



4: Operations management

Paper 2 – Topic questions

The questions in this document have been compiled from a number of past papers, as indicated in the table below.

Use these questions to formatively assess your learners' understanding of this topic.

Question	Year	Series	Paper number
3a	2016	November	21
4a	2017	March	22
4a	2018	March	22
3b	2018	June	21

P & P Paint

P & P is a large private limited company in country X. It has been in business for 15 years. It has one large factory near to the capital city. The factory is located next to a river that flows through the city.

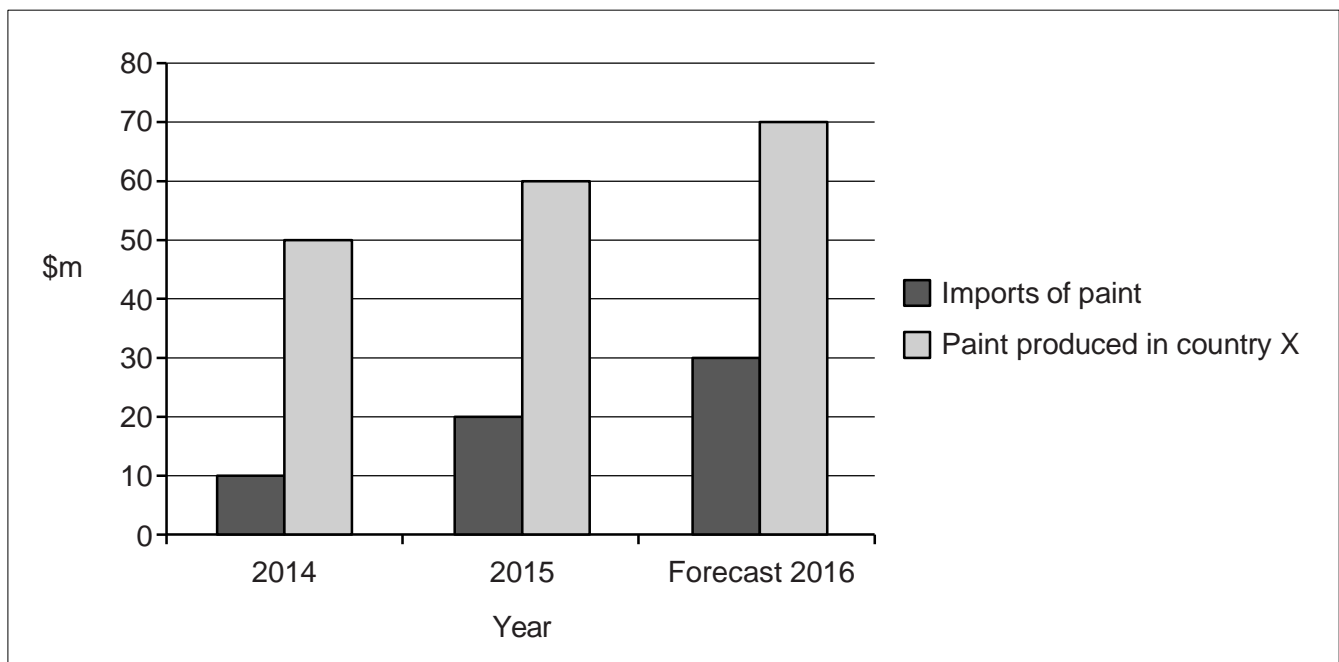
Paint is produced from imported raw materials and then the tins (cans) of paint are sold to large shops in country X. Paint is produced using batch production for each type of paint. P & P employs 150 production workers in its factory and most employees live near to the factory. They are paid using time rate, they do not have any fringe benefits and are managed using an autocratic leadership style.

P & P has developed a new type of paint. It is waterproof and suitable for painting the outside of houses. It is about to be launched in country X. The target customers are professional painters and people who want to improve their own homes.

P & P plans to start selling paint in other countries in 2018. The directors will have to consider what changes the business will need to make if P & P is to expand by exporting its paint.

