

How do I calculate a centered moving average in Excel?

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A centered moving average in Excel refers to a statistical method used to smooth out fluctuations in data and identify trends. It involves calculating the average of a specific number of data points, with an equal number of points on either side. This creates a moving average that is centered around each data point, providing a more accurate representation of the overall trend. To calculate a centered moving average in Excel, one can use the AVERAGE function combined with the OFFSET function to specify the range of data points to be included in the calculation. By using this method, one can effectively analyze and interpret data in a more precise and reliable manner.

Calculate a Centered Moving Average in Excel

In time series analysis, a centered moving average is the moving average of a certain number of values, *centered* around a specific period.

The following example shows how to calculate a centered moving average for a dataset in Excel.

Example: How to Calculate Centered Moving Average in Excel

Suppose we have the following dataset that shows the total sales made during 12 consecutive months by some company:

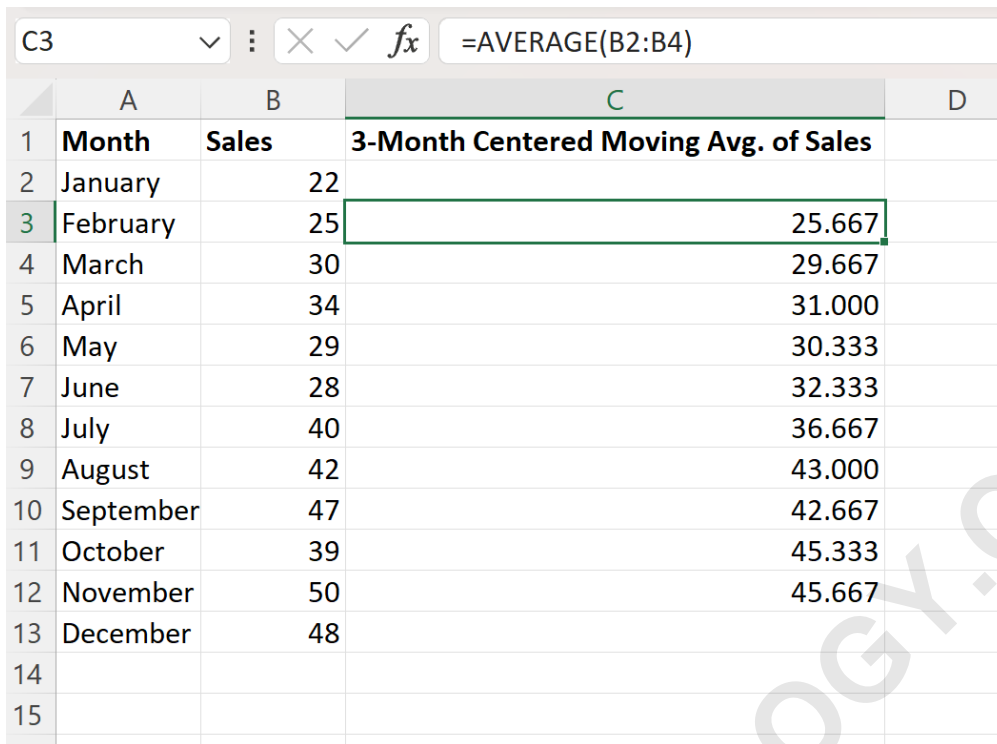
	A	B	C	D	E	F
1	Month	Sales				
2	January	22				
3	February	25				
4	March	30				
5	April	34				
6	May	29				
7	June	28				
8	July	40				
9	August	42				
10	September	47				
11	October	39				
12	November	50				
13	December	48				
14						
15						
16						
17						
18						
19						

Suppose we would like to calculate a 3-month centered moving average of sales values.

To do so, we can type the following formula into cell C3:

=AVERAGE(B2:B4)

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



	A	B	C	D
1	Month	Sales	3-Month Centered Moving Avg. of Sales	
2	January	22		
3	February	25	25.667	
4	March	30	29.667	
5	April	34	31.000	
6	May	29	30.333	
7	June	28	32.333	
8	July	40	36.667	
9	August	42	43.000	
10	September	47	42.667	
11	October	39	45.333	
12	November	50	45.667	
13	December	48		
14				
15				

The values in column C represent the 3-month centered moving average of the values in the sales column.

For example, the 3-month centered moving average of sales in February is 25.667.

The formula uses the sales values in January, February and March to calculate this average:

	A	B	C	D
1	Month	Sales	3-Month Centered Moving Avg. of Sales	
2	January	22		
3	February	25	25.667	
4	March	30	29.667	
5	April	34	31.000	
6	May	29	30.333	
7	June	28	32.333	
8	July	40	36.667	
9	August	42	43.000	
10	September	47	42.667	
11	October	39	45.333	
12	November	50	45.667	
13	December	48		
14				
15				
16				
17				

**3-Month Centered Moving Avg. of Sales in February:
(22+25+30) / 3 = 25.667**

This matches the value calculated by our formula.

We can also use a different number of months to calculate the centered moving average values.

=AVERAGE(B2:B6)

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

C4		=AVERAGE(B2:B6)		
	A	B	C	D
1	Month	Sales	5-Month Centered Moving Avg. of Sales	
2	January	22		
3	February	25		
4	March	30	28.0	
5	April	34	29.2	
6	May	29	32.2	
7	June	28	34.6	
8	July	40	37.2	
9	August	42	39.2	
10	September	47	43.6	
11	October	39	45.2	
12	November	50		
13	December	48		
14				
15				
16				

The values in column C now represent the 5-month centered moving average of the values in the sales column.

For example, the 5-month centered moving average of sales in March is 28.

The formula uses the sales values in January, February, March, April and May to calculate this average:

5-Month Centered Moving Avg. of Sales in March:
 $(22+25+30+34+29) / 5 = 28$

This matches the value calculated by our formula.

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

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