in the school since, for the last three years, there have been shortfalls of cash despite a budget surplus being predicted. Since the school has no other source of funding available to it, these shortfalls have had serious consequences, such as the closure of the school kitchen for a considerable period in the last school year, meaning that no hot meals were available to pupils. This is thought to have been the cause of the 10% fall in the number of pupils registered at the school on 1 June 2013.

**Required:**

**(a) Considering the views of the board of governors, recalculate the budget surplus/deficit for the year ending 31 May 2014.** (6 marks)

**(b) Discuss the advantages and disadvantages of using incremental budgeting.** (4 marks)

**(c) Briefly outline the three main steps involved in preparing a zero-based budget.** (6 marks)

**(d) Discuss the extent to which zero-based budgeting could be used by Newtown School to improve the budgeting process.** (4 marks)

**(20 marks)**

## Formulae Sheet

### Learning curve

$Y = ax^b$

Where Y = cumulative average time per unit to produce x units
a = the time taken for the first unit of output
x = the cumulative number of units produced
b = the index of learning (log LR/log2)
LR = the learning rate as a decimal

### Demand curve

$P = a - bQ$

$$b = \frac{\text{change in price}}{\text{change in quantity}}$$

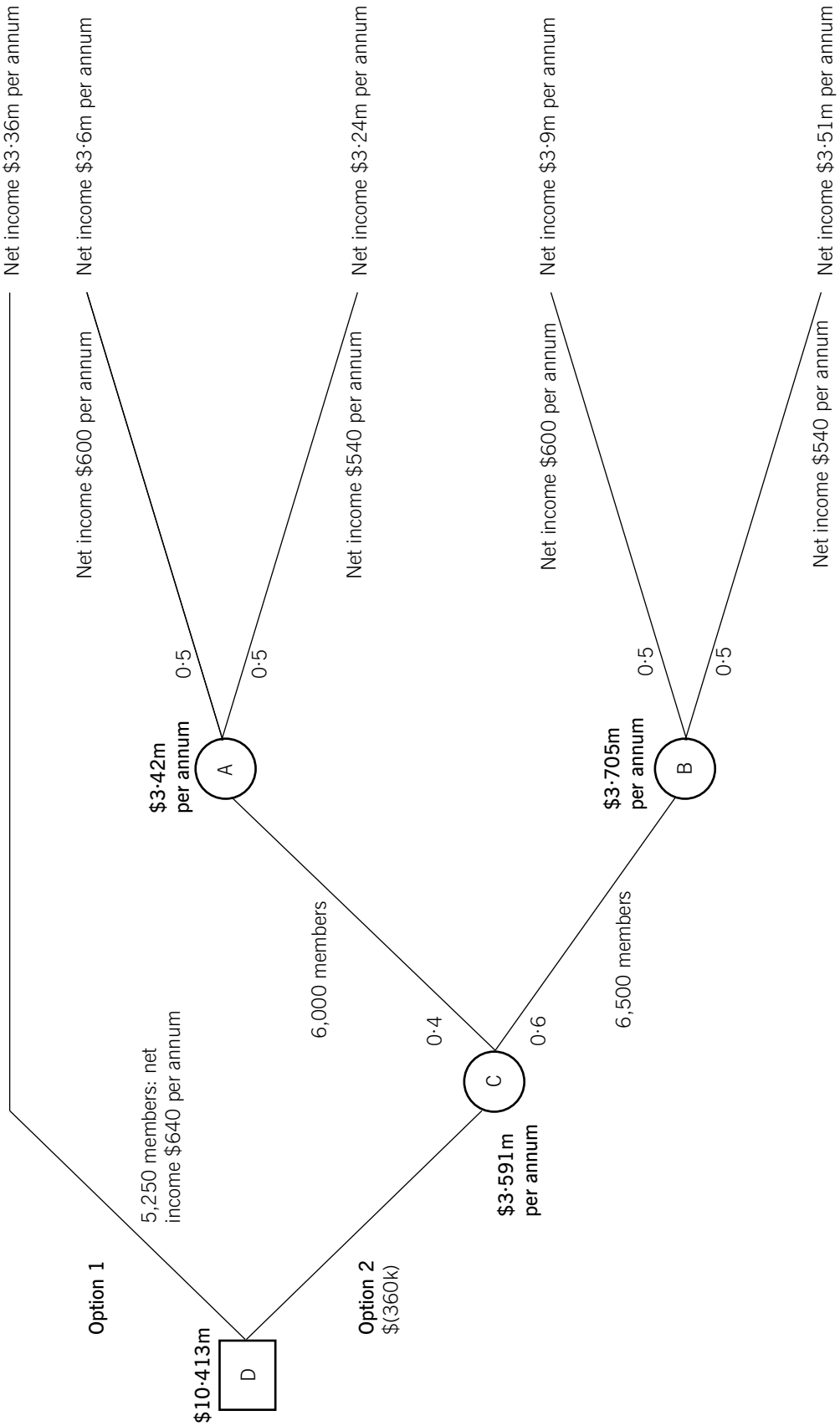
a = price when Q = 0

$MR = a - 2bQ$

**End of Question Paper**

# Answers

**1 (a)** Decision tree



**Workings**

**Option 1**
Net income = $720 – $80 = $640 per annum.

**Option 2**
If costs $120 per annum, net income = $720 – $120 = $600 per annum.
If costs $180 per annum, net income = $720 – $180 = $540 per annum.

**Expected value and decision:**

EV at A = (0·5 x $3·6m) + (0·5 x $3·24m) = $3·42m
EV at B = (0·5 x $(3·9m) + (0·5 x $3·51m) = $3·705m
EV at C = (0·4 x $3·42m) + (0·6 x $3·705m) = $3·591m per annum

At D, compare EV of:
Option 1: (3 x $3·36m) = **$10·08m**
Option 2: ($3 x $3·591m) – $360k = **$10·413m**

Therefore choose option 2 – expand exercise studio.

**(b) With perfect information:**

**If membership numbers were 6,000:**
EV = $3·42m x 3 = $10·26m
*Less* costs of $360k = **$9.9m**

Therefore, with these membership numbers, GB would choose option 1 instead.

**If membership numbers were 6,500:**
EV = $3·705 x 3 = $11·115m
*Less* costs of $360k = **$10·755m**

In this instance, GB would choose option 2.

So, if membership numbers are 6,000, of which there is a 0·4 probability, EV will be $10·08m (option 1) and if membership numbers are 6,500, of which there is a 0·6 probability, then EV will be $10·755m (option 2).

Therefore EV with perfect information = (0·4 x $10·08m) + (0·6 x $10·755) = $10·485m.

Without perfect information the EV is $10·413m, therefore the value of it is $72k ($10·485m – $10·413m). This represents the maximum price that GB should be prepared to pay for the information.

