Exercise walk-through

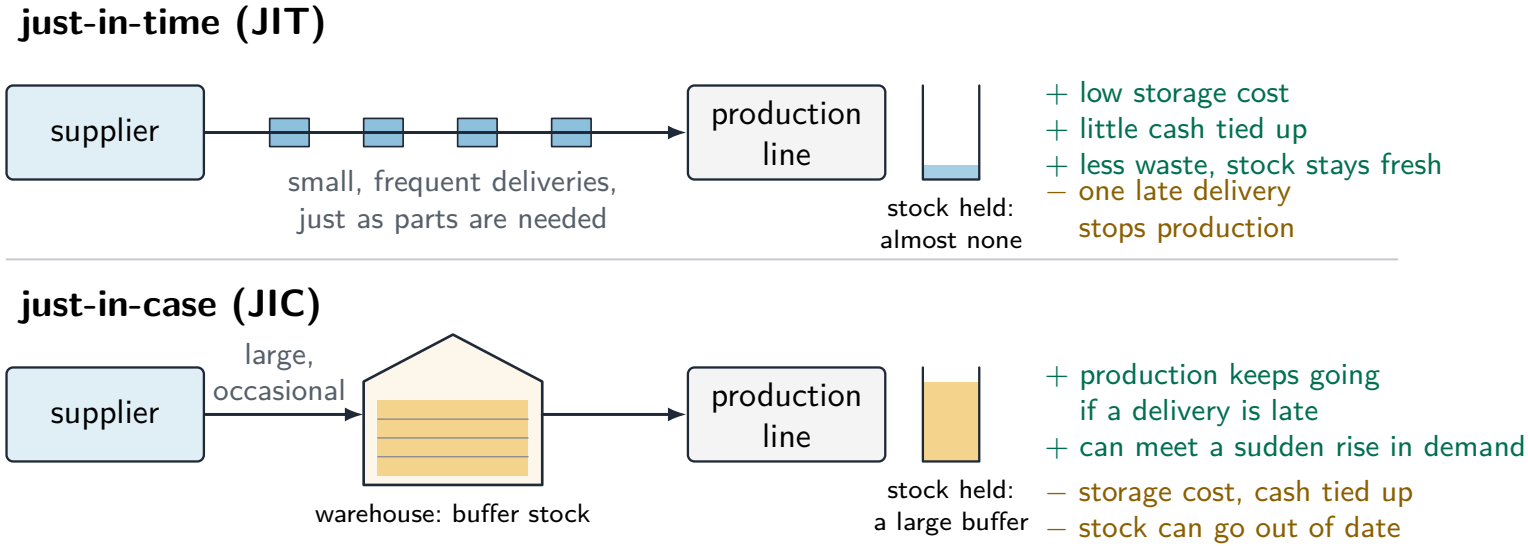
5.3
Production planning

International Baccalaureate · IB Diploma · Business Management · HL

Operations management

- explain the role of operations and **value added**, and compare job, batch, **mass production** and **mass customisation**;
- analyse the factors that decide where a business locates, including outsourcing and reshoring;
- calculate contribution, break-even output, the margin of safety, target output and target price;
- at HL, explain lean production and quality management, plan stock and capacity, and evaluate crisis management, R&D and information systems.

Figure: Production planning (HL)



- JIT: small, frequent deliveries and almost no stock.
- JIC: large deliveries and a **buffer stock**.

Sources for this lesson

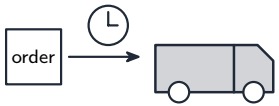
- International Baccalaureate, *Business Management guide* (first assessment 2024).
- Toyota Motor Corporation, reports on the 2011 Great East Japan Earthquake and its supply-chain recovery; Reuters reporting on Toyota's chip stocks (2021).
- T. Ohno, *Toyota Production System: Beyond Large-Scale Production* (1988).
- International Organization for Standardization, ISO 9001:2015 ***Quality** management systems*.

Exercises 2.1·2.2

2.1 Define **buffer stock**. [2]



2.2 Define **lead time**. [2]



Exercises 2.1·2.2

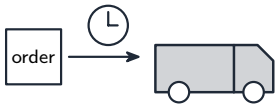
2.1 Define **buffer stock**. [2]



2.1

the minimum level of stock kept; to meet demand if a delivery is late or demand rises unexpectedly

2.2 Define **lead time**. [2]

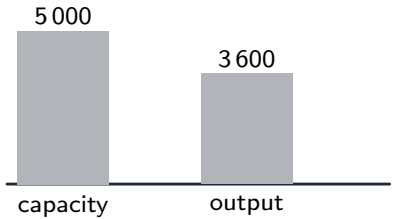


2.2

the time between placing an order for stock; and receiving it

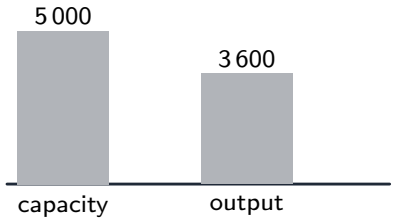
Exercise 2.3

2.3 A kitchen can produce 5 000 meals a week. Last week it produced 3 600. Calculate its capacity utilization, and explain **one** problem of low capacity utilization. [4]



