These notes are intended to give further information about how to answer the *CensusAtSchool* 2014-15 questions, first published September 2014.

Please note that if you want to check the online questions before having the students complete the task, use the word "TESTING" in the "School Name" box and then this row of data can be easily identified in your returned data.

Ideally, students should complete a hard copy of the questionnaire before completing the online questionnaire. In particular, the following points should be noted:

- All the body measurements should be completed in advance as this will help speed up the data entry session, which should take about 25 minutes in total. See the *CensusAtSchool Guide to Taking Measurements*.
- Remind students that slider questions in the online questionnaire require them to move the slider to record a response, even if they move it back to the original position. Otherwise the system will consider that the question has not been answered and will not allow the student to progress to the next page.
- Remind students that the questions involving time require them to use the 24h clock format, e.g., 08:10 and 21:45. Omitting the zero for 08:10 will generate an error. Similarly, the colon rather than a full stop is required.

Data Types in This Questionnaire

Q1, Q4, Q5, Q13, Q14 all give categorical nominal type data.

Q3 gives categorical ordinal type data.

All the other questions give numerical data. Q2, Q6 (shoe size), Q8, Q9 and Q16 give numerical discrete data.

All the data for physical measurements, time, money and ratings on a line provided are naturally continuous numeric data, e.g., Q2, Q6, Q7, Q10, Q11, Q12, Q15, although some are forced into numeric discrete, e.g., Q2, Q7, Q11

Note: Shoe size may also be treated as categorical ordinal data.

Q7. Money used in calculations is a numerical continuous variable, but we are told to round it to numerical discrete values for the purpose of the question.

These questions can be used for the following types of graphical analysis:

Univariate data:

Type of Data	Line plot	Bar chart	Frequency Table	Histogram	Pie chart	Stem plot
Categorical	✓	✓	✓		✓	
Discrete numerical	✓	✓	✓		✓	✓
Continuous numerical	✓		✓	✓		✓

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For comparison purposes, students may use composite bar charts, back to back stem and leaf plots and back to back histograms.

Bivariate data:
Students can draw scatter plots to investigate relationships between two variables such as height and vertical reach etc.

Answering and Interpreting Questions

Q3: Using the data from this question, it is hoped that teachers and students would investigate the well-known "Birthday Paradox". Ask students what do they think is the probability that in a group of 47 people that at least two people share a birthday? Write down their answers. The surprising answer is approximately 95%. Putting two classes together, and checking out if two people have the same birthday causes students to question their intuitive answers to this question. While the mathematics is beyond JC classes it is still a good lesson in reminding us to look carefully at data before making snap judgments.
See also Notes on the Birthday Paradox (mathematics suitable at LC).

Q6: The *CensusAtSchool Guide to Taking Measurements* contains very clear information and diagrams on how pairs of students can work together to compile the measurements required for this question. It might be worthwhile setting up the classroom in advance with four areas where learners measure their:

    a) height and vertical reach;
    b) right and left foot lengths;
    c) open right and left arm spans;
    d) right and left hand spans.

Given that right and left measurements have been asked this adds to the scope of using this bivariate data for questions relating to correlation. Watch out for outliers in the data. Are these genuine data items or are they errors in measurement?

Q7: The "cost of jeans" question might highlight some gender or age differences. Discuss the spread of data for the amount of money spent. Is it a wide spread or do most students spend within a narrow range?

Q16: The number of text messages sent may highlight some gender or age differences. Discuss the spread of the data and watch out for outliers.