**Part 1**. **Computation of Indices**

Below is information on food items for the years 2000 and 2004. [Due Day 4]

|  |  |  |
| --- | --- | --- |
| Item | 2000 | 2004 |
| Price | Quantity | Price | Quantity |
| Margarine (pound) | $0.81 | 18 | $0.89 | 27 |
| Shortening (pound) | 0.81 | 5 | 0.94 | 9 |
| Milk (½ gallon) | 1.44 | 70 | 1.43 | 65 |
| Potato chips | 2.91 | 27 | 3.07 | 33 |

**A.** Compute a simple price index for each of the four items. Use 2000 as the base period.

**B.** Compute a simple aggregate price index. Use 2000 as the base period.

**C.** Compute *Laspeyres’ price index* for 2004 using 2000 as the base period.

**D.** Compute *Paasche’s index* for 2004 using 2000 as the base period.

**E.** Determine *Fisher’s ideal index* using the values for the Laspeyres and Paasche indexes computed in the two previous problems.

**F.** Determine a value index for 2004 using 2000 as the base period.

**Part 2. Convert Price Data to Indices**

The following historical data obtained from the U.S Department of Energy (<http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/mogas_history.html>) shows the yearly average regular conventional retail gasoline Price (US$ per Gallon) for the period 1990-2010.

|  |  |  |
| --- | --- | --- |
| Year | Code | Av. Regular Retail Gasoline Prices (US$ per Gallon) |
| 1990 | 1 | 1.30 |
| 1991 | 2 | 1.10 |
| 1992 | 3 | 1.09 |
| 1993 | 4 | 1.07 |
| 1994 | 5 | 1.07 |
| 1995 | 6 | 1.10 |
| 1996 | 7 | 1.19 |
| 1997 | 8 | 1.19 |
| 1998 | 9 | 1.02 |
| 1999 | 10 | 1.12 |
| 2000 | 11 | 1.46 |
| 2001 | 12 | 1.38 |
| 2002 | 13 | 1.31 |
| 2003 | 14 | 1.52 |
| 2004 | 15 | 1.81 |
| 2005 | 16 | 2.24 |
| 2006 | 17 | 2.53 |
| 2007 | 18 | 2.77 |
| 2008 | 19 | 3.21 |
| 2009 | 20 | 2.31 |
| 2010 | 21 | 2.72 |

1. Determine the linear regression equation for the gasoline retail price (1990-2010).Using the equation, forecast the gasoline price for 2012, which is year 23 (1990 = Year 1).

2. Compute the gasoline retail price data to a moving average series using a 5-year interval. Draw the trendline for the moving average series. Explain the trend.

*To compute the moving average, first, insert the original series in Excel Column A. Use Excel, Data Analysis, Moving Average function. Show the input range. Insert 5 for interval, show the output range next to the original series in column B. Check chart output box. You may also use Megastat, Time Series/Forecasting function, to compute the moving average.*

3. Convert the gasoline retail price to a price index using the year 1990 as a base year (1990 = 100). Graph the data in line chart. What do the indices suggest about the rate of price inflation? Has the rate of inflation increased, decreased, or remained unchanged during 1990-2010?