Appendix 1

**Total market sales of paint in country X
(\$m)**



Appendix 2

To: Managing Director From: Operations manager Date: 10 October 2016
Re: Increasing paint production

In answer to your queries we have the following two options:

Option A

We could produce 200 000 tins of paint per year in a new factory on the other side of the city. There are no houses near this site. The land could be bought for \$100 000. The factory building and machinery would cost \$50 000. We would need a bank loan for the whole amount and would pay an interest rate of 10% per year. We would also keep our existing factory open.

Option B

Extend the existing factory and lease additional machinery. This would cost \$75 000 to extend the factory. This machinery could be leased at an annual cost of \$10 000. We would still need a bank loan for the cost of extending the factory at an interest rate of 10% per year. With this option we could produce an additional 102 500 tins of paint per year.

Appendix 3

Main News

16 October 2016

The process of paint making at P & P results in a lot of dangerous waste being produced which is put into the river. The river is now very polluted as other factories put their waste into the river as well. All the fish have died and local people who used to fish in the river must now buy fish from their local market.

Local people are also worried that their children may become ill due to the pollution if they play in the river. Some people who live near P & P's factory have formed a pressure group to persuade the management to change the way they make paint. P & P is unlikely to change the production process as its factory is not the only one which puts waste into the river. P & P also employs a lot of local people and they worry about keeping their jobs.

It will cost P & P over \$5 000 per year to clean the waste before it is put into the river. Competitors which produce paint abroad do not have legal controls about cleaning waste products. The Government of country X will need to consider all these points when deciding whether or not to introduce new legal controls on pollution.

3(a) P & P has decided to use batch production to produce the new paint. Identify and explain **two** factors which may have influenced this decision.

Factor 1:

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Explanation:

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Factor 2:

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Explanation:

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Bags and Belts (BB)

BB is a small private limited company. It manufactures leather handbags and belts. It only uses the best quality leather. BB sells the bags and belts using its own brand name to large retailers. BB currently does not use the Internet in its business operations.

The leather used by BB has always been purchased from the same local business since BB was set up. This supplier guarantees high quality leather and has always delivered on time.

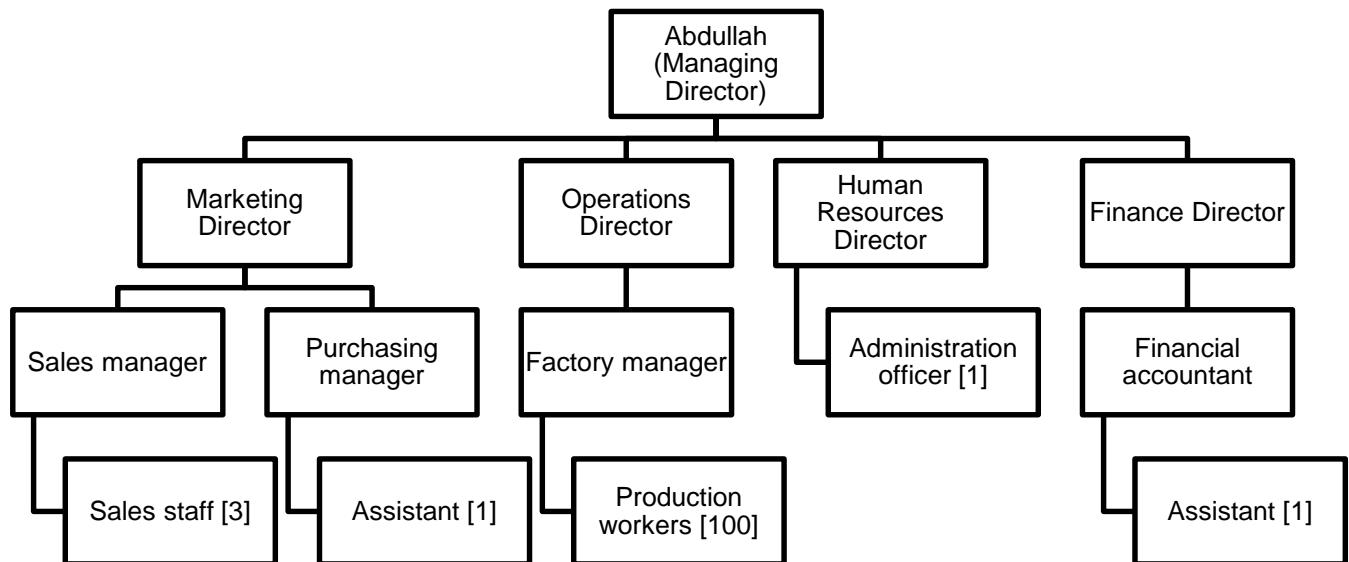
BB was started 35 years ago and is now managed by Abdullah, the grandson of the original owner. The other directors are all members of the family. BB employs workers from the local community to manufacture the handbags and belts.

