

Example 3 lecture

Chosen as EOQ at 0% discount previously

Order quantity 800 units

$$\text{Number of orders} = \text{demand for desks} \div \text{order quantity} = 40,000 \div 800 = \underline{50}$$

$$\text{Average Stock} = \text{order quantity} \div 2 = 800 \div 2 = \underline{400}$$

$$\text{Re-order cost per annum} = \text{number of orders} \times \text{cost of ordering} = 50 \times 20 = \underline{1,000}$$

$$\text{Stock holding cost p.a.} = \frac{\text{average stock} \times \text{cost of holding stock}}{\% (10\%) \text{ of inventory value}} = \frac{400 \times 75}{10} = \underline{1,000}$$

$$\text{Total stock cost p.a.} = \text{re-order cost p.a.} + \text{stock holding p.a.} =$$

$$\text{Purchase cost p.a.} = \text{demand for desks} \times \text{cost of each desk} = 40,000 \times 925 = 1,000,000$$

$$\text{Total cost p.a.} = \text{reorder cost} + \text{stock holding cost} + \text{purchase p.a.} = 1,000 + 1,000 + 1,000,000 = \underline{1,002,000}$$

Order quantity 5,000 units

$$\text{Number of orders} = \text{demand for desks} \div \text{order quantity} = 40,000 \div 5,000 = \underline{8}$$

$$\text{Average stock} = \text{order quantity} \div 2 = 5,000 \div 2 = \underline{2,500}$$

$$\text{Reorder cost per annum} = \text{number of orders} \times \text{cost of reordering} = 8 \times 20 = \underline{160}$$

$$\text{Stock holding cost p.a.} = \frac{\text{average stock} \times \text{cost of holding stock}}{\% (10\%) \text{ of inventory value}} = \frac{2,500 \times 75}{10} = \underline{6,188}$$

$$\text{Discount offered per desk } 1\% \text{ So: original desk value} \times \% \text{ value left} = 25 \times 0.99 = 24.75$$

$$\text{Purchase cost per annum} = \text{demand for desks} \times \text{cost of each desk} = 40,000 \times 24.75 = \underline{990,000}$$

$$\text{Total cost p.a.} = \text{reorder cost p.a.} + \text{stock holding cost} + \text{purchase p.a.} = 160 + 6,188 + 990,000 = \underline{996,348}$$

Order quantity 10,000 units

$$\text{Number of orders} = \text{demand for desks} \div \text{order quantity} = 40,000 \div 10,000 = \underline{4}$$

$$\text{Average stock} = \text{order quantity} \div 2 = 10,000 \div 2 = \underline{5,000}$$

$$\text{Reorder cost per annum} = \text{number of orders} \times \text{cost of ordering} = 4 \times 20 = \underline{80}$$

$$\text{Stock holding cost p.a.} = \frac{\text{average stock} \times \text{cost of holding stock}}{\% (10\%) \text{ of inventory value}} = \frac{5,000 \times 24.625}{10} = \underline{12,313}$$

$$\text{Discount offered per desk } 1.5\% \text{ So: original desk value} \times \% \text{ value left} = 25 \times 0.985 = 24.625$$

$$\text{Purchase cost per annum} = \text{demand for desks} \times \text{cost of each desk} = 40,000 \times 24.625 = \underline{985,000}$$

$$\text{Total cost p.a.} = \text{reorder cost p.a.} + \text{stock holding cost} + \text{purchase p.a.} = 80 + 12,313 + 985,000 = \underline{997,393}$$