

Homework Assignment #7 Results for Samuel Wolfe

⚠️ Answers will be shown after your last attempt

Score for this attempt: **12** out of 20

Submitted Aug 4 at 7:43pm

This attempt took 686 minutes.

Partial

Question 1

0.5 / 1 pts

The reorder point is defined as the lead-time demand for an item. In cases of long lead times, the lead-time demand and thus the reorder point may exceed the economic order quantity Q^* . In such cases, the inventory position will not equal the inventory on hand when an order is placed, and the reorder point may be expressed in terms of either the inventory position or the inventory on hand. Consider the economic order quantity model with $D = 6,250$, $C_o = \$40$, $C_h = \$2$, and 250 working days per year. Identify the reorder point in terms of the inventory position and in terms of the inventory on hand for each of the following lead times.

Question

(a) 5 days (Round your answer to the nearest integer.)

Inventory position =

Inventory on hand =

(b) 15 days (Round your answer to the nearest integer.)

Inventory position =

Inventory on hand =

(c) 25 days (Round your answer to the nearest integer.)

Inventory position =

Inventory on hand =

(d) 45 days (Round your answer to the nearest integer.)

Inventory position =

Inventory on hand =

Answer 1:

125

Answer 2:

250

Answer 3:

375

Answer 4:

500

Answer 5:

625

Answer 6:

750

Answer 7:

1125

Answer 8:

1250

Question 2

1 / 1 pts

Westside Auto purchases a component used in the manufacture of automobile generators directly from the supplier. Westside's generator production operation, which is operated at a constant rate, will require 1,000 components per month throughout the year (12,000 units annually). Assume that the ordering costs are \$28 per order, the unit cost is \$2.20 per component, and annual holding costs are 15% of the value of the inventory. Westside has 250 working days per year and a lead time of 5 days.

Question

(a) What is the EOQ for this component? (Round your answer to the nearest integer.)

(b) What is the reorder point? (Round your answer to the nearest integer.)

(c) What is the cycle time (in days)?

(d) What is the total annual holding cost (in \$) associated with your recommended EOQ? (Round your answer to the nearest integer.)

What is the total annual ordering cost (in \$) associated with your recommended EOQ? (Round your answer to the nearest integer.)

Answer 1:

Answer 2:

240

Answer 3:

30

Answer 4:

235

Answer 5:

235

Partial**Question 3****1.33 / 2 pts**

Nation-Wide Bus Lines is proud of its six-week bus driver-training program that it conducts for all new Nation-Wide drivers. As long as the class size remains less than or equal to 35, a six-week training program costs Nation-Wide \$28,000 for instructors, equipment, and so on. The Nation-Wide training program must provide the company with approximately five new drivers per month. After completing the training program, new drivers are paid \$1,100 per month but do not work until a full-time driver position is open. Nation-Wide views the \$1,100 per month paid to each idle new driver as a holding cost necessary to maintain a supply of newly trained drivers available for immediate service.

Question

(a) Viewing new drivers as inventory-type units, how large should the training classes be to minimize Nation-Wide's total annual training and new driver idle-time costs? (Round your answer to the nearest integer.)

(b) How many training classes should the company hold each year? (Round your answer to the nearest integer.)

classes per year

(c) What is the total annual cost (in \$) associated with your recommendation? (Round your answer to the nearest integer.)

\$ 217600

Answer 1:

16

Answer 2:

4

Answer 3:

217600

Question 4

2 / 2 pts

Cress Electronic Products manufactures components used in the automotive industry. Cress purchases parts for use in its manufacturing operation from a variety of different suppliers. One particular supplier provides a part where the assumptions of the EOQ model are realistic. The annual demand is 4,500 units, the ordering cost is \$50 per order, and the annual holding cost rate is 25%.

Question

(a) If the cost of the part is \$20 per unit, what is the economic order quantity? (Round your answer to the nearest integer.)

300

(b) Assume 250 days of operation per year. If the lead time for an order is 12 days, what is the reorder point? (Round your answer to the nearest integer.)

216

(c) If the lead time for the part is six weeks (30 days), what is the reorder point? (Round your answer to the nearest integer.)

(d) What is the reorder point for part (c) if the reorder point is expressed in terms of the inventory on hand rather than the inventory position? (Round your answer to the nearest integer.)

Answer 1:

300

Answer 2:

216

Answer 3:

540

Answer 4:

240

Question 5

2 / 2 pts

Wilson Publishing Company produces books for the retail market. Demand for a current book is expected to occur at a constant annual rate of 7,800 copies. The cost of one copy of the book is \$13.50. The holding cost is based on an 18% annual rate, and production setup costs are \$150 per setup. The equipment with which the book is produced has an annual production volume of 25,000 copies. Wilson has 250 working days per year, and the lead time for a production run is 15 days. Use the production lot size model to compute the following values.

Question

(a) Minimum cost production lot size (Round your answer to the nearest integer.)

(b) Number of production runs per year (Round your answer to the nearest integer.)

(c) Cycle time (Round your answer to the nearest integer.)

(d) Length of a production run (in days) (Round your answer to the nearest integer.)

(e) Maximum inventory (Round your answer to the nearest integer.)

(f) Total annual cost (in \$) (Round your answer to the nearest integer.)

\$

(g) Reorder point (Round your answer to the nearest integer.)

