Technical Report
for

Longitudinal Proof Project

Year 9 Survey 2001

Volume 1

D Küchemann & C Hoyles

ACKNOWLEDGEMENTS

We acknowledge the financial support of ESRC who funded this research project, Grant Number R000237777. We would like to thank the teachers in our design schools who again assisted us in design and piloting. Finally we would like to express our thanks to all the schools and teachers who agreed to participate in this three year longitudinal study.

We are grateful to Antonia Simon for the analysis presented in sections 6.1, 6.2 and 6.3.

In this technical report we present the design of the Year 9 survey and the data collected. The aims were, first, to identify patterns of mathematical reasoning in high-attaining Year 9 students, as a precursor to studying how these patterns might evolve in this and the subsequent year; and, second, to identify schools which seemed to be highly successful in developing students' mathematical reasoning, with a view to examining these schools more closely in order to identify factors that might have contributed to their success.

CONTENTS

VOLUME 1 Technical Report for Longitudinal Proof Project, Year 9 Survey, 2001

VOLUME 2 Multilevel Analysis Report

1 AIMS

The general aim of the project is to advance understanding of how students learn to reason mathematically by studying their progress over time.

The more specific aims of the project are to:-
a. identify, through large-scale longitudinal study, individual, school and teacher factors which are predictors of secondary school students' competencies in mathematical reasoning;
b. identify and describe different school and classroom approaches that are effective in promoting the development of mathematical reasoning;
c. investigate how individual students progress in mathematical reasoning and trace the factors that shape this progression;
d. contribute to guidance for the teaching profession on ways to promote the development of mathematical reasoning.

2 THE DATA

2.1 Sample and administration

Three questionnaires were developed in Year 9: a student Proof Survey, a Teacher Questionnaire and a School Questionnaire. The questionnaires were based on the corresponding Year 8 questionnaires and are shown in full in Appendix A, B and C respectively.

Students were given the Y9 Proof Survey in June/July 2001, at which time their mathematics teachers completed the Y9 Teacher Questionnaire and the head of mathematics completed the Y9 School Questionnaire. Students had taken Key Stage 3 SATs tests in mathematics a few weeks earlier, in May 2001, and their raw scores on these tests were used in the multilevel statistical analysis (Volume 2 of this report).

In Year 8, 3083 students participated in the study, of whom 2799 took the Proof Survey and 2663 took the Y8 Proof Survey *and* a Baseline Mathematics Test that we had devised for that year. Of the 2799 students who took the Y8 survey, 1984 took the Y9 survey (and all but 77 of these had also taken the Baseline Mathematics Test in Y8). There were also some students who took the Y9 survey but had missed the Y8 survey (for example, because of absence or moving class or school) and it was decided, for logistical as well as theoretical reasons, to put aside their scripts. Part of the fall in numbers from Y8 to Y9 is due to a reduction in the number of (whole) classes participating in Year 9, which is an inevitable consequence of the research design (see the next paragraph). Also 4 of our original 63 schools dropped out of the study in Year 9 (schools 38, 47, 49 and 63). (One of these schools had unfortunately lost their completed scripts, another had a new head of mathematics who felt their students were being overtested and a third was concerned that their students might be demoralised by the survey; the fourth school gave no reason.)

Most schools in the project have a single top mathematics set in Year 10, and where this is the case, our intention is to test just this set when our students reach Year 10. For Year 8, students were therefore selected in such a way that as many as possible of those who were likely to end up in the top set in Year 10 were chosen. Normally, whole classes were selected, unless students were taught mathematics in mixed attainment groups. So, for example, if students in a particular school were taught in two parallel mathematics classes in Year 8 but a single top set in Year 10, both Y8 classes were selected. On the other hand, if students were in mixed attainment groups in Y8 but there was a single top set in Y10, we asked the school to select the 30 or so Y8 students who were thought most

likely to end up in the Y10 top set. A similar logic applied to the selection of Year 9 students. This meant, amongst other things, that if a school moved from parallel top sets in Year 8 to a single top set in Year 9, we would normally only survey the one class in Year 9. (In the event, there were 10 schools where we surveyed fewer classes in Year 9 [usually 1] than in Year 8 [usually 2].) However, some schools decided to continue surveying all (or most of) the original students, though we had not specifically asked them to do this, which occasionally resulted in students from a larger number of classes being involved in Year 9 than in Year 8. (Thus there were 5 schools where we surveyed more classes in Year 9 [usually 2] than in Year 8 [usually 1].)

In Year 8, 6 of our 63 schools had mixed attainment maths groups. A single Y8 class was selected in 25 of the remaining schools and 2 classes in the other 32 schools. In Year 9, we lost one of the schools with mixed attainment groups and according to the School Questionnaire (see Section 8) the others had all started setting their students. Altogether in Year 9, a single class was surveyed in 31 schools, two classes in 25 schools, three classes in 2 schools and nine classes in 1 school.

2.2 Selection of sample schools

Schools invited to participate in the project were chosen at random from within 9 preselected geographical regions. A description of the procedure can be found in the Y8 Technical Report.

3 BASELINE MATHEMATICS TEST and KEY STAGE 3 SCORES

In a previous project conducted by Hoyles and Healy in 1996 (see Healy & Hoyles, 2000), students' Y9 Key Stage 3 scores were used as a 'baseline' indicator of general mathematics attainment. Such an indicator is important if one is trying to identify other factors, be they at the student, class or school level, which might influence students' mathematical reasoning. For the Year 8 survey of the current project, it was felt that it would not be appropriate to use equivalent scores (ie Key Stage 2 test scores) for the Year 8 students, as they were derived from tests taken 2 years previously. We therefore developed a 'Baseline Mathematics Test' to provide us with comparable information, the final version of which is shown in Appendix A of the Y8 report. However, for the Year 9 survey, which is the subject of this report, we decide we would make use of students' KS3 test scores, which were derived from national tests taken in May 2001, just a few weeks before the Y9 Proof Survey was administered. This allowed us to run two sets of multilevel analyses, one set using the Y8 Baseline Mathematics Test as a base, the other using the KS3 scores.

In the previous project, students' KS3 scores were converted into National curriculum levels, and these levels were used in the multilevel analysis. This time, we decided to use the raw scores as this would give a more fine-grained measure of mathematics attainment. Most of the students in our sample took Level 5 - 7 tests or Level 6 - 8 tests. To get a common scale we used a conversion table to change the Level 5 - 7 scores into equivalent Level 6 - 8 scores. The table was devised by QCA who kindly made it available to us. A small number of students in the sample (N = 22) took tests (usually Level 4 - 6) for which we had no conversion table and these students were not used in the analysis. The table below shows the distribution of students' actual or converted Level 6 - 8 scores.

score	frequency	% of total
1-9	1	0%
10-19	0	0%
20-29	6	0%
30-39	49	2%
40-49	145	7%
50-59	219	11%
60-69	253	13%
70-79	315	16%
80-89	286	14%
90-99	240	12%
100-109	186	9%
110-119	101	5%
120-129	58	3%
130-139	35	2%
140-149	7	0%
score not converted	22	1%
score not known (eg, absent)	61	3%
Grand Total	1984	100%

Table 3.1: Y8 students' scores on KS3 L6-8 tests, or equivalent scores

4 STUDENT PROOF SURVEY

The Y9 Proof Survey is a 55-minute written test contain 4 arithmetic/algebra questions, 4 geometry questions and one logic question in the context of number and one in the context of geometry. To avoid giving priority to the algebra or the geometry questions, two versions, A and B, of the test were produced containing identical questions in different orders. The final version of the survey is shown in Appendix A.

