

# How do you calculate SMAPE in Excel, and can you provide examples?

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## RECOMMENDED CITATION

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SMAPE (Symmetric Mean Absolute Percentage Error) is a commonly used mathematical formula for measuring the accuracy of a forecast or prediction. It takes into account both the magnitude and direction of the error, making it a more balanced measure compared to other error metrics.

To calculate SMAPE in Excel, you can follow these steps:

1. First, gather the actual values and forecasted values in two separate columns in your Excel sheet.
2. In a third column, calculate the absolute difference between the actual and forecasted values using the formula: `=ABS(actual-forecast)`
3. In a fourth column, calculate the sum of the actual and forecasted values using the formula: `=(actual+forecast)`
4. In a fifth column, calculate the SMAPE using the formula: `=SUM(absolute difference/sum of actual and forecasted values)*100`
5. The resulting value is the SMAPE for your forecast.

For example, let's say you have the following data in your Excel sheet:

Actual Values: 100, 120, 150, 200

Forecasted Values: 90, 110, 140, 180

Using the above steps, the SMAPE would be calculated as follows:

Absolute difference: 10, 10, 10, 20

Sum of actual and forecasted values: 190, 230, 290, 380

SMAPE: 5.26%, 4.35%, 3.45%, 5.26%

In conclusion, SMAPE can be easily calculated in Excel using basic mathematical formulas, and it provides a comprehensive measure of the accuracy of a forecast.

## Calculate SMAPE in Excel (With Examples)

**The symmetric mean absolute percentage error (SMAPE) is used to measure the predictive accuracy of models. It is calculated as:**

$$\text{SMAPE} = (1/n) * \sum(|\text{forecast} - \text{actual}| / (|\text{actual}| +$$

$$\frac{|\text{forecast}|}{2} * 100$$

where:

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

The smaller the value for SMAPE, the better the predictive accuracy of a given model.

The following step-by-step example explains how to calculate SMAPE in Excel.

Step 1: Enter the Data

First, we'll enter some fake data for the actual sales and the forecasted sales during 12 consecutive sales periods for some company:

	A	B	C	D	E	F	G
1	<b>Month</b>	<b>Actual</b>	<b>Forecasted</b>				
2	January	12	11				
3	February	13	13				
4	March	14	14				
5	April	15	14				
6	May	15	15				
7	June	22	16				
8	July	27	18				
9	August	28	27				
10	September	30	29				
11	October	35	32				
12	November	30	34				
13	December	34	33				
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							

## Step 2: Calculate the SMAPE Differences

Next, we'll calculate the SMAPE difference for each sales period using the following formula:

	A	B	C	D	E	F	G	H
1	<b>Month</b>	<b>Actual</b>	<b>Forecasted</b>	<b>SMAPE differences</b>				
2	January	12	11	0.087	=ABS(C2-B2)/((ABS(B2)+ABS(C2))/2)			
3	February	13	13	0.000				
4	March	14	14	0.000				
5	April	15	14	0.069				
6	May	15	15	0.000				
7	June	22	16	0.316				
8	July	27	18	0.400				
9	August	28	27	0.036				
10	September	30	29	0.034				
11	October	35	32	0.090				
12	November	30	34	0.125				
13	December	34	33	0.030				
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### Step 3: Calculate SMAPE

Lastly, we'll use the following formula to calculate SMAPE:

	A	B	C	D	E	F	G
1	<b>Month</b>	<b>Actual</b>	<b>Forecasted</b>	<b>SMAPE differences</b>			
2	January	12	11	0.087			
3	February	13	13	0.000			
4	March	14	14	0.000			
5	April	15	14	0.069			
6	May	15	15	0.000			
7	June	22	16	0.316			
8	July	27	18	0.400			
9	August	28	27	0.036			
10	September	30	29	0.034			
11	October	35	32	0.090			
12	November	30	34	0.125			
13	December	34	33	0.030			
14			<b>SMAPE</b>	0.0989	=SUM(D2:D13)/COUNT(D2:D13)		
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							

**The SMAPE for this particular model turns out to be 9.89%.**