

Unit 5 Operations management

5.5 Production planning (HL only)

- 1 John Sprague runs a nightclub in Singapore. The firm's total costs amount to \$98 000 per month, with labour costs totalling \$52 000 per month. Rent and overheads are \$11 500 per month and the remaining costs are for hiring state-of-the-art sound systems. On an average night, the club has 261 guests but has a maximum capacity of 300.
- a Calculate the firm's capacity utilization rate. [2]
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- b Calculate the labour intensity rate for John Sprague's business. [2]
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- c Calculate the capital intensity rate for John Sprague's business. [2]
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- 2 *Lucy Clark's Shoes Co.* has fixed costs of \$6 000 a month. The firm can produce a maximum of 2 000 pairs of shoes per month. The variable costs are \$20 per unit and its shoes are sold for an average price of \$80. The current level of demand for the firm's shoes is 1 600 units per month.
- a Calculate the capacity utilization rate for *Lucy Clark's Shoes Co.* [2]
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- b Calculate *Lucy Clark's Shoes Co.*'s fixed costs per unit at 1 600 units of output and at its maximum capacity. [3]
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- c Calculate *Lucy Clark's Shoes Co.*'s profit margin at 1 600 units of output and at its maximum capacity. [3]
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- d Calculate the difference in profit if *Lucy Clark's Shoes Co.* could operate and sell all of its products at its productive capacity. [3]

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- 3 Study Table 5.5.1 for two real estate firms selling residential property during a typical weekend. The number of properties sold and the number of real estate agents (sales staff) involved are also shown.

Firm	Total sales (\$)	Properties sold	Sales staff
<i>Au Property Co.</i>	5 000 000	10	12
<i>Konrad Real Estate</i>	4 200 000	12	10

Table 5.5.1

- a Calculate the labour productivity rate as measured by sales per worker for both firms. [3]

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- b Use the information above to explain why it might be difficult to determine whether *Au Property Co.* or *Konrad Real Estate* is the more productive firm. [4]

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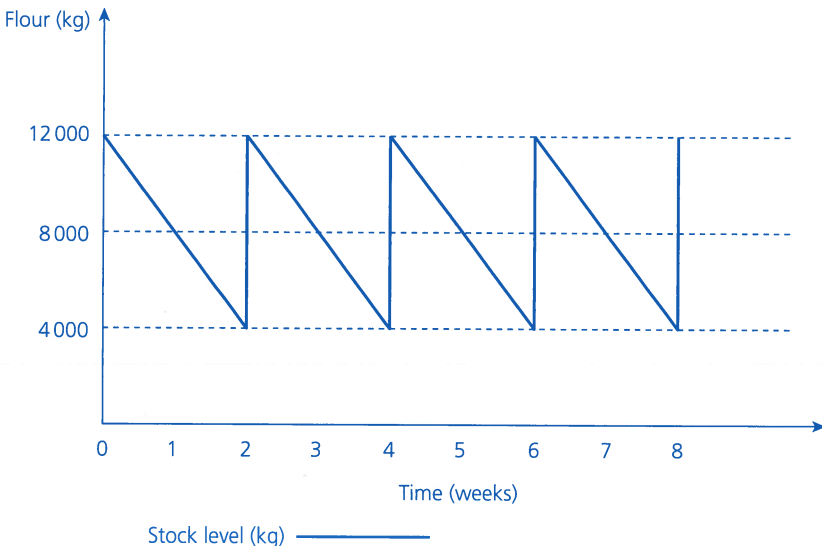
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- 4 *Ben Boyd Bakery* sells its products to well-known supermarkets in Sydney, Australia. The firm uses a just-in-case (JIC) stock control system, as shown in the diagram below.



a Define the term *just-in-case (JIC)* stock control system. [2]

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b With reference to the stock control diagram on the previous page, state the value of the following for *Ben Boyd Bakery*:

i The lead time. [1]

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ii The buffer stock. [1]

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iii The reorder quantity. [1]

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iv The reorder level. [1]

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5 *Ollie Judkins Tiles* can purchase the necessary capital equipment for in-house production for \$15 000 and manufacture the tiles for \$1 each. Alternatively, a local supplier can produce the tiles for \$1.50 each. Demand for the tiles is forecast to be 25 000 units.

a Define the term *make-or-buy decision*. [2]

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b Calculate the cost to make and the cost to buy, and comment on your findings. [4]

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Mock exam practice paper

Each question is worth [10 marks]. Write your answers in the boxes provided.