**(c)** The expansion decision is a one-off decision, rather than a decision that will be repeated many times. Expected values, on the other hand, give us a long run average of the outcome that would be expected if a decision was to be repeated many times. The actual outcome may not be very close to the expected value calculated and the technique is therefore not really very useful here.

Also, estimating accurate probabilities is difficult because this exact situation has not arisen before.

The expected value criterion for decision-making is useful where the attitude of the investor is risk neutral. We do not know what the management of Gym Bunnies' attitude to risk is, which makes it difficult to say whether this criterion is a good one to use. In a decision such as this one, it would be useful to see what the worst case scenario and best case scenario results would be too, in order to assist decision-making.

**2 (a)** Goals and measures

| Goals | Performance Measures | Reason |
|---|---|---|
| **Financial perspective** | | |
| Increase revenue | Percentage increase in total revenue | The changes have been implemented partly in an attempt to increase revenues, so it is sensible to measure the extent to which revenues have actually increased. |
| Increase operating profit margin | Percentage increase in operating profit | The changes have been implemented partly in an attempt to increase operating profit, so it is sensible to measure the extent to which operating profit has actually increased. |
| **Customer perspective** | | |
| Increase customer acquisition | Total sales to new customers | The fourth change (to standalone products) was made in an attempt to attract new customers. This measure will help to assess whether the change has been successful. |
| Reduce loss of customers | Customer churn rate | The first three of the four changes made were made in an attempt to retain customers. This performance measure will help to assess whether the changes have been successful. |
| **Internal business perspective** | | |
| Reduce number of broadband contracts cancelled | Number of broadband contracts cancelled | This performance measure will enable Squarize to assess whether the improved broadband service has resulted in a reduction of the number of contracts cancelled. |
| Increase after sales service quality | Percentage of customer requests that are handled with a single call | Squarize transferred its call centre back to its home country. This measure will assess whether that has improved the service quality to customers as a result. |
| **Learning and growth perspective** | | |
| Increase call centre workers' skill levels | Number of training hours per employee | This measure will improve the likelihood of customers receiving an improved service. A better public image should result, leading to increased revenues as new customers are attracted to the business. |
| Increase employees' satisfaction | Percentage decrease in staff turnover | This measure will also help to improve customer service, thereby improving company image, attracting new customers and increasing revenues in the long term. |