One of the algebra (A3) and one of the geometry (G3) questions has a multiple-choice format similar to the multiple choice questions used in the Y8 survey and in the previous project: students are presented with a range of answers regarding the truth of a given conjecture, and are asked to choose which answer is nearest to the one that they would give, and which would receive the best mark from their teacher. In the Y9 survey they are also asked which choice they like best. They are then asked to rate the validity and the explanatory power of each answer.

The Y9 questions are similar or identical to the questions used in Year 8, as shown in this table:

Y8 item	Y9 item	How the Y9 items compare to the Y8 items
A1	A1a	similar setting, similar structure
	A1b	extension item
A2	A2	broadly similar
A3	A3	similar (but with an extra choice)
A4	A4	identical
G1	G1	similar setting, similar structure
G2a	G2a	similar setting, identical structure
G2b	G2b	identical
G3	G3	similar (but with an extra choice)
G4a	G4a	similar setting, similar structure
G4b	G4b	broadly similar but open-response format
G4c	G4c	broadly similar but open-response format
L1	LA1	identical
	LG1	different setting from L1/LA1 but same structure

The survey questions were developed by interviewing individuals or small groups of Year 9 students in some of the five design schools and by then compiling the questions into a survey and trailing this with groups or classes of Y9 students. Some of the students involved in the interviews and with the survey trials had also been involved in the development work in Year 8. None of the students seemed to be aware that they had met the same or similar questions before.

4.1 Coding scheme and scoring scheme

For the open response questions in the proof survey, where students were asked for an answer and an explanation or justification, a coding scheme was devised for students' responses which had the general format shown in the table below. Often codes were divided into two or more subcodes (eg code 31, code 32), depending on the variety of student responses. Where a code ends in 0 (eg code 30), this indicates that it has *not* been subdivided. For items involving simpler responses, for example just a yes/no response, an attempt was made to match the general format as closely as possible.

code 1	Correct or incorrect decision; no valid justification
code 2	Correct or incorrect decision; incomplete or flawed justification
code 3	Correct decision; valid and adequate justification (eg at a specific level)
code 4	Correct decision; valid, higher level justification (eg at a general level)
code 9	Miscellaneous wrong answers

In general, code 3 was used for adequate correct answers, and code 4 (and sometimes also code 5) was used for responses that were at a higher level than was needed to answer the item correctly. Usually, code 4 (and code 5) answers were expressed in more general terms than code 3 answers.

The codes used for each item are shown in the coding scheme in Appendix D.

For the multilevel modelling, scores were used rather than codes. For most items, it was possible to score 0, 1, 2 or 3, and usually a score of 3 was given to any answer that was adequate (ie any code 3 answer). It was decided that answers that were better than adequate (ie code 4 and above) should also score 3, rather than more than 3, as the items did not require students to give such answers.

The scores used for each item are also shown in the coding scheme in Appendix D.

5 TEACHER AND SCHOOL QUESTIONNAIRES

A Teacher Questionnaire was given to all the mathematics teachers of the students in the Year 9 sample and a School Questionnaire was given to the head of mathematics in each school. The questionnaires are very similar to the Y8 versions, except that the Y9 School Questionnaire no longer asks about the school's special status (which can be obtained from the DfES school performance tables website) and three of the questions (on Higher education, CPD and Extra-curricula mathematics activities) on the Teacher Questionnaire have been simplified. The original questionnaires were developed in consultation with the teachers in our design schools and with the mathematics advisors in the 10 LEAs. Many of the factors that were included in the corresponding questionnaires in the previous project did not show any significant influence on students' patterns of reasoning. However, it was felt that the same factors should be included in the current questionnaires to see whether these findings would be replicated. The Teacher Questionnaire asks teachers about their age, teaching experience and qualifications, about their continuing professional development, their involvement in extra-curricular mathematics activities and their use of computer

software in teaching. Teachers are also asked to evaluate the choices in the two multiple-choice questions in the students' Proof Survey. The School Questionnaire asks for basic information about the school, about mathematics teaching in Year 9 and about Y9 students' involvement in extra curricular mathematics activities. We have supplemented this with certain information available from the DfES school performance tables.

The questionnaires can be seen in Appendix B and C, and findings are shown in Sections 7 and 8.

6 DATA FROM THE STUDENT PROOF SURVEY

6.1 Descriptive Statistics

The tables below give the following information for each item in the Y9 Proof Survey:
the raw and percentage frequency for all the girls in the sample (N = 1003), all the boys in the sample (N = 981), and for the total sample (N = 1984) for
• each specific response code
• each broad response category
• each score
• each choice (on the multiple choice items).
The meaning of the codes and the scores assigned to the codes are shown on the coding sheet in Appendix D. Please note that all percentages are rounded to the nearest whole number.

For comparison, frequencies are also given for related Y8 items (for the same 1984 students). Also, contingency tables are given for scores or choices on certain pairs of Y9 items and Y9/Y8 items. Where appropriate, frequency tables are also given for particular response-types such as "use of tables" in Y9A1a and "use of diagram" in Y9G2b.

Correlation statistics and tests of significance are given in subsections 6.2, 6.3 and 6.4.

Frequencies for Items Y8A1, Y9A1

	Y8A1						Y9A1a					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	9	12	21	1%	1%	1%	4	7	11	0%	1%	1%
12	250	237	487	25%	24%	25%	171	150	321	17%	15%	16%
12E	4	3	7	0%	0%	0%	2		2	0%	0%	0%
12T							2	2	4	0%	0%	0%
13	102	67	169	10%	7%	9%	49	41	90	5%	4%	5%
13E	1	1	2	0%	0%	0%						
14	7	5	12	1%	1%	1%	11	5	16	1%	1%	1%
21	44	52	96	4%	5%	5%	62	53	115	6%	5%	6%
21T							5	1	6	0%	0%	0%
22	20	14	34	2%	1%	2%	2		2	0%	0%	0%
22E	5	2	7	0%	0%	0%						
23	6	10	16	1%	1%	1%	8	13	21	1%	1%	1%
23T	1	1	2	0%	0%	0%	2		2	0%	0%	0%
24	1		1	0%		0%						
30	306	329	635	31%	34%	32%	352	347	699	35%	35%	35%
30E	7	13	20	1%	1%	1%	3	2	5	0%	0%	0%
30T	5	4	9	0%	0%	0%	10	7	17	1%	1%	1%
41	5	9	14	0%	1%	1%	47	58	105	5%	6%	5%
41E							1	1	2	0%	0%	0%
41T	1		1	0%		3%						
42	29	25	54	3%	3%	0%	83	94	177	8%	10%	9%
42E	1	2	3	0%	0%	0%		2	2	0%	0%	0%
42T	4	2	6	0%	0%	3%	2		2	0%	0%	0%
50	27	36	63	3%	4%	0%	60	71	131	6%	7%	7%
50E	2	1	3	0%	0%	4%	3		3	0%	0%	0%
50EL							1		1	0%	0%	0%
50L	29	51	80	3%	5%	0%	51	58	109	5%	6%	5%
50LE	1	2	3	0%	0%	1%						
50LT	11	8	19	1%	1%	11%	23	17	40	2%	2%	2%
50LTE	2		2	0%		0%						
50T	1		1	0%		0%	2	2	4	0%	0%	0%
91							1	4	5	0%	0%	0%
92								1	1	0%	0%	0%
93	122	95	217	12%	10%	0%	46	45	91	5%	5%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A1.1 Y8A1, Y9A1a: full code frequencies