BB uses batch production. The workers who make the handbags and belts are skilled, but wage costs are kept low by employing young workers to pack the products. The production process has waste materials and these are put into the nearby river. However, local people complain that it affects their drinking water.

The directors want to increase profit. They are thinking of either increasing prices or making some of the handbags out of a material that looks like leather but is much cheaper to buy. The Marketing Director thinks the demand for their handbags is price inelastic as many consumers are loyal to the BB brand.

Appendix 1

Organisation chart for BB



Appendix 2

From: Abdullah
To: BB directors

I want BB to expand and I am considering the following two options.

Option A:

Sell BB branded handbags to wholesalers. This will allow BB to sell its handbags all over the country. We will need to spend a lot of money on advertising in magazines aimed at people on high incomes. The economy has been growing rapidly and many people now have high incomes.

Option B:

To accept a contract to manufacture luxury handbags for a major global business. This global business will then sell these handbags using its own channels of distribution across the world. The global business has a recognised luxury brand and its handbags sell at very high prices in exclusive shops all over the world. All the workers will need to be skilled and fully trained as the highest quality will be expected. New equipment costing \$20 000 will need to be purchased. BB will still make some BB branded handbags.

We must meet to discuss which option you think we should choose.

Appendix 3

Summary of BB balance sheet (\$000)

	2015	2016
Non-current assets	100	120
Current assets:		
Inventories	10	40
Cash	10	10
Trade receivables	10	40
Current liabilities:		
Trade payables	40	50
Non-current liabilities:		
Long-term bank loan	80	80



4(a) Identify and explain **two** reasons why batch production is suitable for BB.

Reason 1:

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Explanation:

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Reason 2:

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Explanation:

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City Café (CC)

When George Brown left school he worked as a chef in several restaurants but he had always wanted to be his own boss. He set up City Café (CC) as a sole trader 15 years ago. He purchased a building with \$10 000 he received from his grandfather and made it into a café. It is located in the centre of Main City, in country X. George works very hard and is willing to take risks. He creates his own recipes for the café and his customers like the food.

CC has been successful every year and George has always paid himself a high salary. However, he now wants to increase the profit from CC by expanding the café. It is already open every day from 08:00 to 20:00 and in order to serve more customers he needs a larger café. The café is located in a very busy shopping mall. George has undertaken some market research and found out that 50% of his customers visit the café every day. The other 50% of customers visit less frequently and are often attracted by the special menu items on the board outside the café.



George is considering two options for expansion.

Option 1:

Buy the building next door and make it into one larger café that can serve 50% more customers. The building became empty after a clothes shop closed. The cost of the shop is \$20 000 and it will cost \$10 000 for redecorating and building work.

Option 2:

Move to a new building 10 kilometres away in another part of the city. This building is twice as large as the existing café and will cost \$2 000 a year to rent as it is not for sale. George will be allowed to redecorate and he will need to buy equipment for the kitchen. The total cost for this will be \$5 000. It is in a busy part of the city with many shoppers visiting the area.

