7004 A4

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1.

First, we looked at the mean and standard deviation of demand for each day in excel, getting that the weekly demand is about 50 to 40. Therefore, in the first four weeks, we imported an average of 50 goods from China every week.

Afterwards, the quantity purchased from China would be adjusted based on actual weekly demand. If there was a shortage of inventory, some goods would be purchased urgently from Mexico.

Overall our group's strategy was correct and effective, but we made some mistakes along the way. After experiencing continuous low demand, we mistakenly purchased too few goods, resulting in low inventory and losing many orders later.

2.

$D=250$, $C_u=10-5=5$, $C_o=5-3.5=1.5$, $P=\frac{C_u}{C_u+C_o}=76.923\%$

$Z=NORMSINV(P)=0.736$

Tomorrow: $250+0.736\times34=275$

$D'=350$, $STD=25$

Tomorrow: $350+0.736\times25=368.4$

3.

$C_u = 30-10 = 20$, $C_o = 10-7 = 3$

S	E.O. $E[S-D]^+$	E.U. $E[S-D]^+$	GC(S)
300	0	$100\times0.1+200\times0.4+300\times0.3+400\times0.1+500\times0.05=245$	$245\times20=4900$
400	$100\times0.05=5$	$100\times0.4+200\times0.3+300\times0.1+400\times0.05=150$	$5\times3+150\times20=3015$
500	$200\times0.05+100\times0.1=20$	$100\times0.3+200\times0.1+300\times0.05=65$	$20\times3+65\times20=1360$
600	$300\times0.05+200\times0.1+100\times0.4=75$	$100\times0.1+200\times0.05=20$	$75\times3+20\times20=625$
700	$400\times0.05+300\times0.1+200\times0.4+100\times0.3=160$	$100\times0.05=5$	$160\times3+20\times5=580$
800	$500\times0.05+400\times0.1+300\times0.4+200\times0.3+100\times0.1=255$	0	$255\times3=765$

$\therefore S=700$ is best

4.

$\mu=40$, $\sigma=25$, $C_u=475$, $C_o=800$, $P=\frac{C_u}{C_u+C_o}=37.255\%$

$Z=NORMSINV(P)=-0.325$

$SS=\mu+Z\cdot\sigma=32$

maximum number $=200+32=232$

5.

$Z=NORMSINV(0.98)=2.054$, $D=5$, $\sigma=2$

$\sigma_{LT+T}=\sqrt{4+30}\times2=11.662$

Target $=(4+30)\times5+Z\cdot\sigma_{LT+T}=194$

Order Quantity $=194-45=149$