1. *Supreme Skateboards* is a small business that specializes in producing bespoke skateboards. Data from the latest financial information for the business are listed below:
- Annual sales revenue = \$56 250
 - Annual expenses = \$10 000
 - Net profit after interest and tax = \$20 000
 - Sales volume = 750 skateboards per year

Market research suggests that a 10% increase in the average price of its bespoke skateboards will reduce demand by just 5%. Hence, the business is considering whether to raise its prices.

- (a) Calculate the following for *Supreme Skateboards*:

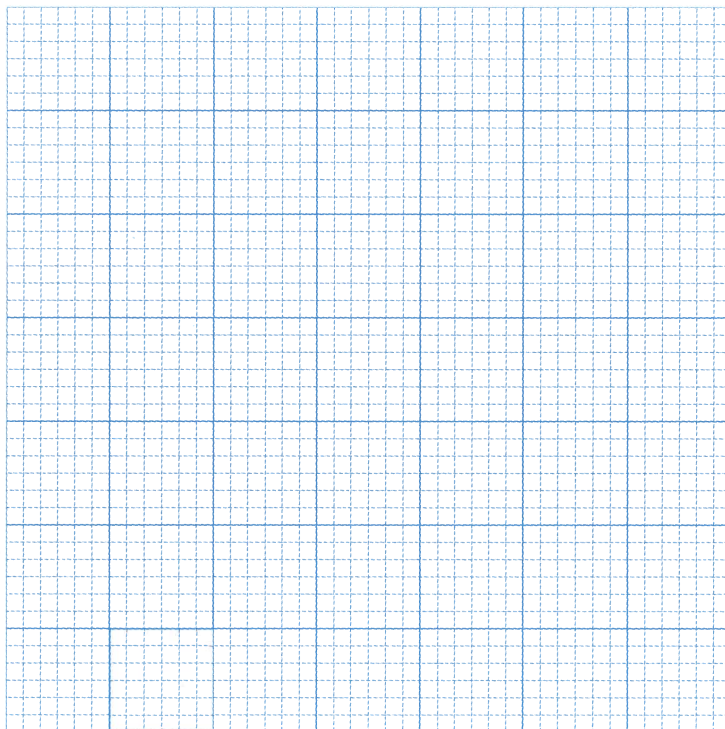
- (i) average price of each skateboard [2]

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- (ii) variable cost per skateboard [2]

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- (b) Construct a fully labelled break-even chart for *Supreme Skateboards*. [4]



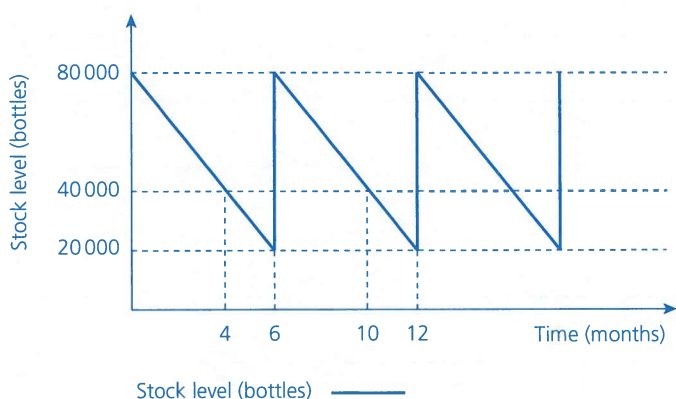
- (c) Calculate the change in expected profits if *Supreme Skateboards* increases its average price by 10% and demand falls by 10%. [2]

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2. *Victoria L. Wines (VLW)* is a large importer of fine wines in southern France. With large-scale operations, *VLW* benefits from **economies of scale**. *VLW* uses a traditional just-in-case stock control system, relying on large stockpiles of its wines. Its stock control chart is shown below.



