10.3 Inventory

Name: _____ Class: _____ Date: _____ **Total: 15 marks**

KEY WORDS economic order quantity • reorder point

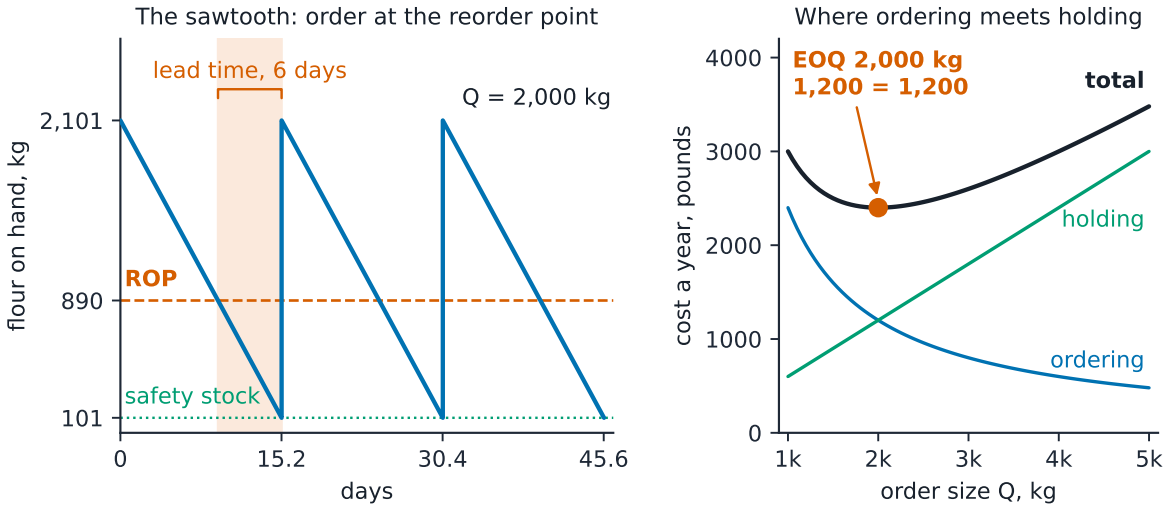
Objective

Compute the EOQ and its costs, set a reorder point with a service level, and check a quantity discount honestly.

1 Key knowledge and worked examples

■ EOQ and ROP

$EOQ = \sqrt{2DS/H}$; at the EOQ, ordering = holding. $ROP = d \times LT + z\sigma_d\sqrt{LT}$. A discount is checked on total cost: purchase + ordering + holding.



Order at the reorder point, not when the bin looks empty

■ Worked example. Flour

$\sqrt{2 \times 48{,}000 \times 50/1.20} = 2{,}000$ kg ✓; ROP $789 + 101 = 890$ ✓; the 2% discount at 4,000 kg saves 1,320 ✓.

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2 Practice

2.1 Sugar: 30,000 kg a year, 60 an order, 1.60 a kg a year to hold. The EOQ and the orders a year. [4]

2.2 Annual ordering and holding cost at the EOQ. [2]

2.3 Lead time 5 days, daily demand sd 12 kg, service level 97.5% ($z = 1.96$). Lead-time demand, safety stock and the reorder point (nearest kg). [5]

2.4 The supplier offers 3% off the 0.80 a kg price for orders of 3,000 kg. Total cost at the EOQ and at 3,000 kg; decision. [4]

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