

Replenishment stock: lead time and uncertainty

Reconcile usable stock and replenishment events, identify lead-time uncertainty, and assemble the evidence needed before approving a stock policy.



Shelf space did not determine the refill delay

Fictional staff pantry: storekeeper Jo has repeated paper-cup shortages despite a marked shelf. The shelf limit was chosen because four boxes fit. Jo follows three replenishment cycles to distinguish usable stock, orders in transit and actual refill delay. This extends a conceptual stock envelope; it does not supply an approved safety-stock formula.

Your role and the reference condition

Inventory owner with purchasing and the people consuming the item.

Normal: The controlled stock and replenishment rule support the agreed service need without excessive aged stock or unsuitable handling.

Gap: Physical capacity has been mistaken for evidence of required inventory.

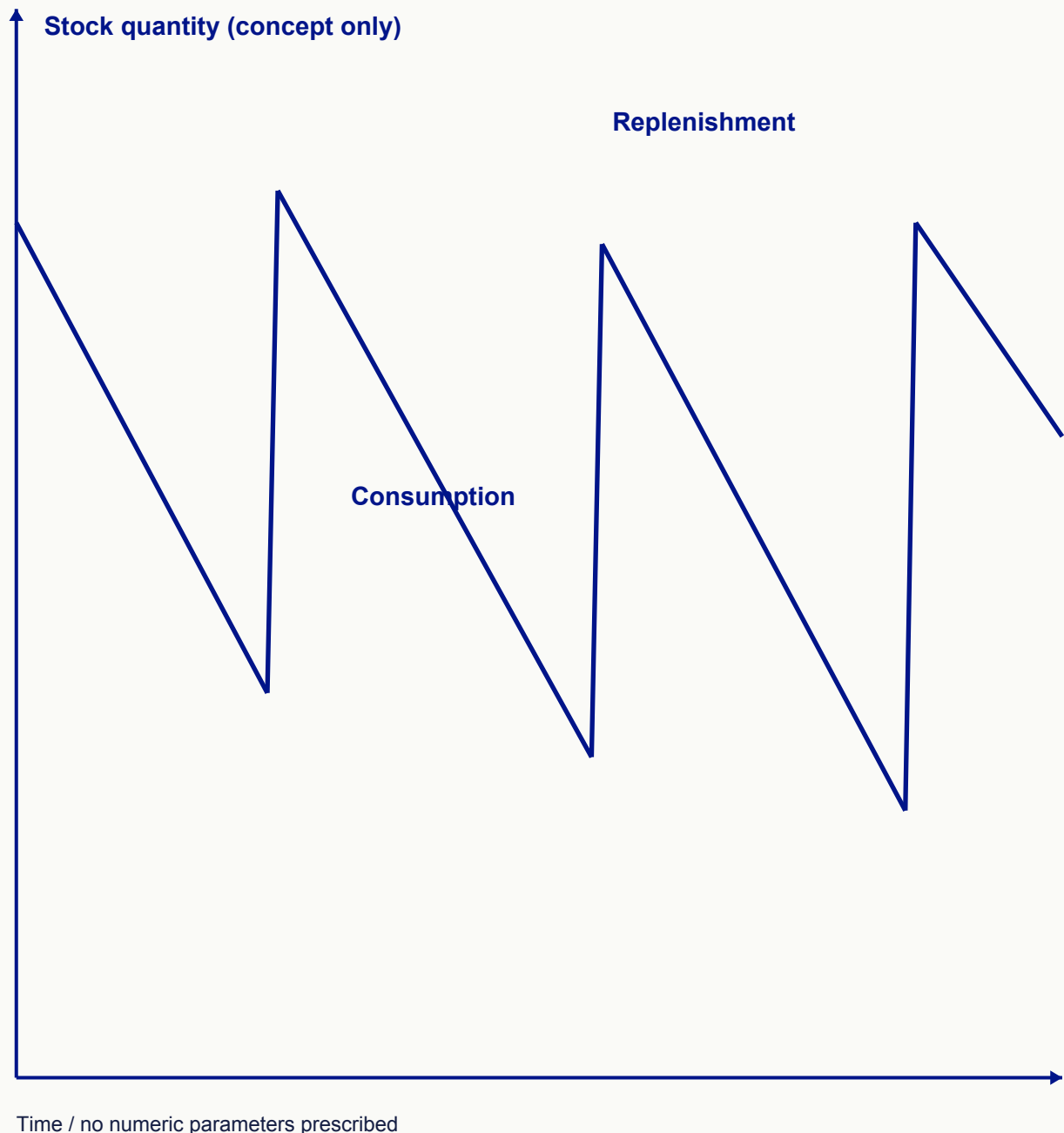
Work within these conditions

1. Cup counts, box counts and timestamps must use consistent units.
2. The small supplied sample is not sufficient to set a service-level guarantee or final stock parameters.

Fictional teaching case. Supplied observations support the exercise; proposed actions are not verified customer results.

See how the method works

Stock should protect a defined service need during replenishment, with assumptions that can be checked. Observe how quickly an item is used, how long a refill actually takes, and how variable both are. Check the accuracy of on-hand stock and outstanding orders before setting provisional bounds. Trial the rule, record shortages and excess, and adjust from evidence. Shelf space alone is not a demand model. Freshness, handling and supplier pack sizes may constrain the choice. Keep the previous pantry arithmetic as an example of a decision rule, not as universal settings for unrelated items or sites.



Conceptual stock depletion and replenishment over time; no numeric stock parameters are prescribed.

Follow the evidence and decisions

Inspect the supplied case inputs

Observation	Supplied fictional evidence
Usable stock now	30 cups
Confirmed incoming order	40 cups; not yet received
Damaged stock	10 cups; not usable
Cycle 1	Replenishment delay 2 working days; consumption during delay 20 cups