- (a) Define the term **economies of scale**. [2]

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- (b) Using the stock control chart for *VLW*, state the following:

- (i) reorder quantity [1]

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- (ii) reorder level [1]

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(iii) lead time [1]

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(iv) buffer stock level [1]

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(c) Explain **two** costs of stockpiling to businesses such as *VZW*. [4]

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3. *Gel Nails* produces a range of nail beauty products for multinational retailers. With operations currently only in China, *Gel Nails* is considering expanding its production in one of three locations: Vietnam, Indonesia or Thailand. The estimated costs and benefits of these three options are shown in **Table 1**, with the probabilities of success, no change and failure also shown.

Option	Outcome	Chance (%)	Potential return (\$ million)	Cost of project (\$ million)
Vietnam	Success	45	25.0	12.5
	No change	30	20.0	
	Failure	25	12.0	
Indonesia	Success	55	22.0	10.5
	No change	20	12.5	
	Failure	25	8.5	
Thailand	Success	50	20.0	14.5
	No change	25	10.0	
	Failure	25	-2.0	

Table 1

(a) State **two** features of multinational companies. [2]

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(b) Construct a fully labelled decision tree and calculate the predicted outcome for each option presented to *Gel Nails*. [6]

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(c) Explain **one** other financial or non-financial factor that *Gel Nails* needs to consider before choosing any of these locations to expand into. [2]

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4. Dany Huang is a franchisee of *Big Bao*. The business specialises in the sale of Vietnamese fresh food and snacks. *Big Bao* only accepts cash payments. Dany Huang has produced a cash flow forecast for his business, shown in **Table 2**. In December, he pays workers 50% extra as an end-of-year bonus.

	Sept (\$)	Oct (\$)	Nov (\$)	Dec (\$)
Cash sales	20 000	18 500	19 500	22 500
Cash inflow	20 000	18 500	19 500	22 500
Direct costs	8 000	7 400	7 800	9 000
Expenses	3 000	3 000	3 000	3 000
Salaries	8 000	8 000	8 000	12 000
Cash outflow	19 000		18 800	24 000
Net cash flow		100	700	-1 500
Opening balance	200	1 200		2 000
Closing balance	1 200	1 300	2 000	

Table 2

- (a) Define the term **franchise**. [2]

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- (b) State the value of the following:

- (i) net cash flow in September [1]

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- (ii) cash outflow in October [1]

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- (iii) opening balance in November [1]

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- (iv) closing balance in December [1]

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- (c) Using the figures in the cash flow forecast, comment on the liquidity position of *Big Bao*. [2]

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- (d) Calculate the profit earned by Dany Huang for the period September to December. [2]

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5. *Mustang Motors Inc. (MMI)* is a business specializing in servicing, repairing and restoring Ford Mustang cars and other similar sports cars. Excerpts from the firm's financial information, as at 31st December 2019, are shown in **Table 3**.

Accumulated depreciation	\$25 000
Accumulated retained profit	\$14 000
Cost of sales	\$60 000
Current assets	\$33 000
Current liabilities	\$22 000

Expenses	\$35 000
Fixed assets	\$250 000
Long-term liabilities	\$120 000
Sales revenue	\$125 000
Share capital	\$80 000

Table 3

- (a) Construct a profit and loss account for *MMI* from the financial information given above. [4]

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(b) Calculate the following for *MMI*:

(i) working capital [2]

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(ii) net profit margin (NPM) [2]

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(iii) return on capital employed (ROCE) [2]

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