**(Other reasonable suggestions will be equally acceptable)**

**(b)** Pay-tv customers currently own the boxes, meaning that a certain number of customers appear to cancel their contract after the first three months and just keep the set-top box with its free channels. Squarize may want to consider loaning the boxes rather than selling them to the customers at the beginning of the contract.

The company only has a minimum contract period of three months. This seems very short and perhaps the company could consider increasing it to 12 months. Unnecessary administration costs must be arising because it takes time, and therefore money, to set up new customers. If these customers then leave three months later, the company has not had much opportunity to earn profits from the customers generating these costs.

**3 (a) Revised target cost**

| | $ | $ |
|---|---|---|
| Manufacturing cost | | |
| Direct material (working 1) | 21·60 | |
| Direct labour (working 2) | 10·96 | |
| Machine costs | 21 | |
| Quality control costs | 10 | |
| Rework costs (working 3) | 1·80 | |
| | | 65·36 |
| Product development cost | 25 | |
| Marketing cost | 35 | |
| Non-manufacturing costs | | 60 |
| Total cost | | 125·36 |

**Working 1: Direct material cost**
Parts to be replaced by standard parts = $40 x 0·8 = $32.
New cost of those at 45% (100% – 55%) = $14·40.
Unique irreplaceable parts: original cost = $40 x 20% = $8.
New cost $7·20
Revised direct material cost = $14·40 + $7·20 = $21·60

**Working 2: Direct labour**
Direct labour – cost per unit for first one hundred units:
$Y = ax^b$
$45 \times 100^{-0·152} = 22·346654$ minutes
Total time for 100 units = 2,234·6654 minutes.

Time for the 100th unit:
Time for 99 units = $45 \times 99^{-0·152}$
= 22·380818 minutes.
For 99 units = 2,215·701 minutes.
Therefore, time for 100th unit = 2,234·6654 – 2,215·701 = 18·9644 minutes.

Time for remaining 49,900 units = 946,323·56 minutes.
Total labour time for 50,000 units = 948,558·23 minutes.
Therefore total labour cost = 948,558·23/60 x $34·67 = $548,108·56.
Therefore average labour cost per unit = $548,108·56/50,000 = $10·96.

**Note:** *Some rounding is acceptable and marks would still be given.*

**Working 3: Rework cost**
Total cost = 50,000 x 10% x $18 = $90,000.
Cost per average unit = $90,000/50,000 = $1·80.

**(b) Market skimming**

Market skimming is a strategy that attempts to exploit those areas of the market which are relatively insensitive to price changes. Initially, high prices for the webcam would be charged in order to take advantage of those buyers who want to buy it as soon as possible, and are prepared to pay high prices in order to do so.

The existence of certain conditions is likely to make the strategy a suitable one for Cam Co. These are as follows:

- Where a product is new and different, so that customers are prepared to pay high prices in order to gain the perceived status of owning the product early. The webcam has superior audio sound and visual quality, which does make it different from other webcams on the market.
- Where products have a short life cycle this strategy is more likely to be used, because of the need to recover development costs and make a profit quickly. The webcam does only have a two year life cycle, which does make it rather short.
- Where high prices in the early stages of a product's life cycle are expected to generate high initial cash inflows. If this were to be the case for the webcam, it would be particularly useful for Cam Co because of the current liquidity problems the company is suffering. Similarly, skimming is useful to cover high initial development costs, which have been incurred by Cam Co.
- Where barriers to entry exist, which deter other competitors from entering the market; as otherwise, they will be enticed by the high prices being charged. These might include prohibitively high investment costs, patent protection or unusually strong brand loyalty. It is not clear from the information whether this is the case for Cam Co.
- Where demand and sensitivity of demand to price are unknown. In Cam Co's case, market research has been carried out to establish a price based on the customers' perceived value of the product. The suggestion therefore is that some information is available about price and demand, although it is not clear how much information is available.