Appendix 1

Daily News
2018

2 February

The Government has forecast that interest rates will be increased later this year. This is very worrying for many local businesses that require finance. Country X has a fast growing economy and the Government does not want this to lead to higher inflation.

A multinational coffee shop chain wants to open cafés in malls all over country X, attracted by the high rate of economic growth. Local businesses are worried about the competition from this business as it benefits from economies of scale. Some market researchers think that customers will prefer to stay with their local café and not use an international style of café.

Appendix 2 Three applicants for the vacancy of chef (cook)

	Jim	Sally	Vera
Experience	6 years as a chef in a small café with some responsibility for managing the café	10 years as a chef in a large city centre restaurant	18 years as a chef in a high quality café in an expensive shopping mall
Age	25	35	40
Interests	Holidays abroad	Taking part in cooking competitions	Baking cakes and cooking
Qualifications	Health and safety qualification 3 IGCSEs	Qualified chef 6 IGCSEs	12 IGCSEs 2 Cambridge A Levels
Wage per hour in previous job	\$5	\$7	\$10

Appendix 3 Cash flow forecast for CC for the second half of 2018 (\$000)

	July	August	September	October	November	December
Cash from sales	10	15	10	5	5	4
Total cash inflows	10	15	10	5	5	4
Payment to suppliers	3	5	2	2	2	2
Fixed costs	4	4	4	4	4	4
Bank loan repayments	2	2	2	2	2	2
Total cash outflows	9	X	8	8	8	8
Net cash flow	1	4	2	(3)	(3)	(4)
Opening bank balance	1	2	6	8	5	2
Closing bank balance	2	6	Y	5	2	Z



4(a) Identify and explain **two** reasons why quality is important for CC.

Reason 1:.....

Explanation:.....

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Reason 2:.....

Explanation:.....

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Value Gym (VG)

Peter is a qualified fitness instructor. He used to work at a luxury gym in country X. Customers of this luxury gym pay a high monthly membership fee no matter how many times they visit. There are no additional fees.

Peter enjoys helping people get fit and lose weight and he enjoys teaching exercise classes. Peter wanted to help more people to get fit or build up their muscles so he decided to set up his own gym. Peter thought there was a demand for low priced gyms that allowed people to pay each time they used it rather than pay a high monthly fee. So he left his job and set up his own gym in a low income part of the city. Peter named his business Value Gym (VG) and opened it three months ago. Peter needed a large bank loan to help him set up his gym as he only had \$5 000 of his own money. He is a sole trader. He prepared a business plan to show the bank manager.

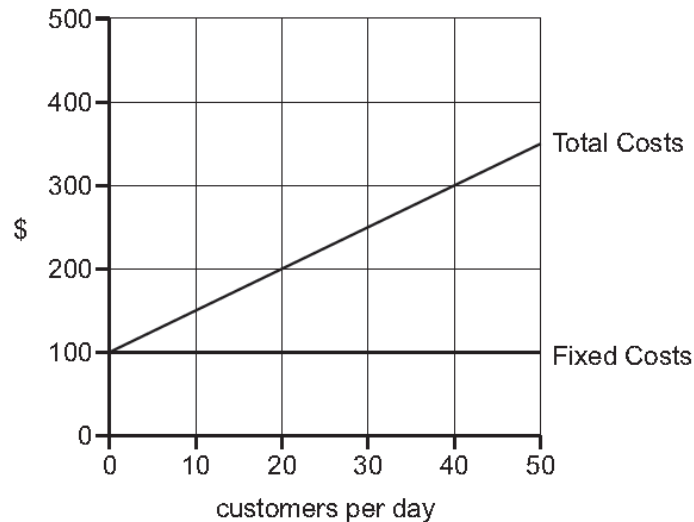
VG has been very successful and Peter is expecting to make a profit by the end of his first year as an entrepreneur. However, he still wants to attract more customers to the gym. He knows that marketing will be very important if his business is to expand.