	Y8A1						Y9A1a					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	9	12	21	1%	1%	1%	4	7	11	0%	1%	1%
12	254	240	494	25%	24%	25%	175	152	327	17%	15%	16%
13	103	68	171	10%	7%	9%	49	41	90	5%	4%	5%
14	7	5	12	1%	1%	1%	11	5	16	1%	1%	1%
21	44	52	96	4%	5%	5%	67	54	121	7%	6%	6%
22	25	16	41	2%	2%	2%	2		2	0%		0%
23	7	11	18	1%	1%	1%	10	13	23	1%	1%	1%
24	1	0	1	0%		0%						
30	318	346	664	32%	35%	33%	365	356	721	36%	36%	36%
41	6	9	15	1%	1%	1%	48	59	107	5%	6%	5%
42	34	29	63	3%	3%	3%	85	96	181	8%	10%	9%
50	73	98	171	7%	10%	9%	140	148	288	14%	15%	15%
91							1	4	5	0%	0%	0%
92								1	1		0%	0%
93	122	95	217	12%	10%	11%	46	45	91	5%	5%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A1.2 Y8A1, Y9A1a: stripped code frequencies

	Y8A1						Y9A1a					
Broad Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Pattern spotting (code **1**)	373	325	698	37%	33%	35%	239	205	444	24%	21%	22%
Partial recognition of structure (code **2**)	77	79	156	8%	8%	8%	79	67	146	8%	7%	7%
Correct, specific (code **3**)	318	346	664	32%	35%	33%	365	356	721	36%	36%	36%
Correct, general (code **4**)	40	38	78	4%	4%	4%	133	155	288	13%	16%	15%
Correct, name variable (code **5**)	73	98	171	7%	10%	9%	140	148	288	14%	15%	15%
Other incorrect (code **9**)	122	95	217	12%	10%	11%	47	50	97	5%	5%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A1.3 Y8A1, Y9A1a: broad code frequencies

	Y9A1a broad codes						
Y8A1 broad codes	code **1**	code **2**	code **3**	code **4**	code **5**	code **9**	**Total**
Pattern spotting (code **1**)	251	54	186	86	82	39	698
Partial recognition of structure (code **2**)	29	20	59	23	20	5	156
Correct, specific (code **3**)	87	39	316	109	91	22	664
Correct, general (code **4**)	8		34	18	16	2	78
Correct, name variable (code **5**)	14	12	58	28	54	5	171
Other incorrect (code **9**)	55	21	68	24	25	24	217
Total	444	146	721	288	288	97	1984

Table 6-A1.4i Y8A1 by Y9A1a: broad code frequencies (number)

	Y9A1a broad codes						
Y8A1 broad codes	code **1**	code **2**	code **3**	code **4**	code **5**	code **9**	**Total**
Pattern spotting (code **1**)	13%	3%	9%	4%	4%	2%	35%
Partial recognition of a structure (code **2**)	1%	1%	3%	1%	1%	0%	8%
Correct, specific (code **3**)	4%	2%	16%	5%	5%	1%	33%
Correct, general (code **4**)	0%	0%	2%	1%	1%	0%	4%
Correct, name variable (code **5**)	1%	1%	3%	1%	3%	0%	9%
Other incorrect (code **9**)	3%	1%	3%	1%	1%	1%	11%
Total	22%	7%	36%	15%	15%	5%	100%

Table 6-A1.4ii Y8A1 by Y9A1a: broad code frequencies (percent)

	Y8A1						Y9A1a					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 1) Pattern spotting; incorrect answer or **0** (code 91,92, 93) other incorrect answers	495	420	915	49%	43%	46%	286	255	541	29%	26%	27%
1 (code 21) Some correct data; incorrect/no answer	44	52	96	4%	5%	5%	67	54	121	7%	6%	6%
2 (code 22, 23, 24) Correct deduction from incorrect structure; or correct answer with no/incorrect reason	33	27	60	3%	3%	3%	12	13	25	1%	1%	1%
3 (code 3, 4, 5) Correct answer and correct structure (specific or general)	431	482	913	43%	49%	46%	638	659	1297	64%	67%	65%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A1.5 Y8A1, Y9A1a: score frequencies

	Y9A1a Score				
Y8A1 Score	**0**	**1**	**2**	**3**	**Total**
0 (code 1) Pattern spotting; incorrect answer or **0** (code 91,92, 93) other incorrect answers	369	66	9	471	915
1 (code 21) Some correct data; incorrect/no answer	21	7	3	65	96
2 (code 22, 23, 24) Correct deduction from incorrect structure; or correct answer with no/incorrect reason	13	8	2	37	60
3 (code 3, 4, 5) Correct answer and correct structure (specific or general)	138	40	11	724	913
Total	541	121	25	1297	1984

Table 6-A1.6i Y8A1 by Y9A1a: score frequencies (number)

	Y9A1a Score				
Y8A1 Score	**0**	**1**	**2**	**3**	**Total**
0 (code 1) Pattern spotting; incorrect answer or **0** (code 91,92, 93) other incorrect answers	19%	3%	0%	24%	46%
1 (code 21) Some correct data; incorrect/no answer	1%	0%	0%	3%	5%
2 (code 22, 23, 24) Correct deduction from incorrect structure; or correct answer with no/incorrect reason	1%	0%	0%	2%	3%
3 (code 3, 4, 5) Correct answer and correct structure (specific or general)	7%	2%	1%	36%	46%
Total	27%	6%	1%	65%	100%

Table 6-A1.6ii Y8A1 by Y9A1a: score frequencies (percent)

	Y8A1						Y9A1a					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
12T*							2	2	4	0%	0%	0%
21T*							5	1	6	0%	0%	0%
23T	1	1	2	0%	0%	0%	2		2	0%	0%	0%
30T	5	4	9	0%	0%	0%	10	7	17	1%	1%	1%
41T	1		1	0%		3%						
42T	4	2	6	0%	0%	3%	2		2	0%	0%	0%
50LT	11	8	19	1%	1%	11%	23	17	40	2%	2%	2%
50LTE	2		2	0%		0%						
50T	1		1	0%		0%	2	2	4	0%	0%	0%
Total	25	15	40	2%	2%	2%	46	29	75	5%	3%	4%

** Codes 12T and 21T were not used in Year 8*

Table 6-A1.7 Y8A1, Y9A1a: use of tables

Y9A1b

Codes	N Girls	N Boys	N All	% Girls	% Boys	% All
11	10	17	27	1%	2%	1%
11W		1	1		0%	0%
12	118	96	214	12%	10%	11%
12G	2	5	7	0%	1%	0%
12W	11	6	17	1%	1%	1%
12Y	1	3	4	0%	0%	0%
13	6	4	10	1%	0%	1%
13W	1		1	0%		0%
21	56	37	93	6%	4%	5%
21G	7	7	14	1%	1%	1%
21W	2	4	6	0%	0%	0%
21Y	1	1	2	0%	0%	0%
22	29	30	59	3%	3%	3%
22G	1	1	2	0%	0%	0%
22P	1		1	0%		0%
22W	3	2	5	0%	0%	0%
23	2	2	4	0%	0%	0%
23G	8	12	20	1%	1%	1%
30	537	550	1087	54%	56%	55%
30B	1	1	2	0%	0%	0%
30P	2	2	4	0%	0%	0%
30PW		1	1		0%	0%
30W	18	26	44	2%	3%	2%
30Y	2	5	7	0%	1%	0%
91	77	62	139	8%	6%	7%
92	1	2	3	0%	0%	0%
93	103	102	205	10%	10%	10%
93P	3	2	5	0%	0%	0%
Total	1003	981	1984	100%	100%	100%

