



# Introduction to Statistics

## Exercises 6: Time series and index numbers

**Exercise 1.** An overall upward or downward pattern in an annual time series would be contained in which component of the times series

- a) Trend
- b) Cyclical
- c) Irregular
- d) Seasonal

**Exercise 2.** The following table contains the number of complaints received in a department store for the first 6 months of last year.

Month	Complaints
Jan	36
Feb	45
Mar	81
Apr	90
May	108
Jun	144

If a 3 term moving average is used to smooth this series, what would be the second calculated term?

- a) 36
- b) 40.5
- c) 54
- d) 72

**Exercise 3.** The mean salaries of a type of office worker between 2006 and 2015 are:

1527; 1531; 1543; 1563; 1579; 1579; 1602; 1628; 1629; 1632

- a) Calculate an index which shows the changes in mean salary with reference to the base year 2006.
- b) How would the index change if we changed the base year to 2008?
- c) If the index of prices went up by 10% in the period 2006-2015, how much money did these office workers gain in real terms in this period?

**Exercise 4.** If the price index of bananas was 100 in 2007 and that for apples was 110, then the price of a kg of bananas was .....

- a) less than for apples.
- b) more than for apples.
- c) equal to that of a kg of apples
- d) impossible to compare.

**Exercise 5.** Given the prices and quantities consumed of articles A, B and C corresponding to the years 1997 a 1999, determine, given the base year 1997:

- a) The weighted *price indices* of Laspeyres and Paasche
- b) The weighted *quantity indices* of Laspeyres and Paasche.

Años	Artículo A		Artículo B		Artículo C	
	Precio	Cantidad	Precio	Cantidad	Precio	Cantidad
1997	4	15	6	12	10	12
1998	4	16	9	10	11	15
1999	5	18	9	6	12	16

**Exercise 6.** The quantities and prices if products A and B used by a company in the years 1980-81 are given below:

Año	A: Cantidad	A: Precio	B: Cantidad	B: Precio
1980	10	2	20	3
1981	20	3	10	2

- a) Calculate the Laspeyres and Paasche price indices with base year 1980.
- b) If it is known that in 1982, the quantities A and B were 30 and 40, respectively, and that the indices of Laspeyres and Paasche were both double their values in 1981, calculate the prices of both products.