

# Statistics Summer Homework

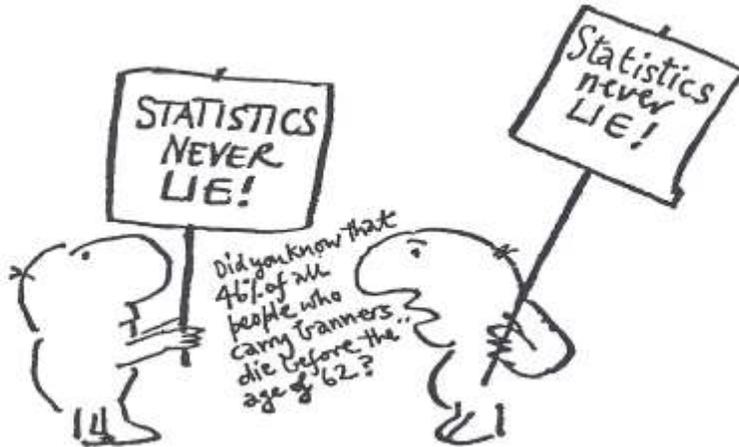
## AN INTRODUCTION TO A LEVEL STATISTICS

*"A single death is a tragedy, a million deaths is a statistic."* Joseph Stalin

At the start of your A level Statistics course, you will be asked to collect a set of data, and then use various statistical techniques to analyse it.

In order to do this, we will be reviewing and building upon the statistics you have already studied as part of your GCSE maths course.

In this introduction, you will explore some of the terminology and types of calculation you will be using. If you don't know the answers to all of these questions straight away, then see if you can find out from resources in a library or the internet. If you are still stumped, then don't worry – we will be discussing this topic thoroughly during the course. Good luck!!



### TYPES OF DATA AND DATA COLLECTION

The types of data you can collect fall broadly into two categories – qualitative and quantitative.

1. What do we mean by qualitative data? \_\_\_\_\_

\_\_\_\_\_

2. Give two examples of qualitative data.

a. \_\_\_\_\_

b. \_\_\_\_\_

3. What do we mean by quantitative data? \_\_\_\_\_

\_\_\_\_\_

4. Quantitative data is further categorised as either discrete data or continuous data.

a. What do we mean by discrete data? \_\_\_\_\_

\_\_\_\_\_

b. What do we mean by continuous data? \_\_\_\_\_

\_\_\_\_\_

5. Give two examples of discrete data.

a. \_\_\_\_\_

b. \_\_\_\_\_

6. Give two examples of continuous data.

a. \_\_\_\_\_

b. \_\_\_\_\_

7. What is a sample? \_\_\_\_\_

\_\_\_\_\_

8. What is a population? \_\_\_\_\_

\_\_\_\_\_

9. What is primary data? \_\_\_\_\_

\_\_\_\_\_

10. What is secondary data? \_\_\_\_\_

\_\_\_\_\_

## PICTORIAL REPRESENTATION OF DATA

Some sort of graph/chart/diagram often gives a quick and clever overview of the data.



11. Select from the list below to see if you can match each type of data with an appropriate pictorial representation. (Some types of data may have more than one appropriate diagram).

### Type of data

### Type of diagram

Qualitative

\_\_\_\_\_

Discrete (ungrouped)

\_\_\_\_\_

Discrete (grouped)

\_\_\_\_\_

Continuous

\_\_\_\_\_

Select from: *Vertical line graph, pie chart, histogram, scatter graph, bar chart, pictogram*

12. You will also be using box and whisker plots and cumulative frequency curves to represent data.

a. What does a box and whisker plot show? \_\_\_\_\_

\_\_\_\_\_

b. What does a cumulative frequency curve show? \_\_\_\_\_

\_\_\_\_\_

**STATISTICAL CALCULATIONS**

You will be asked to calculate different representations of central tendency. There are three main types – mean, median and mode.

13. What is mean, and how do we calculate it? \_\_\_\_\_  
\_\_\_\_\_

14. What is median, and how do we calculate it? \_\_\_\_\_  
\_\_\_\_\_

15. What is mode? \_\_\_\_\_

*It is also extremely useful to study the spread of a set of data:*

16. What is the range? \_\_\_\_\_

- 17 What is represented by
- a. the standard deviation? \_\_\_\_\_
  - b. the variance? \_\_\_\_\_
  - c. What is the relationship between them? \_\_\_\_\_

- 18 What do we mean by
- a. the lower quartile? \_\_\_\_\_
  - b. the upper quartile? \_\_\_\_\_
  - c. the interquartile range (and what does it represent?)  
\_\_\_\_\_

19. Fifteen randomly chosen students were each asked how many children there were in their family. The results are as follows:

1, 3, 4, 5, 2, 3, 2, 2, 4, 2, 5, 2, 6, 1, 7

Find

- a. the mode \_\_\_\_\_
- b. the median \_\_\_\_\_
- c. the mean \_\_\_\_\_
- d. the range \_\_\_\_\_
- e. the variance \_\_\_\_\_
- f. the standard deviation \_\_\_\_\_
- g. the lower quartile \_\_\_\_\_
- h. the upper quartile \_\_\_\_\_
- i. the interquartile range \_\_\_\_\_
- j. what diagram would you use to represent this data? \_\_\_\_\_

A final thought from Mark Twain.

*“Get the facts first, and then you can distort them as much as you please.”*

!!!!!!!

In Statistics we use very little in the way of algebra techniques, but if you need a confidence-boost with simultaneous equations, then watch the two videos on this topic using the following link.

<https://sites.google.com/site/tlmaths314/home/gcse-to-a-level-maths-bridging-the-gap>