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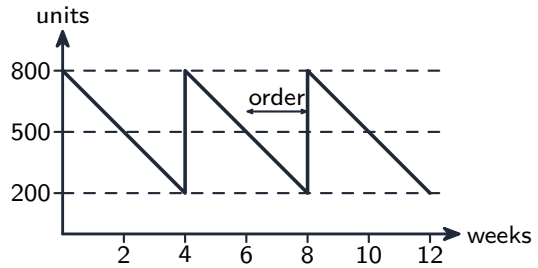


2.3

3 600 ÷ 5 000 × 100 = **72**%; problem: fixed costs are spread over fewer meals, so average cost per meal is high; explained, e.g. lower profit margin or higher prices than rivals

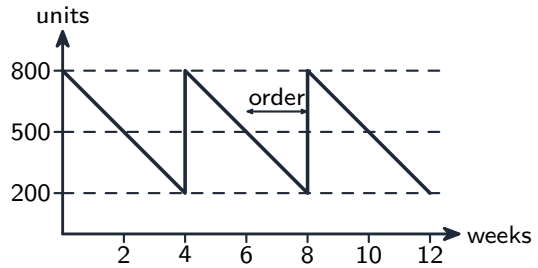
Exercise 2.4

2.4 Using the stock control chart, identify the maximum stock, buffer stock, reorder level and lead time. [4]



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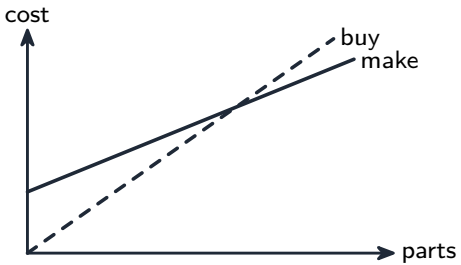


2.4

maximum stock 800 units; buffer stock 200 units; reorder level 500 units; lead time 2 weeks

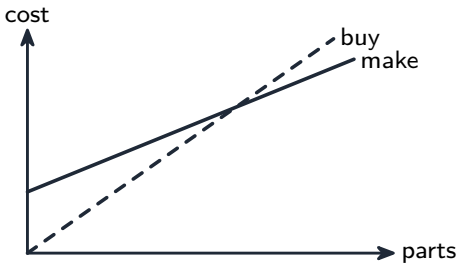
Exercise 2.5

2.5 A firm needs 2 000 parts. Making them costs \$10,000 fixed plus \$6 per part; buying them costs \$10 per part. Calculate the cost to make and the cost to buy, recommend one option, and find the quantity at which both costs are equal. [4]



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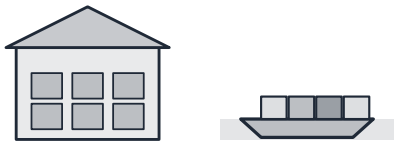
2.5

CTM $= 10\,000 + 6 \times 2\,000 =$ \$**22 000**; CTB $= 10 \times 2\,000 =$ \$**20 000**; buy, as it is \$2,000 cheaper; equal when $10\,000 + 6Q = 10Q$, so $Q =$ **2 500** parts

Exercise 3.1 (a)

3.1 AutoParts Co. makes brake parts for car makers. It holds three weeks of stock of steel and rubber (just-in-case). The new operations manager wants to switch to just-in-time, with daily deliveries from suppliers in another country. Last year a blocked port delayed supplies for ten days.

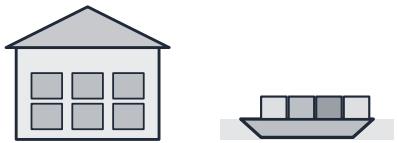
(a) Distinguish between just-in-time and just-in-case stock control, giving **one** advantage of each. [4]



Exercise 3.1 (a)

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(a) Distinguish between just-in-time and just-in-case stock control, giving **one** advantage of each. [4]



(a) JIT: stock arrives only when needed for production; advantage: lower storage costs, less cash tied up; JIC: extra stock is kept in case of problems; advantage: production continues if deliveries are late or demand rises

Exercise 3.1 (b)

3.1 AutoParts Co. makes brake parts for car makers. It holds three weeks of stock of steel and rubber (just-in-case). The new operations manager wants to switch to just-in-time, with daily deliveries from suppliers in another country. Last year a blocked port delayed supplies for ten days.

(b) Discuss whether AutoParts Co. should switch to just-in-time. [10]

Exercise 3.1 (b)

3.1 AutoParts Co. makes brake parts for car makers. It holds three weeks of stock of steel and rubber (just-in-case). The new operations manager wants to switch to just-in-time, with daily deliveries from suppliers in another country. Last year a blocked port delayed supplies for ten days.

(b) Discuss whether AutoParts Co. should switch to just-in-time. [10]

(b) award up to [10]: JIT cuts storage costs and frees cash from three weeks of stock; less waste and damage of stored materials; car makers often use JIT, so AutoParts may need to match their methods; but suppliers are abroad, so lead times are long and risky; the blocked port shows that a ten-day delay would stop production under JIT; late parts could stop customers' assembly lines and lose contracts; possible compromise: JIT for local or reliable inputs, buffer stock for imported ones / find local suppliers; judgement linked to the case