Table 6-A1.8 Y9A1b: full code frequencies

	Y9A1b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	10	18	28	1%	2%	1%
12	132	110	242	13%	11%	12%
13	7	4	11	1%	0%	1%
21	66	49	115	7%	5%	6%
22	34	33	67	3%	3%	3%
23	10	14	24	1%	1%	1%
30	560	585	1145	56%	60%	58%
91	77	62	139	8%	6%	7%
92	1	2	3	0%	0%	0%
93	106	104	210	11%	11%	11%
Total	1003	981	1984	100%	100%	100%

Table 6-A1.9 Y9A1b: stripped code frequencies

	Y9A1b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Pattern spotting (code **1**)	149	132	281	15%	13%	14%
Partial recognition of structure (code **2**)	110	96	206	11%	10%	10%
Correct, specific (code **3**)	560	585	1145	56%	60%	58%
Other incorrect (code **9**)	184	168	352	18%	17%	18%
Total	1003	981	1984	100%	100%	100%

Table 6-A1.10 Y9A1b: broad code frequencies

	Y9A1b broad codes				
Y9A1a broad codes	code **1**	code **2**	code **3**	code **9**	**Total**
Pattern spotting (code **1**)	258	18	40	128	444
Partial recognition of structure (code **2**)	5	72	29	40	146
Correct, specific (code **3**)	2	56	597	66	721
Correct, general (code **4**)	4	33	208	43	288
Correct, name variable (code **5**)		16	260	12	288
Other incorrect (code **9**)	12	11	11	63	97
Total	281	206	1145	352	1984

Table 6-A1.11i Y9A1a by Y9A1b: broad code frequencies (number)

	Y9A1b broad codes				
Y9A1a broad codes	code **1**	code **2**	code **3**	code **9**	**Total**
Pattern spotting (code **1**)	13%	1%	2%	6%	22%
Partial recognition of a structure (code **2**)	0%	4%	1%	2%	7%
Correct, specific (code **3**)	0%	3%	30%	3%	36%
Correct, general (code **4**)	0%	2%	10%	2%	15%
Correct, name variable (code **5**)	0%	1%	13%	1%	15%
Other incorrect (code **9**)	1%	1%	1%	3%	5%
Total	14%	10%	58%	18%	100%

Table 6-A1.11ii Y9A1a by Y9A1b: broad code frequencies (percent)

	Y9A1b					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 Pattern spotting, incorrect answer (code 1)	333	300	633	33%	31%	32%
1 (code 21) some correct data; incorrect/no answer	110	96	206	11%	10%	10%
2 (code 22, 23, 24) Correct deduction from incorrect structure, or correct answer with no/incorrect reason	560	585	1145	56%	60%	58%
Total	1003	981	1984	100%	100%	100%

Table 6-A1.12 Y9A1b: score frequencies

	Y9A1b score			
Y9A1a score	**0**	**1**	**2**	**Total**
0 (code 1) Partial spotting; incorrect answer or **0** (codes 91, 92, 93) other incorrect answers	461	29	51	541
1 (code 21) Some correct data; incorrect/no answer	36	70	15	121
2 (code 22, 23, 24) Correct deduction from incorrect structure, or correct answer with no/incorrect reason	9	2	14	25
3 (code 3, 4, 5) Correct answer and correct structure (specific or general)	127	105	1065	1297
Total	633	206	1145	1984

Table 6-A1.13i Y9A1a by Y9A1b: score frequencies (number)

	Y9A1b score			
Y9A1a score	**0**	**1**	**2**	**Total**
0 (code 1) Partial spotting; incorrect answer or **0** (codes 91, 92, 93) other incorrect answers	23%	1%	3%	27%
1 (code 21) Some correct data; incorrect/no answer	2%	4%	1%	6%
2 (code 22, 23, 24) Correct deduction from incorrect structure, or correct answer with no/incorrect reason	0%	0%	1%	1%
3 (code 3, 4, 5) Correct answer and correct structure (specific or general)	6%	5%	54%	65%
Total	32%	10%	58%	100%

Table 6-A1.13ii Y9A1a by Y9A1b: score frequencies (percent)

Frequencies for Items Y8A2, Y9A2

	Y8A2						Y9A2a						Y9A2b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	85	72	157	8%	7%	8%	8	17	25	1%	2%	1%						
10E	3	8	11	0%	1%	1%	1	7	8	0%	1%	0%						
11													7	8	15	1%	1%	1%
11E													1	2	3	0%	0%	0%
21	34	29	63	3%	3%	3%	2	2	4	0%	0%	0%	2	1	3	0%	0%	0%
22	17	27	44	2%	3%	2%	2	3	5	0%	0%	0%	1		1	0%		0%
22E	24	34	58	2%	3%	3%	2	12	14	0%	1%	1%		1	1		0%	0%
23	6	15	21	1%	2%	1%	2	6	8	0%	1%	0%	7	6	13	1%	1%	1%
23E		1	1		0%	0%												
31	141	155	296	14%	16%	15%	49	59	108	5%	6%	5%	18	23	41	2%	2%	2%
31A	5	8	13	0%	1%	1%												
31AE	7	4	11	1%	0%	1%												
31E	40	26	66	4%	3%	3%	12	10	22	1%	1%	1%	8	7	15	1%	1%	1%
32	249	232	481	25%	24%	24%	359	291	650	36%	30%	33%	334	308	642	33%	31%	32%
32E	65	48	113	6%	5%	6%	153	167	320	15%	17%	16%	75	66	141	7%	7%	7%
32EP							3	6	9	0%	1%	0%	12	11	23	1%	1%	1%
32P							37	33	70	4%	3%	4%	32	38	70	3%	4%	4%
40	39	38	77	4%	4%	4%	95	99	194	9%	10%	10%	107	94	201	11%	10%	10%
40E	16	7	23	2%	1%	1%	32	33	65	3%	3%	3%	14	9	23	1%	1%	1%
40P								1	1		0%	0%	4		4	0%		0%
50	17	11	28	2%	1%	1%	19	13	32	2%	1%	2%	15	11	26	1%	1%	1%
50E		6	6		1%	0%	6	2	8	1%	0%	0%	1		1	0%		0%
50EL							23	23	46	2%	2%	2%	7	10	17	1%	1%	1%
50ELP													1		1	0%		0%
50EP													1		1	0%		0%
50L	10	10	20	1%	1%	1%	58	55	113	6%	6%	6%	61	56	117	6%	6%	6%
50LE	1	3	4	0%	0%	0%												
50LP							9	8	17	1%	1%	1%	10	5	15	1%	1%	1%
50P							1		1	0%		0%	2		2	0%		0%
91	90	108	198	9%	11%	10%	60	59	119	6%	6%	6%	158	152	310	16%	15%	16%
91S							3	10	13	0%	1%	1%	56	76	132	6%	8%	7%
92	4	7	11	0%	1%	1%							1	1	2	0%	0%	0%
93	150	132	282	15%	13%	14%	67	65	132	7%	7%	7%	68	96	164	7%	10%	8%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.1 Y8A2, Y9A2a, Y9A2b: full code frequencies