Answer 1:

1183

Answer 2:

7

Answer 3:

38

Answer 4:

12

Answer 5:

814

Answer 6:

1978

Answer 7:

468

Incorrect**Question 6****0 / 2 pts**

Suppose that Westside Auto, a manufacturer of automobile generators with $D = 13,000$ units per year, $Ch = (3.00)(0.20) = \$0.60$, and $Co = \$25$, decided to operate with a backorder inventory policy. Backorder costs are estimated to be \$5 per unit per year. Identify the following values. Assume 250 working days per year.

Question

(a) Minimum cost order quantity (Round your answer to the nearest integer.)

(b) Maximum number of backorders (Round your answer to the nearest integer.)

(c) Maximum inventory (Round your answer to the nearest integer.)

(d) Cycle time (in days) (Round your answer to the nearest integer.)

days

(e) Total annual cost (in \$) (Round your answer to the nearest integer.)

\$

Answer 1:

1325

Answer 2:

98

Answer 3:

1227

Answer 4:

25

Answer 5:

491

Question 7

2 / 2 pts

A manager of an inventory system believes that inventory models are important decision making aids. The manager has experience with the EOQ policy, but has never considered a backorder model because of the assumption that backorders were "bad" and should be avoided. However, with upper management's continued pressure for cost reduction, you have been asked to analyze the economics of a backorder policy for some products that can possibly be backordered.

Consider a specific product with $D = 600$ units per year, $Co = \$140$, $Ch = \$3$, and $Cb = \$20$.

(Round your answer to the nearest integer.)

Question

(a) What is the difference in total annual cost between the EOQ model and the planned shortage or backorder model (in \$)?

(b) Suppose the manager adds constraints that no more than 25% of the units can be backordered and that no customer will have to wait more than 15 days for an order, should the backorder inventory policy be adopted? Assume 250 working days per year.

The percentage of units backordered would be

. The length of the backorder period would be

. Based on these constraints, the backorder inventory policy

Answer 1:

48

Answer 2:

less than

Answer 3:

less than

Answer 4:

should

Question 8**2 / 2 pts**

Keith Shoe Stores carries a sneaker for toddlers that sells at an approximately constant rate of 700 pairs of shoes every three months. Keith's current buying policy is to order 700 pairs each time an order is

placed. It costs Keith \$30 to place an order. The annual holding cost rate is 20%. With the order quantity of 700, Keith obtains the shoes at the lowest possible unit cost of \$27 per pair. Other quantity discounts offered by the manufacturer are as follows.

Order Quantity	Price per Pair
0–99	\$35
100–199	\$31
200–299	\$29
300 or more	\$27

Question

(a) What is the minimum cost order quantity for the shoes? (Round your answer to the nearest integer.)

(b) What are the annual savings (in dollars) of your inventory policy over the policy currently being used by Keith? (Round your answer to the nearest integer.)

Answer 1:

Answer 2:

Partial

Question 9

0.67 / 2 pts

A daily newspaper is stocked by a coffee shop so its patrons can purchase and read it while they drink coffee. The newspaper costs \$1.13 per unit and sells for \$1.75 per unit. If units are unsold at the end of the

day, the supplier takes them back at a rebate of \$1 per unit. Assume that daily demand is approximately normally distributed with $\mu = 150$ and $\sigma = 30$.

Question

(a) What is your recommended daily order quantity for the coffee shop? (Round your answer to the nearest integer.)

(b) What is the probability that the coffee shop will sell all the units it orders? (Round your answer to four decimal places.)

(c) In problems such as these, why would the supplier offer a rebate as high as \$1? For example, why not offer a nominal rebate? Find the recommended order quantity at 25¢ per unit. (Round your answer to the nearest integer.)

Answer 1:

Answer 2:

Answer 3:**Partial****Question 10****0.5 / 2 pts**

Floyd Distributors, Inc., provides a variety of auto parts to small local garages. Floyd purchases parts from manufacturers according to the EOQ model and then ships the parts from a regional warehouse direct to

its customers. For a particular type of muffler, Floyd's EOQ analysis recommends orders with $Q^* = 25$ to satisfy an annual demand of 100 mufflers. Floyd's has 250 working days per year, and the lead time averages 15 days.

Question

(a) What is the reorder point if Floyd assumes a constant demand rate? (Round your answers to the nearest integer.)

(b) Suppose that an analysis of Floyd's muffler demand shows that the lead-time demand follows a normal probability distribution with $\mu = 6$ and $\sigma = 2$. If Floyd's management can tolerate one stock-out per year, what is the revised reorder point? (Round your answers to the nearest integer.)

(c) What is the safety stock for part (b)? (Round your answers to the nearest integer.)

If $C_h = \$4/\text{unit}/\text{year}$, what is the extra cost (in \$ per year) due to the uncertainty of demand? (Round your answers to the nearest integer.)

\$ per year

Answer 1:

Answer 2:

Answer 3:

Answer 4:

8

Incorrect

Question 11

0 / 2 pts

Wood Watercolors is a commercial art gallery that uses a four-week periodic review system to reorder paintings for its showrooms. A one-week lead time is required to fill the order. Demand for one particular style of painting during the five-week replenishment period is normally distributed with a mean of 22 units and a standard deviation of 10 units.

Question

(a) At a particular periodic review, 12 units are in inventory. The curator places an order for 20 units. What is the probability that this style of painting will have a stock-out before an order that is placed during the next four-week review period arrives? (Round your answer to four decimal places.)

(b) Assume that the gallery is willing to tolerate a 2.5% chance of a stock-out associated with a replenishment decision. How many paintings should the curator have ordered in part (a)? (Round your answer to the nearest integer.)

paintings

What is the replenishment level for the four-week periodic review system? (Round your answer to the nearest integer.)

Answer 1:**Answer 2:**

Answer 3:

40

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