ABC CLASSIFICATION & EOQ

A. The manager of an automobile repair shop hopes to achieve a better allocation of inventory control efforts by adopting ABC approach. Given the following information classify the items in A, B and C categories. Also provide your justification.

Item	Usage	Unit Cost ($)			
K30	200	10			
K31	600	25			
K32	150	36			
K33	25	16			
K34	80	20			
K35	200	80			
K36	300	20			
K37	800	30			
K38	60	20			
K39	550	10			
K40	90	12			
K41	110	15			
K42	120	40			
K43	40	30			
K44	500	16			
K45	30	10			

- A items: These are items with high value or high significance, often representing a small percentage of total items.

B items: These are moderately important items.

C items: These are items with lower ~~Hiw~~ value or usage.

item	usage	unit cost	Annual consumption
K30	200	10	$ 2,000
K31	600	25	$ 15,000
K32	150	36	$ 5400
K33	25	16	$ 400
K34	80	20	$ 1600
K35	200	80	$ 16,000

K_{36}	300	20	$ 6,000
K_{37}	800	30	$ 24,000
K_{38}	60	20	$ 1200
K_{39}	550	10	$ 5500
K_{40}	90	12	$ 1080
K_{41}	110	15	$ 1650
K_{42}	120	40	$ 4800
K_{43}	40	30	$ 1200
K_{44}	500	16	$ 8,000
K_{45}	300	10	$ 300

A items

- K 31
- K 35
- K 37
- K 44

B items

- K 32
- K 36
- K 39
- K 42

C items

- K 30
- K 33
- K 34
- K 38
- K 40
- K 41
- K 43
- K 45

B. Peerless (Guang Zhou) Bicycle Company

Inventory plan for Zhou Bicycle Company. The forecasted demand is summarized in the following table.

Month	Forecasted Demand	Month	Forecasted Demand
January	8	July	39
February	15	August	24
March	31	September	16
April	59	October	15
May	97	November	28
June	60	December	47

The manager of that company has been facing problem at the time of placing order every time. Some time it is incurring too much cost and the order quantity is not right. As a result, over stock or under stock are natural phenomena for that company. To solve this problem Company Manager appointed a demand planner – Sun Moon who has recently graduated from "BD University".

To calculate the right (Economic Order Qty) order quantity Sun Moon collected the following data:
Purchasing Cost/Bicycle: $ 102
Ordering Cost/Order : $ 65
Holding Cost was considered as 20% of per unit purchasing cost.

Questions:
1. What should be the Economic Order Quantity?
2. How many orders should be placed to meet annual demand?
3. What will be the total cost at EOQ?

The Economic order Quantity

$$EOQ = \sqrt{\frac{2 \times \text{Demand} \times \text{ordering cost}}{\text{Holding cost per unit}}}$$

- Demand : sum of forecasted demand
  = (8 + 15 + 31 + 59 + 97 + 60 + 47 + 39 + 24 + 16 + 28 + 15)
  = 379 bicycles.
- ordering cost = $65 per order
- Purchasing cost per bicycle: $102
- Holding cost per unit = 20% of purching cost
  = 0.20 × $102
  = $20.40

$$EOQ = \sqrt{\frac{2 \times 379 \times 65}{20.40}}$$

EOQ ≅ 49 bicycles

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(b) Number of order = $\frac{\text{Annual Demand}}{\text{EOQ}}$

So, Number of order = $\frac{379}{49}$

≈ 7.73

(c) Total cost at EOQ =

Total Ordering cost + total Holding cost

Total ordering cost = 8 * $65

= 520

Holding cost per unit = 0.20 X $102

= $20.40

total Holding cost = EOQ X Holding cost per unit

= 49 X $20.40

= $999.60

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So, total cost at EOQ =

$= \$520 + \$999.60$

$= \$1519.60$