1. Corporate Triple A Bond interest rates for 12 consecutive months are 9.5, 9.3, 9.4, 9.6, 9.58, 9.7, 9.8, 10.5, 9.9, 9.7, 9.6, and 9.6.
2. Develop three- and four-month averages for this time series. Which moving average provides the better forecasts? Explain.
3. What is the moving average forecast for the next month?

9. The following data represent 15 quarters of manufacturing capacity utilization (in percentages):

**Quarter/Year Utilization Quarter/Year Utilization**

1/2000 82.5 1/2002 78.8

2/2000 81.3 2/2002 78.7

3/2000 81.3 3/2002 78.4

4/2000 79.0 4/2002 80.0

1/2001 76.6 1/2003 80.7

2/2001 78.0 2/2003 80.7

3/2001 78.4 3/2003 80.8

4/2001 78.0

1. Compute three- and four-quarter moving averages for this time series. Which moving average provides the better forecast for the fourth quarter of 2003?
2. Use smoothing constants of a=0.4 and a=0.5 to develop forecasts for the fourth quarter of 2003. Which smoothing constant provides the better forecast?
3. Based on the analysis in parts (a) and (b), which method-moving averages or exponential smoothing-provides the better forecast? Explain.

17. TV ratings provided by Nielsen Media Research show the percentage of TV-owning households tuned into a particular program. The following data show the rating for the top-rated TV show of each season, from 1987-1988 to 2000-2001 ( *The New York Times Almanac 2002*):

 **Season Rating Season Rating**

 1987-1988 27.8 1994-1995 20.5

 1988-1989 25.5 1995-1996 22.0

 1989-1990 23.4 1996-1997 21.2

 1990-1991 21.6 1997-1998 22.0

 1991-1992 21.7 1998-1999 17.8

 1992-1993 21.6 1999-2000 16.6

 1993-1994 21.9 2000-2001 17.4

1. Graph this time series. Does a linear trend appear?
2. Develop a linear trend equation for this time series.
3. Use the trend equation to estimate the rating for the 2001-2002 season.

21. Hudson Marine has been an authorized dealer for C&D marine radios for the past seven years. The number of radios sold each year is shown.

 **Year 1 2 3 4 5 6 7**

 **Number Sold 35 50 75 90 105 110 130**

1. Graph this time series. Does a linear trend appear?
2. Develop the equation for the linear trend component for the time series.
3. Use the linear trend developed in part (b) to prepare a forecast for sales in year 8.