	Y8A2						Y9A2a						Y9A2b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	88	80	168	9%	8%	8%	9	24	33	1%	2%	2%						
11													8	10	18	1%	1%	1%
21	34	29	63	3%	3%	3%	2	2	4	0%	0%	0%	2	1	3	0%	0%	0%
22	41	61	102	4%	6%	5%	4	15	19	0%	2%	1%	1	1	2	0%	0%	0%
23	6	16	22	1%	2%	1%	2	6	8	0%	1%	0%	7	6	13	1%	1%	1%
31	193	193	386	19%	20%	19%	61	69	130	6%	7%	7%	26	30	56	3%	3%	3%
32	314	280	594	31%	29%	30%	552	497	1049	55%	51%	53%	453	423	876	45%	43%	44%
40	55	45	100	5%	5%	5%	127	133	260	13%	14%	13%	125	103	228	12%	10%	11%
50	28	30	58	3%	3%	3%	116	101	217	12%	10%	11%	98	82	180	10%	8%	9%
91	90	108	198	9%	11%	10%	63	69	132	6%	7%	7%	214	228	442	21%	23%	22%
92	4	7	11	0%	1%	1%							1	1	2	0%	0%	0%
93	150	132	282	15%	13%	14%	67	65	132	7%	7%	7%	68	96	164	7%	10%	8%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.2 Y8A2, Y9A2a, Y9A2b: stripped code frequencies

	Y8A2						Y9A2a						Y9A2b					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Pattern spotting (code **1**)	88	80	168	9%	8%	8%	9	24	33	1%	2%	2%	8	10	18	1%	1%	1%
Partial recognition of structure (code **2**)	81	106	187	8%	11%	9%	8	23	31	1%	2%	2%	10	8	18	1%	1%	1%
Correct, specific (code **3**)	507	473	980	51%	48%	49%	613	566	1179	61%	58%	59%	479	453	932	48%	46%	47%
Correct, general (code **4**)	55	45	100	5%	5%	5%	127	133	260	13%	14%	13%	125	103	228	12%	10%	11%
Correct, name variable (code **5**)	28	30	58	3%	3%	3%	116	101	217	12%	10%	11%	98	82	180	10%	8%	9%
Other, incorrect (code **9**)	244	247	491	24%	25%	25%	130	134	264	13%	14%	13%	283	325	608	28%	33%	31%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.3 Y8A2, Y9A2a, Y9A2b: broad code frequencies

	Y9A2b broad codes						
Y8A2 broad codes	code **1**	code **2**	code **3**	code **4**	code **5**	code **9**	**Total**
Spotting number patterns (code **1**)	4	2	72	8	6	76	168
Recognition of structure but method ignored (code **2**)	1	1	80	23	11	71	187
Recognition of structure and method used (code **3**)	1	8	527	122	101	221	980
Structure made explicit and method used (code **4**)			40	26	21	13	100
Structure made explicit using variable names; method used (code **5**)			17	15	20	6	58
Other incorrect (code **9**)	12	7	196	34	21	221	491
Total	18	18	932	228	180	608	1984

Table 6-A2.4i Y8A2 by Y9A2b: broad code frequencies (number)

	Y9A2b						
Y8A2 broad codes	code **1**	code **2**	code **3**	code **4**	code **5**	code **9**	**Total**
Spotting number patterns (code **1**)	0%	0%	4%	0%	0%	4%	8%
Recognition of structure but method ignored (code **2**)	0%	0%	4%	1%	1%	4%	9%
Recognition of structure and method used (code **3**)	0%	0%	27%	6%	5%	11%	49%
Structure made explicit and method used (code **4**)	0%	0%	2%	1%	1%	1%	5%
Structure made explicit using variable names; method used (code **5**)	0%	0%	1%	1%	1%	0%	3%
Other incorrect (code **9**)	1%	0%	10%	2%	1%	11%	25%
Total	1%	1%	47%	11%	9%	31%	100%

Table 6-A2.4ii Y8A2 by Y9A2b: broad code frequencies (percent)

	Y8A2						Y9A2a						Y9A2b					
Scores*	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 10) Pattern spotting; incorrect answer + **0** (code 91, 92,93) other incorrect answers	332	327	659	33%	33%	33%	139	158	297	14%	16%	15%	291	335	626	29%	34%	32%
1 (code 21) Some recognition of structure; method ignored; no answer	34	29	63	3%	3%	3%	2	2	4	0%	0%	0%	2	1	3	0%	0%	0%
2 (code 22, 23) Some recognition of structure; method ignored; correct answer	47	77	124	5%	8%	6%	6	21	27	1%	2%	1%	8	7	15	1%	1%	1%
2.5 (code 31) Recognition of structure; imprecise use of method; partially correct answer	193	193	386	19%	20%	19%	61	69	130	6%	7%	7%	26	30	56	3%	3%	3%
3 (code 32, 40, 50) Recognition of structure; correct use of method; correct answer	397	355	752	40%	36%	38%	795	731	1526	79%	75%	77%	676	608	1284	67%	62%	65%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

**These scores should be halved for Y9A2a and for Y9A2b*

Table 6-A2.5 Y8A2, Y9A2a, Y9A2b: score frequencies

	Y9A2b score					
Y8A2 score	**0**	**0.5**	**1**	**1.25**	**1.5**	**Total**
0 (code 10) Pattern spotting; incorrect answer + (code 91, 92,93) other incorrect answers	313		9	25	312	659
1 (code 21) Some recognition of structure; method ignored; no answer	30				33	63
2 (code 22, 23) Some recognition of structure; method ignored; correct answer	42		1	3	78	124
2.5 (code 31) Recognition of structure; imprecise use of method; partially correct answer	112	1	3	17	253	386
3 (code 32, 40, 50) Recognition of structure; correct use of method; correct answer	129	2	2	11	608	752
Total	626	3	15	56	1284	1984

Table 6-A2.6 Y8A2 by Y9A2b: score frequencies (number)

	Y9A2ci						Y9A2cii					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
12	1		1	0%		0%						
20	21	13	34	2%	1%	2%	12	13	25	1%	1%	1%
31	131	114	245	13%	12%	12%	10	7	17	1%	1%	1%
31A	20	12	32	2%	1%	2%	8	7	15	1%	1%	1%
32	387	370	757	39%	38%	38%	372	343	715	37%	35%	36%
32A	53	53	106	5%	5%	5%	89	79	168	9%	8%	8%
32AP	5	5	10	0%	1%	1%	3	8	11	0%	1%	1%
32P	23	29	52	2%	3%	3%	41	29	70	4%	3%	4%
91	208	225	433	21%	23%	22%	319	336	655	32%	34%	33%
91S	4	6	10	0%	1%	1%	11	15	26	1%	2%	1%
92	2		2	0%		0%	3		3	0%		0%
93	148	154	302	15%	16%	15%	135	144	279	13%	15%	14%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.7 Y9A2ci, Y9A2cii: full code frequencies

Y9A2ci	Y9A2cii

Codes	N Girls	N Boys	N All	% Girls	% Boys	% All	N Girls	N Boys	N All	% Girls	% Boys	% All
12	1		1	0%		0%						
20	21	13	34	2%	1%	2%	12	13	25	1%	1%	1%
31	151	126	277	15%	13%	14%	18	14	32	2%	1%	2%
32	468	457	925	47%	47%	47%	505	459	964	50%	47%	49%
91	212	231	443	21%	24%	22%	330	351	681	33%	36%	34%
92	2		2	0%		0%	3	144	3	0%	15%	0%
93	148	154	302	15%	16%	15%	135		279	13%		14%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.8 Y9A2ci, Y9A2cii: stripped code frequencies

