Supply Chains teacher pack

Find the constraint, define the measurement and separate an order from its physical journey.

For learners around age 14 and curious adults. Three 40-minute sessions. Use with the current AHA Supply Chains manuscript. References use chapter titles so they work in both print and ebook.

Learning goals

Find the constraint, define the measurement and separate an order from its physical journey.

Use the terms lead time; throughput; inventory; bottleneck; forecast; reorder point. Show the reasoning behind an answer and identify where the example stops applying.

Reading route

1. The slowest necessary step

2. When to place the next order

3. A small rule connecting time and inventory

Teaching plan

Session 1: Ask the opening question before reading (5 minutes). Read the first selected chapter together (15). Draw the mechanism or compare two possible explanations (15). End with a one-sentence explanation (5).

Session 2: Read the remaining selected material (10 minutes). Complete the worksheet individually, then compare reasoning in pairs (20). Discuss the common wrong turn (10).

Session 3: Revisit one uncertain answer (10 minutes). Try the extension (15). Give a two-minute explanation without the book (10). Use the exit question (5).

Materials and access

Paper, pencil, the book and an optional calculator. Read diagrams aloud, allow spoken or drawn responses, and give extra time for vocabulary. No real accounts or specialist equipment are needed.

Supply Chains learner worksheet

Opening question

If one factory station becomes twice as fast, must the whole factory produce twice as much?

Investigation

A fictional paper factory has three necessary stations with capacities of 12, 8 and 10 items per hour. Assume steady operation and no other constraints. In a second stable system, throughput averages 5 items per hour and average flow time is 3 hours.

1. What limits the first factory's throughput?

Show your reasoning, label units or evidence, and state any assumptions.

2. Would speeding the 12-item station to 24 raise the maximum throughput?

Show your reasoning, label units or evidence, and state any assumptions.

3. What average inventory follows from the second example?

Show your reasoning, label units or evidence, and state any assumptions.

Transfer question

If demand averages 4 items a day and replenishment takes 3 days, expected lead-time demand is 12 items, before any safety stock.

Exit question

What would you now check before accepting a claim about this topic? Name one specific check and explain why.

Supply Chains answers and teaching notes

Answer 1

The 8-item-per-hour station is the bottleneck, so throughput cannot exceed 8 per hour under the assumptions.

Answer 2

No. The 8-item station remains the constraint.

Answer 3

By Little's law, average inventory = 5 × 3 = 15 items, using consistent boundaries and a stable long-run system.

Common wrong turn

A shipping label is not evidence that the carrier has the parcel. A forecast is an estimate, not a guarantee.

Extension discussion

If demand averages 4 items a day and replenishment takes 3 days, expected lead-time demand is 12 items, before any safety stock.

Assess the explanation

Give one point each for a correct conclusion, visible reasoning, correct units or evidence, and a relevant limitation. A correct number with no explanation is not a complete answer. Accept equivalent wording and well-supported alternative interpretations where the question allows them.

If the learner gets stuck

Return to the diagram or the smallest example. Ask what is being counted, compared or transferred. Let the learner revise the answer after explaining the mistake; do not reward speed over understanding.

Family connection

Draw a made-up order's product, money and information paths. Avoid using a child's real address or tracking number.