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 Section: MT14 – section I

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SEATWORK: MATERIAL MANAGEMENT

- **Problem 1**

- Givens:

- Annual usage: 8000 boxes of syringe
- Cost of ordering: 10,250 per order
- Annual holding cost: 1000 pesos per year
- Lead time: 5 days

- Solution

- EOQ

- $$EOQ = \sqrt{\frac{2 \times (\text{annual usage} \times \text{cost of ordering})}{\text{annual holding cost per unit}}}$$
- $$EOQ = \sqrt{\frac{2 \times (8000 \text{ boxes of syringe} \times 10\,250 \text{ PHP})}{1000 \text{ PHP}}}$$
- EOQ = 404.9691346
- EOQ = **405**

- EOP

- $$EOP = \frac{\text{annual usage}}{365 \text{ days}} \times \text{lead time}$$
- $$EOP = \frac{8000 \text{ boxes of syringe}}{365 \text{ days}} \times 5 \text{ days}$$
- EOP = 109.5890411
- EOP = **110**

- ROT

- $$ROT = \frac{EOQ}{\text{annual usage}} \times 365 \text{ days}$$
- $$ROT = \frac{405}{8000 \text{ boxes of syringe}} \times 365 \text{ days}$$
- ROT = 18.478125
- ROT = **19 days**

- Conclusion

- For maximum financial benefit and storage space utilization, order **405** boxes of syringe each time the inventory drops to **110** (about every **19** days).



- **Problem 2**

- Givens:

- Annual usage: 2000 boxes of red top tubes
- Cost of ordering: 4350 per order
- Annual holding cost: 2000 pesos per year
- Lead time: 10 days

- Solution:

- EOQ

- $$EOQ = \sqrt{\frac{2 \times (\text{annual usage} \times \text{cost of ordering})}{\text{annual holding cost per unit}}}$$
- $$EOQ = \sqrt{\frac{2 \times (2000 \text{ boxes of red top tube} \times 4\,350 \text{ PHP})}{2000 \text{ PHP}}}$$
- $EOQ = 93.27379058$
- $EOQ = 93$

- EOP

- $$EOP = \frac{\text{annual usage}}{365 \text{ days}} \times \text{lead time}$$
- $$EOP = \frac{2000 \text{ boxes of red top tube}}{365 \text{ days}} \times 10 \text{ days}$$
- $EOP = 54.79452055$
- $EOP = 55$

- ROT

- $$ROT = \frac{EOQ}{\text{annual usage}} \times 365 \text{ days}$$
- $$ROT = \frac{93}{2000 \text{ boxes of red top tube}} \times 365 \text{ days}$$
- $ROT = 16.9725$
- $ROT = 17 \text{ days}$

- Conclusion

- For maximum financial benefit and storage space utilization, order **93** boxes of red top tubes each time the inventory drops to **55** (about every **17** days)



- **Problem 3**

- Givens

- Annual usage: 12000 boxes of glass slides
- Cost of ordering: 9850 per order
- Annual holding cost: 6000 pesos per year
- Lead time: 15 days

- Solutions

- EOQ

- $$EOQ = \sqrt{\frac{2 \times (\text{annual usage} \times \text{cost of ordering})}{\text{annual holding cost per unit}}}$$
- $$EOQ = \sqrt{\frac{2 \times (12\,000 \text{ boxes of glass slides} \times 9850 \text{ PHP})}{6000 \text{ PHP}}}$$
- $EOQ = 198.4943324$
- $EOQ = 199$

- EOP

- $$EOP = \frac{\text{annual usage}}{365 \text{ days}} \times \text{lead time}$$
- $$EOP = \frac{12000 \text{ boxes of glass slides}}{365 \text{ days}} \times 15 \text{ days}$$
- $EOP = 493.1506849$
- $EOP = 493$

- ROT

- $$ROT = \frac{EOQ}{\text{annual usage}} \times 365 \text{ days}$$
- $$ROT = \frac{199}{12000 \text{ boxes of glass slides}} \times 365 \text{ days}$$
- $ROT = 6.052916667$
- $ROT = 6 \text{ days}$

- Conclusion

- For maximum financial benefit and storage space utilization, order **199** boxes of glass slides each time the inventory drops to **493** (about every **6** days).

