Conception Test:

Q1:
In our current setting, based on your understanding, if you place the order at week x, in which week will the order information reach your supplier?

Q2:
In our current setting, if you place the order at week x, in which week will you receive the order? Please elaborate the concept of order lead time, and what is the order lead time here?

Q3:
Based on your understanding, if you want to receive the order at week y, in which week should you place the order? As an example, if you want to receive the order at week 10, in which week should you place the order?

Q4:
Please explain the concept of on-order quantity.

Q5:
Please explain what the end-period inventory position is?

Q6:
Please elaborate how to do forecasting?

Q7:
Please explain what the order-up-to level is?

Formula Test:

Q8:
Given the values of the total order placed, the order placed in the previous week, the ending inventory of the previous week, the incoming shipment of this week, the demand of this week, and the total order received, what is the formula to calculate the on-order quantity for the current week?

Q9:
Given the values of the total order placed, the order placed in the previous week, the ending inventory of the previous week, the on-order quantity of the previous week, the incoming shipment of this week, and the demand of this week, what is the formula to calculate the on-order quantity for the current week?

Q10:
Given the values of the total order placed, the order placed in the previous week, the ending inventory of the previous week, the on-hand inventory of this week, the backorder of this week, the incoming shipment of this week, the demand of this week, and the on-order quantity of this week, what is the formula to calculate the end-period inventory position?

Q11:
Given the values of the demand for the previous 4 weeks, the on-hand inventory of this week, the backorder of this week, the incoming shipment of this week, the on-order quantity of this week, and the end-period inventory position of this week, and assuming the safety stock is 5 and the lead time is 4 weeks, how do you calculate the order-up-to level?

Reasoning Test:
Current is the beginning of Week 5, the Retailer, has a beginning inventory of 12 units, a backorder of 0, a demand of 8, an incoming shipment of 4. The on-order quantity for the previous week is 10. In our setting, for a current week x, on-order quantity is always calculated after the arrival of the incoming shipment for that week.
In addition, the following are the historic data in a table. The columns of the table are: week, inventory, backorder, demand, incoming shipment, outgoing shipment, order placed, and cost:

week	inventory	backorder	demand	incoming shipment	outgoing shipment	order placed	cost
1	12	0	4	4	4	4	6
2	12	0	4	4	4	4	12
3	12	0	4	4	4	4	18
4	12	0	4	4	4	4	24

Q12:
In our setting, for a current week x, on-order quantity is always calculated after the arrival of the incoming shipment for that week. Please calculate the on-order quantity for the current week.

Q13:
Please calculate the end-period inventory position for the current week.

Q14:
Please calculate the order-up-to Level for this week, assuming the demand remains constant at 8 units per week in the future and safety stock equals 5.

Q15:
Please calculate the order to be place for this week, assuming the demand remains constant at 8 units per week in the future and safety stock equals 5.

Current is the beginning of Week 9, the Retailer, has a demand of 8, an incoming shipment of 8. In our setting, for a current week x, on-order quantity is always calculated after the arrival of the incoming shipment for that week. Assume the on-order quantity for week 1 is 12.
In addition, the following are the historic data in a table. The columns of the table are: week, inventory, backorder, demand, incoming shipment, outgoing shipment, order placed, and cost:

week	inventory	backorder	demand	incoming shipment	outgoing shipment	order placed	cost
1	12	0	4	4	4	4	6
2	12	0	4	4	4	4	12
3	12	0	4	4	4	4	18
4	12	0	4	4	4	4	24
5	8	0	8	4	8	8	28
6	4	0	8	4	8	8	30
7	0	0	8	4	8	8	30
8	0	4	8	4	4	12	34

Q16:
Please calculate the on-order quantity for each week from week 2 to week 9.

Q17:
Given that the total orders placed before week 1 equals 16 units and the total orders received before week 1 equals 0 units, please calculate the on-order quantity for each week from week 2 to week 9.

At the beginning of Week 9, the retailer has a beginning inventory of 0 units, a backorder of 4 units, a demand of 8 units, and an incoming shipment of 8 units. In our setting, for a current week x, the on-order quantity is always calculated after the arrival of the incoming shipment for that week. Assume the following:

i) On-order quantity for Week 1 is 12 units.
ii) The demands for Weeks 1 to 4 are 4 units each, and for Weeks 5 to 8 are 8 units each.
iii) The incoming shipments for Weeks 1 to 4 are 4 units each.
iv) The orders placed for Weeks 1 to 4 are 4 units each.
v) The orders placed for Weeks 5 to 7 are 8 units each, and the order placed for Week 8 is 12 units.
vi) The supplier's inventory is large enough to handle the demand.

Q18:
What is the on-order quantity for Week 9?

Q19:
What is the inventory balance and backorder at the beginning of week 9 if the beginning inventory is 12 for week 1?

Q20:
What is the end-period inventory position for Week 9? (Hint: You should calculate the Ending Inventory for week 8 at first.)

	Question	GPT-4o	Simple RAG	Socratic
Conception	1	correct	correct	correct
	2	correct	correct	correct
	3	correct	correct	correct
	4	correct	correct	correct
	5	correct	correct	correct
	6	correct	correct	correct
	7	correct	correct	correct
Formula	8	correct	correct	correct
	9	wrong	wrong	correct
	10	wrong	wrong	correct
	11	correct	correct	correct
Reasoning	12	correct	correct	correct
	13	correct	correct	correct
	14	correct	correct	correct
	15	correct	wrong	correct
	16	wrong	wrong	correct
	17	wrong	wrong	correct
	18	wrong	wrong	correct
	19	correct	wrong	correct
	20	wrong	wrong	correct
Score	Conception	7/7	7/7	7/7
	Formula	2/4	2/4	4/4

	Reasoning	5/9	3/9	9/9
	Total	14/20	12/20	20/20