It is not possible to say for definite whether this pricing strategy would be suitable for Cam Co, because of the limited information available. However, it does seem unusual that a high-tech, cutting edge product like this should be sold at the same price over its entire, short life cycle. Therefore, price skimming should be investigated further, presuming that this has not already been done by Cam Co.

**4 (a)** **Sales price operational variance:** (actual price – market price) x actual quantity

**Commodity 3:** ($40·40 – $39·10) x 25,600 = $33,280

**Sales price planning variance:** (standard price – market price) x actual quantity

**Commodity 3:** ($41·60 – $39·10) x 25,600 = $(64,000)

An alternative approach to the variance calculations for Commodity 3 would be as follows:

**Sales price operational variance**

| | Commodity 3 |
|---|---|
| Should now | $39·10 |
| Did | $40·40 |
| Difference | $1·30F |
| Actual sales quantity | 25,600 |
| Variance | $33,280F |

**Sales price planning variance**

| | Commodity 3 |
|---|---|
| Should now | $39·10 |
| Should | $41·60 |
| Difference | $2·50A |
| Actual sales quantity | 25,600 |
| Variance | $64,000A |

**(b)** **Sales mix variance:**

(Actual sales quantity in actual mix at standard margin) – (actual sales quantity in standard mix at standard margin) = $768,640 (w.1 & 2) – $782,006 (w.3) = $13,366 adverse.

**Working 1: Standard margins per unit:**
Budgeted machine hours = (30,000 x 0·2) + (28,000 x 0·6) + (26,000 x 0·8) = 43,600.
Overhead absorption rate = $174,400/43,600 = $4 per hour.

| Product | Commodity 1 $ | Commodity 2 $ | Commodity 3 $ |
|---|---|---|---|
| Standard selling price | 30 | 35 | 41·60 |
| Variable production costs | (18) | (28·40) | (26·40) |
| Fixed production overheads | (0·8) | (2·4) | (3·2) |
| Standard profit margin | 11·20 | 4·20 | 12 |

**Working 2: Actual sales quantity in actual mix at standard profit margin:**

| Product | Actual quantity in actual mix | Standard profit | $ |
|---|---|---|---|
| Commodity 1 | 29,800 | $11·20 | 333,760 |
| Commodity 2 | 30,400 | $4·20 | 127,680 |
| Commodity 3 | 25,600 | $12 | 307,200 |
| | 85,800 | | 768,640 |

**Working 3 Actual sales quantity in standard mix at standard profit margin:**

| Product | Actual quantity in standard mix | Standard profit | $ |
|---|---|---|---|
| Commodity 1 | 85,800 x 30/84 = 30,643 | $11·20 | 343,202 |
| Commodity 2 | 85,800 x 28/84 = 28,600 | $4·20 | 120,120 |
| Commodity 3 | 85,800 x 26/84 = 26,557 | $12 | 318,684 |
| | 85,800 | | 782,006 |

**The sales quantity variance** = (actual sales quantity in standard mix at standard margin) – (budgeted sales quantity in standard mix at standard profit margin) = $782,006 (w.3 above) – $765,600 (w.4) = $16,406 favourable.

**Working 4: Budgeted sales quantity in standard mix at standard profit margin:**

| Product | Quantity | Standard profit | $ |
|---|---|---|---|
| Commodity 1 | 30,000 | $11·20 | 336,000 |
| Commodity 2 | 28,000 | $4·20 | 117,600 |
| Commodity 3 | 26,000 | $12 | 312,000 |
| | 84,000 | | 765,600 |

**(c)** The calculations above have shown that, as regards the sales price, there is a $23,360 favourable operational variance and a $54,680 adverse planning variance. In total, these net off to a sales price variance of $31,320 adverse. The sales manager can only be responsible for a variance to the extent that he controls it. Since the standard selling prices are set by a consultant, rather than the sales manager, the sales manager can only be held responsible for the operational variance. Given that this was a favourable variance of $23,360, it appears that he has performed well, achieving sales prices which, on average, were higher than the market prices at the time. The consultant's predictions, however, were rather inaccurate, and it is these that have caused an adverse variance to occur overall in relation to sales price.