	Y9A2ci						Y9A2cii					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Spotting number patterns (code **1**)	1		1	0%		0%						
Recognition of structure but methods ignored (code **2**)	21	13	34	2%	1%	2%	12	13	25	1%	1%	1%
Recognition of structure and method used (code **3**)	619	583	1202	62%	59%	61%	523	473	996	52%	48%	50%
Other incorrect (code **9**)	362	385	747	36%	39%	38%	468	495	963	47%	50%	49%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.9 Y9A2ci, Y9A2cii: broad code frequencies

	Y9A2ci						Y9A2cii					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 11, 12, 20) Passive description, pattern spotting or use of parameters; or **0** (code 91, 92,93) other incorrect answers	384	398	782	38%	41%	39%	480	508	988	48%	52%	50%
0.83 (code 31) Correct expression for partially correct structure	151	126	277	15%	13%	14%	18	14	32	2%	1%	2%
1 (code 32) Correct expression for correct structure	468	457	925	47%	47%	47%	505	459	964	50%	47%	49%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A2.10 Y9A2ci, Y9A2cii: score frequencies

Frequencies for Items Y8A3, Y9A3

Choice	Y8A3a 'own approach' N Girls	N Boys	N All	% Girls	% Boys	% All	Y8A3b 'best mark' N Girls	N Boys	N All	% Girls	% Boys	% All
Choice A	413	292	705	41%	30%	36%	201	169	370	20%	17%	19%
Choice B	228	289	517	23%	29%	26%	511	521	1032	51%	53%	52%
Choice C	264	271	535	26%	28%	27%	215	220	435	21%	22%	22%
Choice D	63	92	155	6%	9%	8%	20	33	53	2%	3%	3%
c9	35	37	72	3%	4%	4%	56	38	94	6%	4%	5%
Total sample	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A3.1 Y8A3a, Y8A3b: choice frequencies

Choice	Y9A3a 'like best' N Girls	N Boys	N All	% Girls	% Boys	% All	Y9A3b 'own approach' N Girls	N Boys	N All	% Girls	% Boys	% All	Y9A3c 'best mark' N Girls	N Boys	N All	% Girls	% Boys	% All
Choice A	307	282	589	31%	29%	30%	290	298	588	29%	30%	30%	45	72	117	4%	7%	6%
Choice B	245	179	424	24%	18%	21%	149	134	283	15%	14%	14%	54	59	113	5%	6%	6%
Choice C	163	191	354	16%	19%	18%	91	105	196	9%	11%	10%	490	448	938	49%	46%	47%
Choice D	193	217	410	19%	22%	21%	399	349	748	40%	36%	38%	45	56	101	4%	6%	5%
Choice E	60	59	119	6%	6%	6%	29	40	69	3%	4%	3%	304	267	571	30%	27%	29%
c9	35	53	88	3%	5%	4%	45	55	100	4%	6%	5%	65	79	144	6%	8%	7%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A3.2 Y9A3a, Y9A3b, Y9A3c: choice frequencies

Y9A3a 'like best'	Y9A3b 'own approach' Choice A	Choice B	Choice C	Choice D	Choice E	c9	Total
Choice A	308	48	18	196	11	8	589
Choice B	111	149	31	124	5	4	424
Choice C	85	55	119	77	13	5	354
Choice D	49	18	12	317	12	2	410
Choice E	34	12	16	29	28		119
c9	1	1		5		81	88
Total	588	283	196	748	69	100	1984

Table 6-A3.3i Y9A3a by Y9A3b: choice code frequencies (number)

	Y9A3b 'own approach'						
Y9A3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	16%	2%	1%	10%	1%	0%	30%
Choice B	6%	8%	2%	6%	0%	0%	21%
Choice C	4%	3%	6%	4%	1%	0%	18%
Choice D	2%	1%	1%	16%	1%	0%	21%
Choice E	2%	1%	1%	1%	1%	0%	6%
c9	0%	0%	0%	0%	0%	4%	4%
Total	30%	14%	10%	38%	3%	5%	100%

Table 6-A3.3ii Y9A3a by Y9A3b: choice code frequencies (percent)

	Y9A3c 'best mark'						
Y9A3b 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	60	31	278	19	180	20	588
Choice B	4	35	140	6	93	5	283
Choice C	2	8	132	4	42	8	196
Choice D	47	35	353	68	221	24	748
Choice E	2	3	26	3	32	3	69
c9	2	1	9	1	3	84	100
Total	117	113	938	101	571	144	1984

Table 6-A3.4i Y9A3b by Y9A3c: choice code frequencies (number)

	Y9A3c 'best mark'						
Y9A3b 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	3%	2%	14%	1%	9%	1%	30%
Choice B	0%	2%	7%	0%	5%	0%	14%
Choice C	0%	0%	7%	0%	2%	0%	10%
Choice D	2%	2%	18%	3%	11%	1%	38%
Choice E	0%	0%	1%	0%	2%	0%	3%
c9	0%	0%	0%	0%	0%	4%	5%
Total	6%	6%	47%	5%	29%	7%	100%

Table 6-A3.4ii Y9A3b by Y9A3c: choice code frequencies (percent)

	Y9A3c 'best mark'						
Y9A3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	83	26	273	18	168	21	589
Choice B	7	49	219	6	132	11	424
Choice C	4	6	243	4	84	13	354
Choice D	22	27	166	71	112	12	410
Choice E	1	4	33	2	74	5	119
c9		1	4		1	82	88
Total	117	113	938	101	571	144	1984

Table 6-A3.5i Y9A3a by Y9A3c: choice code frequencies (number)

	Y9A3c 'best mark'						
Y9A3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	4%	1%	14%	1%	8%	1%	30%
Choice B	0%	2%	11%	0%	7%	1%	21%
Choice C	0%	0%	12%	0%	4%	1%	18%
Choice D	1%	1%	8%	4%	6%	1%	21%
Choice E	0%	0%	2%	0%	4%	0%	6%
c9	0%	0%	0%	0%	0%	4%	4%
Total	6%	6%	47%	5%	29%	7%	100%

Table 6-A3.5ii Y9A3a by Y9A3c: choice code frequencies (percent)

	Y8A3b 'best mark'					
Y8A3a 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**c9**	**Total**
Choice A	203	381	99	13	9	705
Choice B	53	383	55	14	12	517
Choice C	74	183	261	6	11	535
Choice D	37	78	18	19	3	155
c9	3	7	2	1	59	72
Total	370	1032	435	53	94	1984

Table 6-A3.6i Y8A3a by Y8A3b: choice code frequencies (number)

	Y8A3b 'best mark'					
Y8A3a 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**c9**	**Total**
Choice A	10%	19%	5%	1%	0%	36%
Choice B	3%	19%	3%	1%	1%	26%
Choice C	4%	9%	13%	0%	1%	27%
Choice D	2%	4%	1%	1%	0%	8%
c9	0%	0%	0%	0%	3%	4%
Total	19%	52%	22%	3%	5%	100%

Table 6-A3.6ii Y8A3a by Y8A3b: choice code frequencies (percent)

	Y9A3a 'like best'						
Y9A3d VR	Students who selected choice **A** for 'like best'	Students who selected choice **B** for 'like best'	Students who selected choice **C** for 'like best'	Students who selected choice **D** for 'like best'	Students who selected choice **E** for 'like best'	Students who gave a c**9** response for 'like best'	**Total mean**
Mean validity rating of choice **A**	0.39	0.86	0.81	0.64	0.82	0.32	0.64
Mean validity rating of choice **B**	1.23	1.59	1.44	1.03	1.23	0.35	1.27
Mean validity rating of choice **C**	1.18	1.40	1.59	0.96	1.34	0.38	1.23
Mean validity rating of choice **D**	1.18	1.38	1.37	0.45	1.25	0.33	1.07
Mean validity rating of choice **E**	0.15	0.17	0.15	0.15	0.06	0.07	0.14
Total mean validity rating of choices **A, B, C, D, E**	4.13	5.40	5.37	3.23	4.70	1.44	4.35
Total number of students	589	424	354	410	119	88	1984