Cycle 2	Delay 3 working days; consumption 36 cups
Cycle 3	Delay 4 working days; consumption 44 cups

01 / Count what can actually be used

Jo reconciles the 30 usable cups, 10 damaged cups and 40 on order. She records them separately rather than reporting 80 cups available now.

Why: A total across different statuses obscures the service risk. Incoming stock cannot satisfy today's need until it arrives and is eligible.

Evidence / check: Available now: 30; damaged: 10; incoming: 40.

02 / Measure the complete replenishment delay

For each cycle, record the actual signal time and time the received cups become usable at the point of use. Include ordering, delivery and put-away delays inside that boundary.

Why: Supplier transit alone can understate the period the stock must cover. The conceptual stock curve needs an operational clock.

Evidence / check: Observed working-day delays: 2, 3 and 4.

03 / Pair consumption with its own delay

Link each delay to consumption during that same interval: 20, 36 and 44 cups. Keep exceptional causes and demand conditions attached to their cycle.

Why: Combining an average demand with an unrelated nominal lead time can conceal the observed variation. Three points are evidence to investigate, not a distribution model.

Evidence / check: The longest observed cycle also consumed 44 cups; this is an observation, not a recommended buffer.

04 / State what remains needed for sizing

Agree the required service, review cycle, order constraints, freshness/space/handling limits and reliable stock records. Obtain representative consumption and delay evidence before selecting parameters.

Why: A stock policy trades availability against inventory and practical constraints. Shelf capacity alone answers only the physical storage question.

Evidence / check: Parameter decision remains open with named missing inputs and owners.

05 / Test and revise an approved policy visibly

Once the owner approves a bounded trial, record signal, on-order quantity, receipts, stockouts and aged stock. Investigate missed or duplicate signals before simply adding stock.

Why: A replenishment problem can come from inaccurate records or slow response, not only insufficient quantity.

Evidence / check: A learning record links any parameter change to service and inventory outcomes.

