Forecast 2 Problem is from Test 1, Summer 2008

Requirements:
   1) Manually derive the required answers;
   2) Manually computer MSE for MA, WMA and EXP;
   3) Use Excel to verify the answers;
   4) Use Excel to find the optimal weights for WMA and the optimal smoothing constant α by minimizing
   corresponding MSE;
   5) Compare the MSEs for WMA forecasting with current and optimal weights; and
   6) Compare the MSEs for EXP forecasting with current and optimal smoothing constant α.

1.   The Table 1 below shows the number of speeding tickets Harrisonburg Polices wrote during the last few
    days. Answer the following questions based on the information given in Tables 1, 2 and 3.

Table 1

	A	B	C	D	E	F	G	H
1	Day	Tickets	SMA (4)	WMA(3)	EXP		weights	
2	1	33			33.000		w3	0.1
3	2	25			33.000		w2	0.2
4	3	16			31.400		w1	0.7
5	4	24			28.320		sum	1
6	5	8			27.456			
7	6	6					alpha	0.2
8	7							

Table 2

	A	B	C
11	Day	Tickets	WMA(3)
12	5	8	22.500
13	6	6	12.000
14			
15		MSE	

Table 3

Methods	MSE
SMA (4)	211.156
WMA(3)	123.125
EXP	343.529

(1) What is the three – period weighted moving average forecast for the number of tickets for Day 7 using the
    weights 0.7, 0.2 and 0.1 with the largest weight for the most recent day's data?
      a.   What is the equation to be used?

b. What is the Excel@ formula to be used for it in Cell D8?

c. What is the answer for it? (put the numbers in the equation and derive the answer)

(2) What is the Exponential smooth forecast for Day 7 using α value of 0.2?
   a. What is the equation to be used?

   b. What is the Excel@ formula to be used for it in Cell E8?

   c. What is the answer for it? (put the numbers in the equation and derive the answer)

(3) What is the MSE for the WMA(3) forecasts developed for Days 5 and 6 as given in Table 2 above?
   a. What is the equation to be used?

   b. What is the Excel@ formula to be used for it in Cell C15?

   c. What is the answer for it? (put the numbers in the equation and derive the answer)

(4) Table 3 shows the Mean Squared Forecasting Errors (MSE) for the number of tickets data with three forecasting methods.
   a. Which method would you recommend to be used in developing forecasts in the next few days and

   b. why?