

How do I calculate a moving average forecast in Excel?

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A moving average forecast is a commonly used method for predicting future values based on past data. In Excel, this can be easily calculated using the AVERAGE function. Simply select the range of data you want to use for the calculation, then use the AVERAGE function to calculate the average value for each data point. The resulting values can then be plotted on a graph to visualize the trend and make forecasts for future values. This method is useful for analyzing trends and making informed decisions based on historical data.

Calculate a Moving Average Forecast in Excel

A moving average forecast uses a moving average of a certain number of previous periods to forecast the value of the next period.

The following example shows how to calculate a moving average forecast in Excel.

Example: How to Calculate Moving Average Forecast in Excel

Suppose we have the following dataset that shows the total sales made by some company during 20 consecutive days:

	A	B	C	D	E	F
1	Date	Sales				
2	1/1/2023	8				
3	1/2/2023	10				
4	1/3/2023	12				
5	1/4/2023	12				
6	1/5/2023	13				
7	1/6/2023	10				
8	1/7/2023	11				
9	1/8/2023	13				
10	1/9/2023	15				
11	1/10/2023	18				
12	1/11/2023	20				
13	1/12/2023	23				
14	1/13/2023	28				
15	1/14/2023	18				
16	1/15/2023	19				
17	1/16/2023	20				
18	1/17/2023	25				
19	1/18/2023	28				
20	1/19/2023	30				
21	1/20/2023	27				
22						
23						

Suppose we would like to calculate a 5-day moving average forecast.

This means we will use the average sales value of the previous 5 days as the forecast value for the next day.

To do so, we can type the following formula into cell C8:

=AVERAGE(B2:B6)

We can then click and drag this formula down to each remaining cell in column C:

C7		✓	:	✗	✓	<i>fx</i>	=AVERAGE(B2:B6)
	A	B	C	D	E		
1	Date	Sales	5-Day Moving Avg. Forecast				
2	1/1/2023	8					
3	1/2/2023	10					
4	1/3/2023	12					
5	1/4/2023	12					
6	1/5/2023	13					
7	1/6/2023	10	11				
8	1/7/2023	11	11.4				
9	1/8/2023	13	11.6				
10	1/9/2023	15	11.8				
11	1/10/2023	18	12.4				
12	1/11/2023	20	13.4				
13	1/12/2023	23	15.4				
14	1/13/2023	28	17.8				
15	1/14/2023	18	20.8				
16	1/15/2023	19	21.4				
17	1/16/2023	20	21.6				
18	1/17/2023	25	21.6				
19	1/18/2023	28	22				
20	1/19/2023	30	22				
21	1/20/2023	27	24.4				

The values in column C represent the 5-day moving average forecasted values of sales.

For example, the forecasted sales value on 1/6/2023 is 11.

To quantify how well our forecasted values match the

actual sales values we can calculate the (mean absolute percentage error), which uses the following formula:

$$\text{MAPE} = (1/n) * \Sigma(|\text{actual} - \text{forecast}| / |\text{actual}|) * 100$$

where:

Σ - a symbol that means "sum"
n - sample size
actual - the actual data value
forecast - the forecasted data value

The lower the value for MAPE, the better a model is able to forecast values.

To calculate the MAPE for this forecast model, we can type the following formula into cell D7:

$$=\text{ABS}(\text{B7}-\text{C7})/\text{B7}*100$$

We can then click and drag this formula down to each remaining cell in column D:

D7 ✕ ✓ <i>fx</i> =ABS(B7-C7)/B7*100					
	A	B	C	D	E
1	Date	Sales	5-Day Moving Avg. Forecast	Abs. Percent Error	
2	1/1/2023	8			
3	1/2/2023	10			
4	1/3/2023	12			
5	1/4/2023	12			
6	1/5/2023	13			
7	1/6/2023	10	11	10	
8	1/7/2023	11	11.4	3.636363636	
9	1/8/2023	13	11.6	10.76923077	
10	1/9/2023	15	11.8	21.33333333	
11	1/10/2023	18	12.4	31.11111111	
12	1/11/2023	20	13.4	33	
13	1/12/2023	23	15.4	33.04347826	
14	1/13/2023	28	17.8	36.42857143	
15	1/14/2023	18	20.8	15.55555556	
16	1/15/2023	19	21.4	12.63157895	
17	1/16/2023	20	21.6	8	
18	1/17/2023	25	21.6	13.6	
19	1/18/2023	28	22	21.42857143	
20	1/19/2023	30	22	26.66666667	
21	1/20/2023	27	24.4	9.62962963	
22					

Lastly, we can type the following formula into cell D22 to get the MAPE for this forecast model:

=AVERAGE(D7:D21)

The following screenshot shows how to use this formula in practice:

D22		=AVERAGE(D7:D21)			
	A	B	C	D	E
1	Date	Sales	5-Day Moving Avg. Forecast	Abs. Percent Error	
2	1/1/2023	8			
3	1/2/2023	10			
4	1/3/2023	12			
5	1/4/2023	12			
6	1/5/2023	13			
7	1/6/2023	10	11	10	
8	1/7/2023	11	11.4	3.636363636	
9	1/8/2023	13	11.6	10.76923077	
10	1/9/2023	15	11.8	21.33333333	
11	1/10/2023	18	12.4	31.11111111	
12	1/11/2023	20	13.4	33	
13	1/12/2023	23	15.4	33.04347826	
14	1/13/2023	28	17.8	36.42857143	
15	1/14/2023	18	20.8	15.55555556	
16	1/15/2023	19	21.4	12.63157895	
17	1/16/2023	20	21.6	8	
18	1/17/2023	25	21.6	13.6	
19	1/18/2023	28	22	21.42857143	
20	1/19/2023	30	22	26.66666667	
21	1/20/2023	27	24.4	9.62962963	
22		MAPE		19.12227272	
23					
24					

We can see that the MAPE of this model is about **19.12%**.

This tells us that the average difference between the sales values forecasted by the 5-day moving average and the actual sales values is 19.12%.

If we'd like, we can then repeat this process using a different interval such as a 10-day moving average

forecast to determine if this forecast leads to a lower MAPE value.

The following tutorials explain how to perform other common tasks in Excel:

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