

# [Inventory and annual holding cost](https://assignbuster.com/inventory-and-annual-holding-cost/)

1. Your firm uses a continuous review system and operates 52 weeks per year. One of the SKUs has the following characteristics. Demand (D) = 20, 000 units/year
Ordering cost (S) = $40/order
Holding cost (H) = $2/unit/year
Lead time (L) = 2weeks
Cycle-service level = 95%
Demand is normally distributed with a standard deviation of weekly demand of 100 units. The current on-hand inventory is 1. 040 units with no scheduled receipts and no backorders. 1. Calculate the item’s EOQ. What is the average time, in weeks between orders? EOQ = (2DS)/H
* EOQ = (2\*20000\*40)/2
* EOQ = 800000
* EOQ = 894. 43894
* TBO = (EOQ/D)\*52weeks
* TBO = (894/20000)\*52weeks
* TBO = (0. 0447)\*52weeks
* TBO = 2. 32442. 32weeks

2. Find the safety stock and reorder point that provides a 95% cycle-service level. Safety stock = Z\*(standard deviation of demand during the lead time) Z for 95% service level is 1. 64

* Safety stock = 1. 64\*(2\*100)
* Safety stock = 328 units

Reorder point = (Average demand during lead time) + (Safety Stock) Reorder point = ((20000/52weeks)\*2) + 328 = 1097. 23 1097

3. For these policies, what are the annual costs of holding the cycle inventory and placing orders?

Annual holding cost = (Average cycle inventory)\*(Unit holding cost)

Annual holding cost = (Average Lot size/2)\*(Unit holding cost)

* Annual holding cost = ((20000/52weeks)\*2. 32weeks)/2 \* 2
* Annual holding cost = (892. 30 892/2)\*2
* Annual holding cost = 446\*2 = $892
* Annual ordering cost = (Number of orders/year)\*(Ordering cost)
* Annual
ordering cost = (Demand/Average lot size)\*(Ordering cost)
* Annual ordering costs = (20000/892)\*(40)
* Annual ordering costs = 22. 42\*40 = $896. 8

4. Withdrawal of 15 units just occurred. Is it time to reorder? If so, how much should be ordered?

Inventory position = on hand inventory + schedule receipts – backorders Inventory position = 1040+15+0= 1055

IP (1055) < R (1097) so new order must be placed

Order quantity: Target inventory level – Inventory position

Target inventory level = Average demand during the protection interval + Safety stock Target inventory level = (Demand/52weeks)\*((EOQ/Demand)\*52weeks)\*(Lead time) + Safety Stock Target inventory