Peter has estimated that VG will soon need 4 personal trainers to work in the gym. Peter has not decided whether to employ these personal trainers or to allow personal trainers who work for themselves to use VG's facilities for a fee. The gym is open from 0600 until 2200, 7 days a week. Customers pay for each day they use the gym. In addition customers can pay for a personal trainer if they want individual tuition.

Appendix 1



Appendix 2 Break-even chart for VG



Variable costs per customer = \$5

Price per day to use the gym = \$10

Maximum capacity of the gym = 50 customers per day

Appendix 3

City News

April 2018

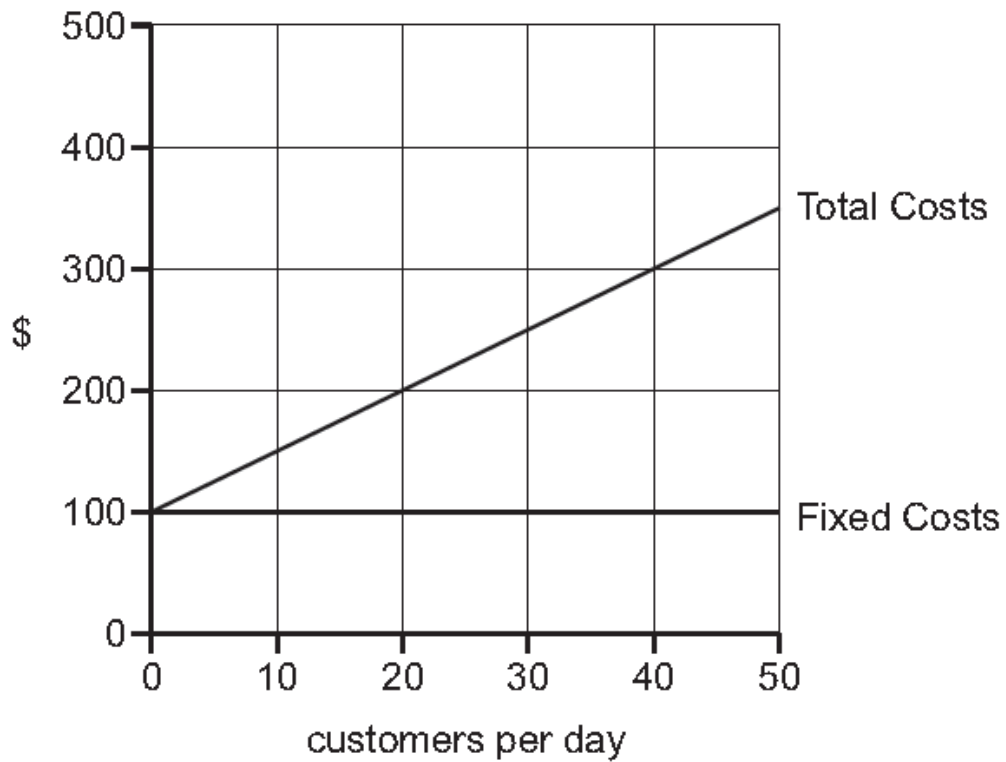
Demand for gyms is expected to increase

The government of country X is worried about the increasing health problems of the population. It wants more people to lose weight and get fit. This could make employees more productive and increase output for the businesses where they work.

A government grant is being given to anyone who owns a gym and has more than 20 customers a day. It is planned that the grants will be used to encourage more people to use a gym and get fit.

There is expected to be an increase in demand for personal trainers, especially to work in the evening. They will need to have qualifications in personal training to meet the health and safety regulations for working in a gym. Most personal trainers are paid the minimum wage. However it is expected that their wages will have to increase, as there will be a shortage of personal trainers until more people can gain qualifications in personal training.