Note: Maximum possible validity rating (VR) is 2 for each choice

Table 6-A3.7 Y9A3d by Y9A3a: validity rating

	Y9A3b 'own approach'						
Y9A3d VR	Students who selected choice **A** for 'own approach'	Students who selected choice **B** for 'own approach'	Students who selected choice **C** for 'own approach'	Students who selected choice **D** for 'own approach'	Students who selected choice **E** for 'own approach'	Students who gave a c**9** response for 'own approach'	**Total mean**
Mean validity rating of choice **A**	0.56	0.83	0.77	0.64	0.80	0.29	0.64
Mean validity rating of choice **B**	1.30	1.66	1.43	1.18	1.07	0.36	1.27
Mean validity rating of choice **C**	1.27	1.45	1.57	1.14	1.19	0.41	1.23
Mean validity rating of choice **D**	1.23	1.46	1.44	0.81	0.96	0.38	1.07
Mean validity rating of choice **E**	0.17	0.15	0.19	0.13	0.06	0.05	0.14
Total mean validity rating of choices **A, B, C, D, E**	4.52	5.56	5.40	3.90	4.07	1.49	4.35
Total number of students	588	283	196	748	69	100	1984

Note: Maximum possible validity rating (VR) is 2 for each choice

Table 6-A3.8 Y9A3d by Y9A3b: validity rating

	Y9A3c 'best mark'						
Y9A3d VR	Students who selected choice **A** for 'best mark'	Students who selected choice **B** for 'best mark'	Students who selected choice **C** for 'best mark'	Students who selected choice **D** for 'best mark'	Students who selected choice **E** for 'best mark'	Students who gave a c**9** response for 'best mark'	**Total mean**
Mean validity rating of choice **A**	0.56	0.83	0.77	0.64	0.80	0.29	0.64
Mean validity rating of choice **B**	1.30	1.66	1.43	1.18	1.07	0.36	1.27
Mean validity rating of choice **C**	1.27	1.45	1.57	1.14	1.19	0.41	1.23
Mean validity rating of choice **D**	1.23	1.46	1.44	0.81	0.96	0.38	1.07
Mean validity rating of choice **E**	0.17	0.15	0.19	0.13	0.06	0.05	0.14
Total mean validity rating of choices **A, B, C, D, E**	4.52	5.56	5.40	3.90	4.07	1.49	4.35
Total number of students	588	283	196	748	69	100	1984

Note: Maximum possible validity rating (VR) is 2 for each choice

Table 6-A3.9 Y9A3d by Y9A3c: validity rating

Y9A3a 'like best'

Y9A3d EP	Students who selected choice **A** for 'like best'	Students who selected choice **B** for 'like best'	Students who selected choice **C** for 'like best'	Students who selected choice **D** for 'like best'	Students who selected choice **E** for 'like best'	Students who gave a c**9** response for 'like best'	**Total mean**
Mean explanatory power of choice **A**	0.56	0.20	0.12	0.39	0.25	0.05	0.33
Mean explanatory power of choice **B**	0.54	0.80	0.57	0.49	0.50	0.14	0.57
Mean explanatory power of choice **C**	0.54	0.63	0.79	0.40	0.63	0.08	0.56
Mean explanatory power of choice **D**	-0.20	-0.43	-0.48	0.35	-0.44	-0.03	-0.19
Mean explanatory power of choice **E**	0.33	0.33	0.32	0.34	0.56	-0.05	0.33
Total number of students	589	424	354	410	119	88	1984

Note: Mean explanatory power (EP) = [mean of N(agree)– mean of N(disagree)]. EP ranges from -1 to 1

Table 6-A3.10 Y9A3d by Y9A3a: mean explanatory power

Y9A3b 'own approach'

Y9A3d EP	Students who selected choice **A** for 'own approach'	Students who selected choice **B** for 'own approach'	Students who selected choice **C** for 'own approach'	Students who selected choice **D** for 'own approach'	Students who selected choice **E** for 'own approach'	Students who gave a c**9** response for 'own approach'	**Total mean**
Mean explanatory power of choice **A**	0.46	0.20	-0.02	0.41	0.12	0.09	0.33
Mean explanatory power of choice **B**	0.57	0.78	0.52	0.58	0.38	0.19	0.57
Mean explanatory power of choice **C**	0.56	0.66	0.72	0.53	0.55	0.18	0.56
Mean explanatory power of choice **D**	-0.30	-0.46	-0.59	0.09	-0.38	-0.01	-0.19
Mean explanatory power of choice **E**	0.30	0.32	0.27	0.37	0.68	0.04	0.33
Total number of students	588	283	196	748	69	100	1984

Note: Mean explanatory power (EP) = [mean of N(agree)– mean of N(disagree)]. EP ranges from -1 to 1

Table 6-A3.11 Y9A3d by Y9A3b: mean explanatory power

Y9A3c 'best mark'

Y9A3d EP	Students who selected choice **A** for 'best mark'	Students who selected choice **B** for 'best mark'	Students who selected choice **C** for 'best mark'	Students who selected choice **D** for 'best mark'	Students who selected choice **E** for 'best mark'	Students who gave a c**9** response for 'best mark'	**Total mean**
Mean explanatory power of choice **A**	0.67	0.23	0.31	0.33	0.35	0.17	0.33
Mean explanatory power of choice **B**	0.46	0.72	0.62	0.35	0.58	0.38	0.57
Mean explanatory power of choice **C**	0.30	0.43	0.71	0.05	0.55	0.28	0.56
Mean explanatory power of choice **D**	-0.13	-0.36	-0.29	0.51	-0.17	-0.08	-0.19
Mean explanatory power of choice **E**	0.12	0.20	0.30	0.18	0.54	0.08	0.33
Total number of students	588	283	196	748	69	100	1984

Note: Mean explanatory power (EP) = [mean of N(agree)– mean of N(disagree)]. EP ranges from -1 to 1

Table 6-A3.12 Y9A3d by Y9A3c: mean explanatory power

Frequencies for Items Y8A4, Y9A4

	Y8A4a						Y9A4a					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	72	70	142	7%	7%	7%	43	52	95	4%	5%	5%
30	677	652	1329	67%	66%	67%	731	668	1399	73%	68%	71%
30E	68	49	117	7%	5%	6%	55	47	102	5%	5%	5%
41	21	10	31	2%	1%	2%	33	21	54	3%	2%	3%
41E		1	1		0%	0%						
41N		1	1		0%	0%						
42	6	7	13	1%	1%	1%	35	31	66	3%	3%	3%
42N		2	2		0%	0%						
91	34	53	87	3%	5%	4%	38	54	92	4%	6%	5%
92	1	5	6	0%	1%	0%	1	6	7	0%	1%	0%
93	124	131	255	12%	13%	13%	67	102	169	7%	10%	9%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.1 Y8A4a, Y9A4a: full code frequencies

