36-201 Spring 1999
Solutions to Homework 13

1. `Moore, 6.32 (p.391-392)`.

   (a) Gasoline prices tend to rise during summers, probably due to the increase in demand originated by vacations and travels.

   (b) Gasoline prices show an increasing trend over the years.

   (c) The Gulf War caused a jump in gasoline prices in 1990. There is no long term effect after this jump.

2. `Moore, 6.36 (p.394)`.

   (a) To study trends in the economy we need to use the seasonally adjusted series of the CPI. It's easier to identify trends after removing seasonal effects.

   (b) If we want to keep pace with the actual prices we pay we need to use the unadjusted series.

3. `Moore, 6.44 (p.397)`.

   The price in gold in 1983 dollars is found as

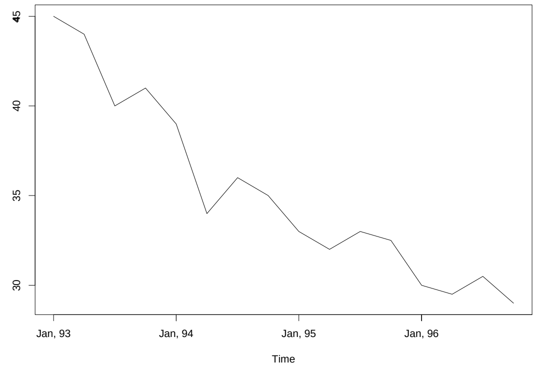
$$Dollars\ in\ 1983 \quad = \quad Dollars\ in\ year\ x \times \frac{CPI\ 1983}{CPI\ year\ x}$$

Year	Gold Price	CPI	1983 dollars
1983	385	99.6	385
1985	329	107.6	305
1987	486	113.6	426
1989	403	124.0	324
1991	354	136.2	259
1993	391	144.5	270
1995	392	152.4	256

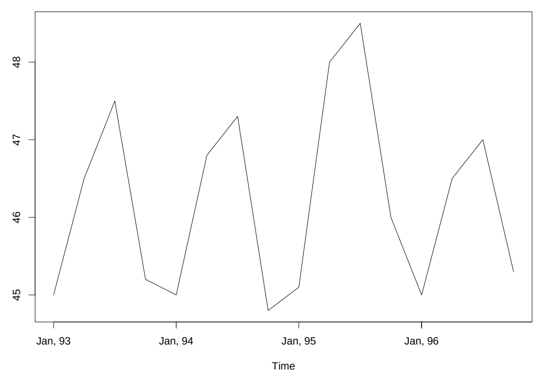
The dashed line shows that the real price of gold decreased drastically after 1987, so an investment in gold would not have protected against inflation.

4. Moore, 6.45 (p.398).

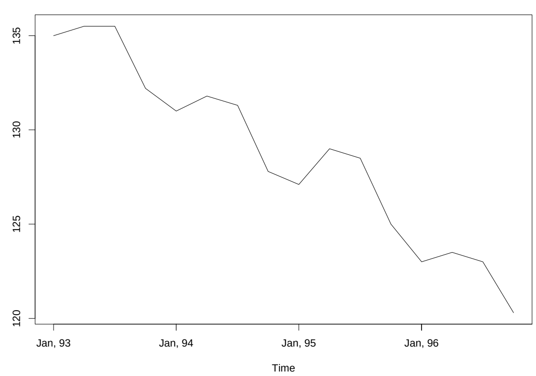
   (a) Downward trend, no seasonal variation:



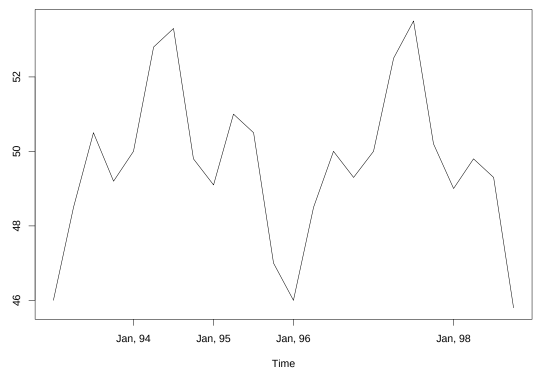
   (b) Seasonal variation, no clear trend:



   (c) String downward trend with yearly seasonal variation:



(d) Yearly seasonal variation, no clear trend, irregular cycles 3 years long:



5. `Moore, 6.46 (p.398)`.

   In order to identify seasonal variations that span a year or more, one need several years to be able to decide what is really seasonal variation and what is just random fluctuation.