3(b) (i) Refer to Appendix 2. Complete the break-even chart below by drawing the Total Revenue line. [1]



(ii) Identify the number of break-even customers per day

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[1]

(iii) Consider the following **two** ways Peter could use to try to increase profit. Recommend which way he should choose. Justify your answer.

Increase prices:.....

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Reduce variable costs:.....

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Recommendation:.....

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[10]

Question	Answer	Mark
3 (a)	<p>P & P has decided to use batch production to produce the new paint. Identify and explain two factors which may have influenced this decision.</p> <p>Knowledge [2 × 1] – award one mark for each relevant factor Analysis [2 × 1] – award one mark for a relevant explanation for each factor Application [2 × 2] – award two application marks for each factor</p> <p>Award one mark for each relevant factor (maximum of two), such as:</p> <ul style="list-style-type: none"> • Size of the output/ level of demand • Various styles of product made • Easier/quicker to respond to changes in demand • Not enough capital to use capital-intensive methods <p>Award a maximum of three additional marks for each explanation – 2 of which must be applied to this context – of the factor which may have influenced the decision to use batch production.</p> <p>Indicative response:</p> <p>Size of the output [k] as if a large output is not required then flow production will not be used as too many products will be produced (an). Paint has many colours and types and so only a certain quantity of one type will be needed (ap). P & P will produce a certain amount of, for example bathroom paint and then a certain amount of kitchen paint because the demand will not be high for all types of paint (ap).</p> <p>Possible application marks: different colours of paint; paint manufacturer; paint tins; large limited company; sells to large retailers; 150 production workers; employees live near to the factory; paid using time-rate and no fringe benefits; new waterproof paint; new machinery/equipment to make the paint; details of two options outlined in Appendix 2.</p> <p>There may be other examples in context which have not been included here.</p>	8

Question	Answer	Mark
4 (a)	<p>Identify and explain two reasons why batch production is suitable for BB.</p> <p>Knowledge [2 × 1] – award one mark for each relevant reason Analysis [2 × 1] – award one mark for a relevant explanation for each reason Application [2 × 2] – award two application marks for each reason</p> <p>Award one mark for each reason (maximum of two), such as:</p> <ul style="list-style-type: none"> • Demand for the product/The size of the market • The nature of the product • The size of the business • The nature of demand/seasonal or continuous <p>Award a maximum of three additional marks for each explanation – 2 of which must be applied to this context – of the reason.</p> <p>Indicative response:</p> <p>BB produce different styles of handbags (ap) and the demand for each style is not large (k) so a large output of each style of handbag is not required and batch production where the quantities produced are smaller is more suitable for BB's products. (an) BB's handbags are high quality and sold at high prices therefore this means the demand is not large. (ap)</p> <p>Possible application marks: small private limited company; manufactures leather handbags and belts; best quality leather; uses own brand name; sold to large retailers; leather purchased -same local business; supplier guarantees high quality leather; always delivered on time; skilled workers; wage costs are kept low by employing young workers to pack the products; demand for its handbags is price inelastic; loyal customers to the BB brand.</p> <p>There may be other examples in context that have not been included here.</p>	8

Question	Answer	Mark
4 (a)	<p>Identify and explain two reasons why quality is important for CC.</p> <p>Knowledge [2 × 1] – award one mark for each relevant reason Analysis [2 × 1] – award one mark for an explanation of each reason Application [2 × 2] – award two application marks for each reason</p> <p>Award one mark for each relevant reason (maximum of one each), such as:</p> <ul style="list-style-type: none"> • Establishes a brand image • Builds brand loyalty • Maintains a good reputation • Helps to increase sales • Attracts new customers • Can charge a higher price • Ensure food safety regulations are met • Avoids cost of dealing with defects/waste • Maintain or increase market share <p>Award a maximum of three additional marks for each explanation of the reason – 2 of which must be applied to this context.</p> <p>Indicative response:</p> <p>Maintains a good reputation (k) so that customers of the café will tell their friends how good it is. (ap) A good reputation should help ensure that the café maintains its existing customers and also increases sales. (an) The café already has 50% of its trade from regular customers so it is important to maintain the quality of the food and drinks to ensure this is maintained. (ap)</p> <p>Possible application marks:</p> <p>Set up as his own boss – café/restaurant; menu; 50% are repeat customers; cafe is located in shopping mall in Main City; creates his own recipes for the café; wants to expand the café and increase profit; cafe is open 6 days a week; advertises using menu board outside the café; details of the two options for expansion; multinational coffee shop chain wants to open cafes in country X. There may be other examples in context that have not been included here.</p>	8