As regards sales volumes, the mix variance is $13,366 adverse and the quantity variance is $16,406 favourable, meaning that the total volume variance is $3,040 favourable. This is because total sales volumes were higher than expected, although it is apparent that the increased sales related to the lower margin Commodity 2, with sales of Commodity 1 and Commodity 3 actually being lower than budget.

The total variance relating to sales is $28,280 adverse. This looks poor but, as identified above, it is due to the inaccuracy of the sales price forecasts made by the consultant. We know that Block Co is facing tough market conditions because of the economic recession and therefore it is not that surprising that market prices were actually a bit lower than originally anticipated. This could be due to the recession hitting even harder in this quarter than in previous ones.

**5 (a)** Budget deficit/surplus

**Budgeted income:**
Income from pupils registered on 1 June 2013: $724,500 (given in question)
Expected number of new joiners: (0·2 x 50) + (0·3 x 20) + (0·5 x 26) = 29
Expected income from new joiners at $900 each = $26,100
Total expected income = $750,600.

**Budgeted expenditure:**
Repairs and maintenance: $30,000 x 1·03 = $30,900.
Salaries: [($620,000 – $26,000)/2] + [($620,000 – $26,000 x 1·02)/2]
= $297,000 + $302,940 = $599,940.
Expected capital expenditure = (0·7 x $145,000) + (0·3 x $80,000) = $125,500.
Total expected expenditure = $756,340.

Budget deficit = $5,740.

**(b)** Discussion of estimates

**Advantages**

- Incremental budgeting is very easy to perform. This makes it possible for a person without any accounting training to build a budget.
- Incremental budgeting is also very quick compared to other budgeting methods.
- The information required to complete it is also usually readily available.

**Disadvantages**

- On the other hand, incremental budgeting encourages inefficiency because it does not question the preceding year's figures on which it is based. No-one asks how those figures could be reduced.
- Similarly, in some organisations, it encourages slack because departmental managers may attempt to use their entire budget up for one year, even if they do not need to, just to ensure that that cash is available again the next year.
- Errors from one year are carried to the next, since the previous year's figures are not questioned.

**(c)** Zero-based budgeting (ZBB)

The three main steps involved in preparing a zero-based budget are as follows:

1. Activities are identified by managers. Managers are then forced to consider different ways of performing the activities. These activities are then described in what is called a 'decision package', which:
   - analyses the cost of the activity;
   - states its purpose;
   - identifies alternative methods of achieving the same purpose;

- establishes performance measures for the activity;
- assesses the consequence of not performing the activity at all or of performing it at different levels.

As regards this last point, the decision package may be prepared at the base level, representing the minimum level of service or support needed to achieve the organisation's objectives. Further incremental packages may then be prepared to reflect a higher level of service or support.

2. Management will then rank all the packages in the order of decreasing benefits to the organisation. This will help management decide what to spend and where to spend it. This ranking of the decision packages happens at numerous levels of the organisation.

3. The resources are then allocated, based on order of priority up to the spending level.

**(d) Use of ZBB at Newtown School**

There is definitely a place for ZBB at Newtown School. At the moment, incremental budgeting is responsible for recurring unexpected cash shortages, which is deterring new pupils from joining the school. Had a deficit been predicted for the year ended 31 May 2013, perhaps $65,000 would not have been spent on improving the school gym, and then it would not have been necessary to close the school kitchen. ZBB would be good to establish the way cash is spent on those activities that are, to a certain extent, discretionary.

For example, although there is a need for pupils to have somewhere to eat lunch, it is not essential for children to have a cooked meal every day. It is essential that children do have somewhere to eat though and, as a bare minimum, they would need an area where they could eat their sandwiches and have access to fresh water. ZBB could be used to put together decision packages which reflect the different levels of service available to the children. For example, the most basic level of service could be the provision of an area for the children to eat a lunch brought from home. The next level would be the provision of some cold and maybe hot food for the children, but on a self-service basis. Finally, the highest level of service would be a restaurant for the children where they get served hot meals at tables. At Newtown School the catering manager could prepare the decision packages and they would then be decided upon by the head teacher, who would rank them accordingly.

Similarly, although some level of sports education is needed, the extent of the different activities offered is discretionary. ZBB could be used to create decision packages for each of these services in order to prioritise them better than they are currently being prioritised.