Completed stock and evidence review

Field	Reconciled result	Implication
Available now	30 cups	Do not include damaged/incoming
Incoming	40 cups	Track receipt and eligibility
Observed delay	2-4 working days	Nominal delay alone is insufficient
Consumption during delay	20 / 36 / 44 cups	Retain paired observations
Approved parameters	Not supplied	No safety-stock recommendation

The incoming order is delayed

Purchasing reports that the 40 cups will arrive later than confirmed; the usable count remains 30.

Decision

Update the expected receipt and communicate the service risk using the current usable stock and expected demand; apply the approved shortage response.

Reasoning

Changing a due date does not create stock. Do not quietly mark an order received to make the display look healthy.

What would change the decision?

Revised receipt expectation, communication owner and actual stock remain traceable.

Practise with a changed case

Another item with an inaccurate total

Separate fictional pantry item: 18 usable sachets, six damaged sachets and 24 confirmed on order. Prior refill delays are one and three working days, with consumption of 10 and 28 sachets during those intervals.

Input	Value
Usable / damaged	18 / 6 sachets
Incoming	24 sachets
Delay/consumption pairs	1 day / 10; 3 days / 28

Your task

1. Reconcile available-now stock and state what the 48-item sum conceals.
2. Explain why "keep 28" is not a fully supported service policy.
3. Name the next evidence and a record-control check.

Use the next page to record your reasoning before reading the answer.

Your practice worksheet

Another item with an inaccurate total

Stock by eligibility/status

Complete delay boundary

Paired consumption

Service and order constraints

Parameter decision and owner

Complete your reasoning before turning to the answer. Use the separate learner workbook for group practice.

Check your reasoning and transfer it

1. Available now is 18 sachets, not 48. Six are damaged and 24 are not yet received.
2. The largest supplied observed interval consumption is 28, but two cycles do not establish a service guarantee or account for review frequency, variability and order constraints.
3. Verify physical versus recorded stock and signal/receipt timestamps; gather representative paired data and agree the service objective before approving a trial.

Suggested completed record

Status / observation	Quantity	Meaning
Usable	18	Available now
Damaged	6	Exclude from eligibility
Incoming	24	Not available until received
Observed consumption	10 and 28	Evidence, not approved stock target

Plausible wrong turns

1. A shelf limit is not a demand-based parameter.
2. The largest of a few observations is not automatically a statistically justified safety stock.

Evidence of a sound answer

1. Separate eligibility and on-order status.
2. Retain uncertainty rather than prescribing an unsupported number.
3. Connect sizing to service and replenishment controls.

Take the learning back to work

Commitment	Agreed follow-through
Owner	Inventory and replenishment owner
Record	Stock-status reconciliation and signal-to-usable-receipt history
Review	Across representative cycles and at the agreed policy review
Verification evidence	Service outcome, stock accuracy, delay variation and excess/aged stock
If unresolved	Correct signal or receipt controls, obtain missing evidence and review parameters through the owner.

Help someone else apply the method

Prepare

1. Stock-status tokens and a signal-to-receipt timeline
2. Paired observation table and missing-input checklist

Minutes	Activity and coaching prompt
4	Reconcile the shelf Which cups could a user take now?
8	Trace replenishment clocks When does an incoming cup actually become available?
8	Review the sachet variant Why is the largest observed consumption not the complete answer?
5	Plan data collection What service decision must the owner make?

Debrief

1. Distinguish physical storage capacity from a replenishment rule.
2. Ask learners to identify a record error that more stock would conceal.

Individual or remote practice

Reconcile statuses first, then connect each consumption count to its own delay interval.

Connect the method and check its boundaries

Before application

1. Stable item identity
2. Stock and on-order accuracy

Outside this lesson

1. Min/max is not arbitrary shelf fullness
2. Illustrative buffers are not universal settings

LEI: Supermarket

LEI: Supermarket

Predetermined stock locations and consumption-triggered replenishment

Method reference; original OPEX scenario and diagram are synthetic teaching content, not source case results.

[Open this lesson and its visual aids](#)