Question

Answer

Mark

3 (b)

Refer to Appendix 2. Complete the break-even chart below by drawing the Total Revenue line.

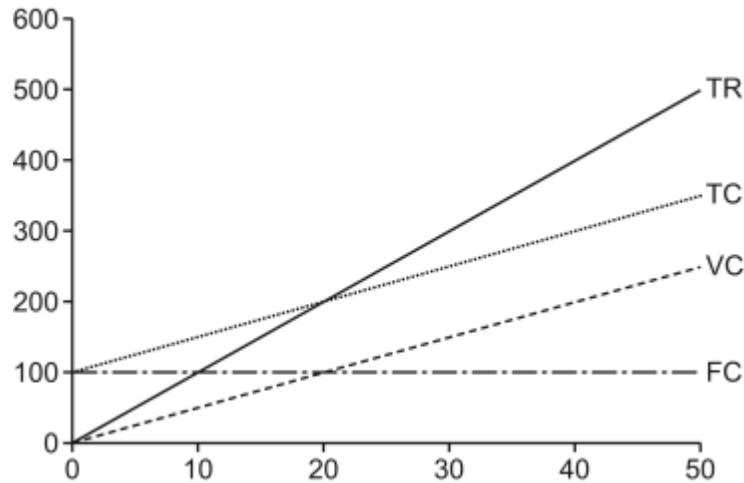
12

(i)

1 mark for correct TR line – starts at 0 and goes up to \$500
Identify the break-even number of customers per day.

(ii)

1 mark for break-even number of customers = 20



(iii)

Consider the following two ways Peter could use to try to increase profit. Recommend which way he should choose. Justify your answer.

Relevant points might include:

	Advantages	Disadvantages
Increase prices	<ul style="list-style-type: none"> • Increase in revenue if same number of gym members remain • Increase inflows of cash • Reduces break-even number of customers 	<ul style="list-style-type: none"> • Possible decreased demand – as situated in low income area – so overall effect may not be to increase revenue and inflows • Expect higher quality facilities so may need to invest in more equipment
Reduce variable costs	<ul style="list-style-type: none"> • Less outflows • Increased profit • Reduces break-even number of customers 	<ul style="list-style-type: none"> • Lower quality provision • Deter customers as perceived as reduced service

Question	Answer	Mark
	<p>Level 1 [1–3 marks]</p> <p>Outline of advantages and disadvantages of each option. (max of 3 marks)</p> <p>E.g. Increasing prices will increase inflows from increased revenue.</p> <p>Level 2 [4–6 marks]</p> <p>Detailed discussion of advantages and disadvantages of each option. 1 × L2 explanation can gain 4 marks and a further mark can be awarded for each additional L2 explanation (max 6 marks)</p> <p>E.g. Increasing prices will increase inflows from increased revenue which will help to increase the profit at the gym. However, if prices are much higher than similar competing gyms then VG will lose customers and cash inflows will fall.</p> <p>Level 3 [7–10 marks]</p> <p>For L3 to be awarded there needs to be at least two L2 marks awarded and then a recommendation that justifies which option to choose.</p> <p>7–8 marks for limited judgement shown in recommendation as to which option to use OR why the alternative option is not chosen.</p> <p>9–10 marks for well justified recommendation as to which option to use AND why the alternative option is not chosen.</p> <p>Note: Do not award application marks in (iii)</p>	