ZBB takes a long time to implement and would not be appropriate to all categories of expenditure at the school. Much of the budgeting is very straight forward. Incremental budgeting could still be used as a starting point for essential expenditure such as salary costs, provided that changes in staff numbers are also taken into account. There is an element of essential, recurring expenditure in relation to repairs and maintenance too, since the costs of the checks and repairs needed to comply with health and safety standards seem to largely stay the same each year, with an inflationary increase.

| | | | *Marks* |
|---|---|---|---|
| **1** | **(a)** | Decision tree diagram | |
| | | Start with decision point | 0·5 |
| | | Option 1 format | 0·5 |
| | | Option 2 format | 5 |
| | | Expected value and decision | |
| | | EV at A | 1 |
| | | EV at B | 1 |
| | | EV at C | 2 |
| | | Compare EVs at D | 1 |
| | | Recommendation that follows | 1 |
| | | | 12 |
| | **(b)** | Price of perfect information | |
| | | EV with 6,000 members | 2 |
| | | EV with 6,500 members | 2 |
| | | Price | 2 |
| | | | 6 |
| | **(c)** | Discussion | 2 |
| | | **Total marks** | **20** |
| **2** | **(a)** | Balanced scorecard | |
| | | Identifying the four perspectives | 4 |
| | | Each goal | 0·5 |
| | | Each performance measure | 0·5 |
| | | Each reason | 0·5 |
| | | Maximum marks | 16 |
| | **(b)** | Customer retention issue | |
| | | Each point discussed – 2 marks | 4 |
| | | Maximum marks | 4 |
| | | **Total marks** | **20** |

| | | | *Marks* |
|---|---|---|---|
| **3** | **(a)** | Revised lifetime cost | |
| | | Direct material cost | 2·5 |
| | | Direct unskilled labour cost | 0·5 |
| | | Direct skilled labour cost: | |
| | | Cumulative average time per unit for 100 units | 1 |
| | | Cumulative total time for 100 units | 0·5 |
| | | Cumulative average time per unit for 99 units | 0·5 |
| | | Cumulative total time for 99 units | 0·5 |
| | | Incremental time for 100th unit | 0·5 |
| | | Total time for 49,900 units | 0·5 |
| | | Total time for 50,000 units | 0·5 |
| | | Total labour cost for 50,000 units | 0·5 |
| | | Average labour cost per unit | 0·5 |
| | | Total labour cost per unit | 0·5 |
| | | Machine costs | 0·5 |
| | | Quality control costs | 0·5 |
| | | Rework cost | 1 |
| | | Non-manufacturing cost | 1 |
| | | Total cost | 0·5 |
| | | | 12 |
| | **(b)** | Market skimming | |
| | | Explanation – maximum | 2 |
| | | Discussion of each condition – maximum | 1·5 |
| | | Conclusion | 1 |
| | | Maximum marks | 8 |
| | | **Total marks** | **20** |
| **4** | **(a)** | Planning and operational variances | |
| | | Operational variance | 2 |
| | | Planning variance | 2 |
| | | | 4 |
| | **(b)** | Mix and quantity variances | |
| | | Standard profit per unit | 4 |
| | | Mix variance | 4 |
| | | Quantity variance | 3 |
| | | | 11 |
| | **(c)** | Discussion | |
| | | Each valid comment | 1 |
| | | | 5 |
| | | **Total marks** | **20** |

| | | | *Marks* |
|---|---|---|---|
| **5** | **(a)** | Budgeted costs | |
| | | Budgeted income | 1·5 |
| | | Repairs and maintenance | 1 |
| | | Teachers' salaries | 1·5 |
| | | Capital expenditure | 1 |
| | | Total expected expenditure | 0·5 |
| | | Deficit | 0·5 |
| | | | 6 |
| | **(b)** | Advantages and Disadvantages | |
| | | Two advantages | 2 |
| | | Two disadvantages | 2 |
| | | | 4 |
| | **(c)** | Zero-based budgeting | |
| | | Step 1 | 2 |
| | | Step 2 | 2 |
| | | Step 3 | 2 |
| | | | 6 |
| | **(d)** | Use of ZBB to Newtown School | |
| | | Each point made | 1 |
| | | Maximum | 4 |
| | | Total marks | **20** |