Solutions

2.1

- $\sqrt{2 \times 30{,}000 \times 60/1.60} = \sqrt{2{,}250{,}000} = 1{,}500$ kg.
- $30{,}000/1{,}500 = 20$ orders a year.

2.2

- Ordering $20 \times 60 = 1{,}200$; holding $750 \times 1.60 = 1{,}200$ - equal, as the EOQ requires.

2.3

- Daily $30{,}000/365 = 82.2$ kg; lead-time demand $82.2 \times 5 = 411$ kg.
- $\sigma_{LT} = 12\sqrt{5} = 26.8$; safety stock $1.96 \times 26.8 = 53$ kg.
- $ROP = 411 + 53 = 464$ kg.

2.4

- EOQ: purchase $24{,}000 + 1{,}200 + 1{,}200 = 26{,}400$.
- 3,000 kg: purchase $23{,}280$ + ordering $10 \times 60 = 600$ + holding $1{,}500 \times 1.60 = 2{,}400$ $= 26{,}280$.
- Saves 120 a year - take it, but only just; a 2.5% discount would break even.

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