

### Answer on Question #51689 – Math – Statistics and Probability

b) Vacuum cleaner sales for 12 months are given in the table below.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Actual sales (in units)	10	12	13	16	19	23	26	30	28	18	16	14

i). Compute a simple 5-month average to forecast sales for month 13.

#### Solution

We have the following data, which is represented in the Table.

Table

Vacuum cleaner sales for 12 months

Month	1	2	3	4	5	6	7	8	9	10	11	12
Actual sales (in units)	10	12	13	16	19	23	26	30	28	18	16	14

In the given problem, we need to maintain only the N most recent periods of data points. At the end of each period, the oldest period's data is discarded and the newest period's data is added to the database. The average is then divided by N and used as a forecast for the next period.

The formula for a five-period moving average is given below:

$$\text{Five - period moving average} = \text{MA}(5) = M_{t+1} = \frac{[D_t + D_{t-1} + D_{t-2} + D_{t-3} + D_{t-4}]}{5}$$

Now using the five-period moving average, the value of the average for the above problem can be calculated as follows.

$$\text{MA}(5) = M_{13} = \frac{[D_{12} + D_{11} + D_{10} + D_9 + D_8]}{5} = \frac{14 + 16 + 18 + 28 + 30}{5} = 21.2$$

The forecast sales for month 13 will be equal to 21.2 units.