



# Applied Statistics

## Exercises 3

**PROBLEM 1.** Given the data 2, 5, 7, 9, 12, calculate:

- The mean and median.
- If we add 5 to each datum, what will the new values of the mean and median be?
- If we add 200 to the last value only, what will happen to the mean and median?
- What will the mean and median be if we multiply all the data by 3?

**PROBLEM 2.** The hourly wages (€) of 65 factory workers are given in the following table:

<b>Wage</b>	[50, 60)	[60, 70)	[70, 80)	[80,90)	[90, 100)	[100, 110)	[110, 120)
<b>n:</b>	8	10	16	14	10	5	2

- Construct a table of frequencies and cumulative frequencies.
- Draw a histogram of this data.
- Calculate the mean, median and mode.
- Calculate the three quartiles.
- Calculate the 30% and 90% percentiles.

**PROBLEM 3.** Calculate the following measures of dispersion for the data of Problem 1:

- Variance and standard deviation.
- Coefficient of variation.
- Range and interquartile range.

**PROBLEM 4.** For a variable with mean 8 and standard deviation 0, what can we say about the possible values of this variable?

**PROBLEM 5.** A class of 20 Social Science students give ratings from 1 to 5 to the new government where 1 = very bad and 5 = very good.

1 3 3 4 1 2 2 2 5 1  
4 5 1 5 3 5 1 4 1 2

Which of the following is correct?

- The mode is 1, the median is 2.5 and the mean is 2.75.
- The mode is 2.5, the mean is 1 and the median is 2.75.
- The mode is 1, the median is 2,75 and the mean is 2.5.
- None of the above.

**PROBLEM 6.** A researcher counts the number of photos on the first page of a newspaper during **N** randomly chosen days. The information obtained is as below:

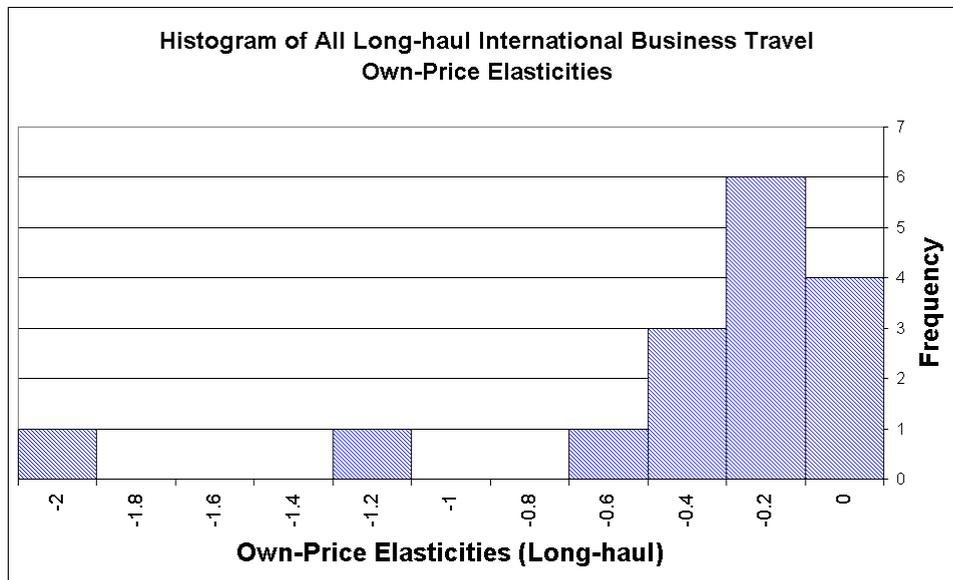
Nº photos	$n_i$	$F_i$
0	25	0.25
1	20	0.45
2		
3	15	0.95
4		
Total		

- Complete the table.
- Calculate the mean number of photos.
- Obtain the variance and the standard deviation.
- Draw a suitable graph of the data.

**PROBLEM 7.** If two samples have the same variance:

- They have the same standard deviation.
- They have the same mean.
- They have the same interquartile range.
- None of the above.

**PROBLEM 8.** The histogram below shows the elasticity of demand for long haul flights.



Mark which of the following is correct:

- The mean is higher than the mode.
- The mean is lower than the mode.
- The mean and mode are equal.
- The variance is negative.

**PROBLEM 9.** The wage distribution in a small country is unimodal with mode less than median and the mean somewhat higher than both. Which of the following diagrams could represent the shape of the wage distribution in this country?

