Question 1

A researcher wants to know if the Irish public are in support of a new government policy - she believes that less than 30% of the public support it. She wishes to test this hypothesis by carrying out a survey. From a list of all individuals living in her local area, shes draws a random sample of 80 individuals and finds that 23 are in favour.

(a) What is the population? **(b)** What is the sample? **(c)** What is the value of n? **(d)** Identify the the parameter and statistic - give the symbol and value for both. **(e)** What type of data was collected on each of the individuals in the sample? **(f)** Identify any potential bias. **(g)** Can we confirm her hypothesis?

Question 2

Employees of a software firm were each assigned the task of developing a tool. Once completed, they each submitted their code and executable file. A number of details were recorded:

(a) The number of lines of code. **(b)** Time taken to develop the tool. **(c)** Experience level of the employee (high, average, low). **(d)** The size of the executable file (megabytes). **(e)** Does the tool work? (yes/no) **(f)** The employee's age. **(g)** Gender.

For each of the above, identify the data type.

Question 3

2	4	2	1	5	3	0	4	1	8

For the above sample of numbers, calculate the following:

(a) Mean. **(b)** Median. **(c)** Standard deviation. **(d)** Inter-quartile range.

Question 4

A laptop manufacturer wishes to test a particular brand of CPU. A sample of 30 CPUs were selected and used to perform an intensive task for 1 hour. The temperature of each one was then recorded.

29.7	34.6	34.8	35.1	35.9	36.0	36.7	36.8	37.6	37.9
38.1	38.2	38.5	38.7	39.3	39.6	40.1	40.1	40.3	40.3
41.0	41.1	41.4	41.6	42.2	42.2	43.0	44.5	44.5	47.9

(a) Construct a frequency table with 5 classes (use 29 as the first breakpoint). **(b)** Draw the histogram (use relative frequency). **(c)** Calculate the median. **(d)** Calculate the quartiles. **(e)** Using the lower/upper fences, identify any outliers. **(f)** Draw the boxplot. **(g)** Is the data symmetric, left-skewed or right-skewed?