

- 12-6.** The manager of the Excom Service Station wants to forecast the demand for unleaded gasoline next month so that the proper number of gallons can be ordered from the distributor. The owner has accumulated the following data on demand for unleaded gasoline from sales during the past 10 months:

Month	Gasoline Demanded (gal)
October	800
November	725
December	630
January	500
February	645
March	690
April	730
May	810
June	1200
July	980

- Compute an exponentially smoothed forecast using an α value of 0.30.
- Compute an adjusted exponentially smoothed forecast ($\alpha = 0.30$ and $\beta = 0.20$).
- Compare the two forecasts using MAPD and indicate which seems to be the most accurate.

- 12-7.** The Intrepid mutual fund of growth stocks has had the following average monthly price for the past 10 months.

Month	Fund Price
1	62.7
2	63.9
3	68.0
4	66.4
5	67.2
6	65.8
7	68.2
8	69.3
9	67.2
10	70.1

Compute the exponentially smoothed forecast with $\alpha = 0.40$, the adjusted exponentially smoothed forecast with $\alpha = 0.40$ and $\beta = 0.30$, and the linear trend line forecast. Compare the accuracy of the three forecasts using cumulative error and MAD, and indicate which forecast appears to be most accurate.

- 12-8.** The Oceanside Hotel is adjacent to City Coliseum, a 24,000-seat arena that is home to the city's professional basketball and ice hockey teams and that hosts a variety of concerts, trade shows, and conventions throughout the year. The hotel has experienced the following occupancy rates for the nine years since the coliseum opened:

Year	Occupancy Rate
1	75%
2	70
3	72

Year	Occupancy Rate
4	77
5	83
6	81
7	86
8	91
9	87

Compute an exponential smoothing forecast with $\alpha = 0.20$, an adjusted exponential smoothing forecast with $\alpha = 0.20$ and $\beta = 0.20$, and a linear trend line forecast. Compare the three forecasts using MAD and average error ($\bar{E}$), and indicate which forecast seems to be most accurate.

- 12-9.** Mary Hernandez has invested in a stock mutual fund and she is considering liquidating and investing in a bond fund. She would like to forecast the price of the stock fund for the next month before making a decision. She has collected the following data on the average price of the fund during the past 20 months.

Month	Fund Price	Month	Fund Price
1	63 1/4	11	68 1/8
2	60 1/8	12	63 1/4
3	61 3/4	13	64 3/8
4	64 1/4	14	68 5/8
5	59 3/8	15	70 1/8
6	57 7/8	16	72 3/4
7	62 1/4	17	74 1/8
8	65 1/8	18	71 3/4
9	68 1/4	19	75 1/2
10	65 1/2	20	76 3/4

- Using a three-month moving average, forecast the fund price for month 21.
- Using a three-month weighted average with the most recent month weighted 0.60, the next most recent month weighted 0.30, and the third month weighted 0.10, forecast the fund price for month 21.
- Compute an exponentially smoothed forecast using $\alpha = 0.40$ and forecast the fund price for month 21.
- Compare the forecasts in (a), (b), and (c) using MAD and indicate the most accurate.

- 12-10.** Globetron manufactures components for use in small electronic products such as computers, CD players, and radios at plants in Belgium, Germany, and France. The parts are transported by truck to Hamburg, where they are shipped overseas to customers in Mexico, South America, the United States, and the Pacific Rim. The company has to reserve space on ships months and sometimes years in advance, and thus needs an accurate forecasting model. Following are the number of cubic feet of container space the company has used in each of the past 18 months.

Month	Space (1000s ft ³)	Month	Space (1000s ft ³)
1	10.6	3	9.8
2	12.7	4	11.3

(Continued)