	Y8A4a						Y9A4a					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	72	70	142	7%	7%	7%	43	52	95	4%	5%	5%
30	745	701	1446	74%	71%	73%	786	715	1501	78%	73%	76%
41	21	12	33	2%	1%	2%	33	21	54	3%	2%	3%
42	6	9	15	1%	1%	1%	35	31	66	3%	3%	3%
91	34	53	87	3%	5%	4%	38	54	92	4%	6%	5%
92	1	5	6	0%	1%	0%	1	6	7	0%	1%	0%
93	124	131	255	12%	13%	13%	67	102	169	7%	10%	9%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.2 Y8A4a, Y9A4a: stripped code frequencies

	Y8A4a						Y9A4a					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Ignores ! sign (code **1**)	72	70	142	7%	7%	7%	43	52	95	4%	5%	5%
Uses definition and calculates (code **3**)	745	701	1446	74%	71%	73%	786	715	1501	78%	73%	76%
Uses definition and understands divisibility (calculation not used) (code **4**)	27	21	48	3%	2%	2%	68	52	120	7%	5%	6%
Other incorrect (code **9**)	159	189	348	16%	19%	18%	106	162	268	11%	17%	14%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.3 Y8A4a, Y9A4a: broad code frequencies

Y9A4a broad codes

Y8A4a broad codes	code **1**	code **3**	code **4**	code **9**	**Total**
Ignores ! sign (code **1**)	31	86	1	24	142
Uses definition and calculates (code **3**)	38	1177	77	154	1446
Uses definition and understands divisibility (calculation not used) (code **4**)	2	16	25	5	48
Other incorrect (code **9**)	24	222	17	85	348
Total	95	1501	120	268	1984

Table 6-A4.4i Y8A4a by Y9A4a: broad code frequencies (number)

	Y9A4a broad codes				
Y8A4a broad codes	code **1**	code **3**	code **4**	code **9**	**Total**
Ignores ! sign (code **1**)	2%	4%	0%	1%	7%
Uses definition and calculates (code **3**)	2%	59%	4%	8%	73%
Uses definition and understands divisibility (calculation not used) (code **4**)	0%	1%	1%	0%	2%
Other incorrect (code **9**)	1%	11%	1%	4%	18%
Total	5%	76%	6%	14%	100%

Table 6-A4.4ii Y8A4a by Y9A4a: broad code frequencies (percent)

	Y8A4a						**Y9A4a**					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 10) Ignores ! sign, or 0 (code 91, 92, 93), other incorrect	231	259	490	23%	26%	25%	149	214	363	15%	22%	18%
3 (code 30, 41, 42) Uses definition and calculates or understands divisibility	772	722	1494	77%	74%	75%	854	767	1621	85%	78%	82%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.5 Y8A4a, Y9A4a: score frequencies

	Y9A4a Scores		
Y8A4a Scores	**0**	**3**	**Total**
0 (code 10) Ignores ! sign or **0** (code 91, 92, 93), other incorrect	164	326	490
3 (code 30, 41, 42) uses definition and calculates or understands divisibility	199	1295	1494
Total	363	1621	1984

Table 6-A4.6i Y8A4a by Y9A4a: score frequencies (number)

	Y9A4a Scores		
Y8A4a Scores	**0**	**3**	**Total**
0 (code 10) Ignores ! sign or **0** (code 91, 92, 93), other incorrect	8%	16%	25%
3 (code 30, 41, 42) uses definition and calculates or understands divisibility	10%	65%	75%
Total	18%	82%	100%

Table 6-A4.6ii Y8A4a by Y9A4a: score frequencies (percent)

	Y8A4b						Y9A4b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	15	19	34	1%	2%	2%	6	11	17	1%	1%	1%
12		1	1		0%	0%	2	1	3	0%	0%	0%
31	268	292	560	27%	30%	28%	126	170	296	13%	17%	15%
31N	38	23	61	4%	2%	3%	35	24	59	3%	2%	3%
32	392	392	784	39%	40%	40%	213	270	483	21%	28%	24%
32F	104	48	152	10%	5%	8%	478	347	825	48%	35%	42%
32FZ		1	1		0%	0%						
32N	50	47	97	5%	5%	5%	49	38	87	5%	4%	4%
32NZ	4	3	7	0%	0%	0%	3	6	9	0%	1%	0%
32Z	14	10	24	1%	1%	1%	6	7	13	1%	1%	1%
32ZN	1		1	0%		0%						
41	2	3	5	0%	0%	0%	3	2	5	0%	0%	0%
41L		3	3		0%	0%		2	2		0%	0%
41N	6	6	12	1%	1%	1%	2	1	3	0%	0%	0%
42	3		3	0%		0%	2	2	4	0%	0%	0%
42L		1	1		0%	0%						
42N	6	3	9	1%	0%	0%		1	1		0%	0%
91	39	64	103	4%	7%	5%	30	48	78	3%	5%	4%
92	4	7	11	0%	1%	1%	1	4	5	0%	0%	0%
93	57	58	115	6%	6%	6%	47	47	94	5%	5%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.7 Y8A4b, Y9A4b: full code frequencies

	Y8A4b						Y9A4b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	15	19	34	1%	2%	2%	6	11	17	1%	1%	1%
12		1	1		0%	0%	2	1	3	0%	0%	0%
31	306	315	621	31%	32%	31%	161	194	355	16%	20%	18%
32	565	501	1066	56%	51%	54%	749	668	1417	75%	68%	71%
41	8	12	20	1%	1%	1%	5	5	10	0%	1%	1%
42	9	4	13	1%	0%	1%	2	3	5	0%	0%	0%
91	39	64	103	4%	7%	5%	30	48	78	3%	5%	4%
92	4	7	11	0%	1%	1%	1	4	5	0%	0%	0%
93	57	58	115	6%	6%	6%	47	47	94	5%	5%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.8 Y8A4b, Y9A4b: stripped code frequencies

	Y8A4b						Y9A4b					
Broad Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Partial statement only of definition (code **1**)	15	20	35	1%	2%	2%	8	12	20	1%	1%	1%
Correct statement of definition (code **3**)	871	816	1687	87%	83%	83%	910	862	1772	91%	88%	89%
Correct statement of definition; structure made explicit (code **4**)	17	16	33	2%	2%	2%	7	8	15	1%	1%	1%
Other incorrect (code **9**)	100	129	229	10%	13%	13%	78	99	177	8%	10%	9%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.9 Y8A4b, Y9A4b: broad code frequencies

	Y9A4b broad codes				
Y8A4b broad codes	code **1**	code **3**	code **4**	code **9**	**Total**
Partial statement only of definition (code **1**)	3	27	1	4	35
Correct statement of definition (code **3**)	12	1552	10	113	1687
Correct statement of definition; structure made explicit (code **4**)	1	29	2	1	33
Other incorrect (code **9**)	4	164	2	59	229
Total	20	1772	15	177	1984

Table 6-A4.10i Y8A4b by Y9A4b: broad code frequencies (number)

	Y9A4b broad codes				
Y8A4b broad codes	code **1**	code **3**	code **4**	code **9**	**Total**
Partial statement only of definition (code **1**)	0%	1%	0%	0%	2%
Correct statement of definition (code **3**)	1%	78%	1%	6%	85%
Correct statement of definition; structure made explicit (code **4**)	0%	1%	0%	0%	2%
Other incorrect (code **9**)	0%	8%	0%	3%	12%
Total	1%	89%	1%	9%	100%

Table 6-A4.10ii Y8A4b by Y9A4b: broad code frequencies (percent)

	Y8A4b						Y9A4b					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 11,12) Partial statement only of definition, or **0** (code 91, 92, 93) other incorrect answers	115	149	264	11%	15%	13%	86	111	197	9%	11%	10%
0.5 (code 31) correct statement of definition but not completely explicit	306	315	621	31%	32%	31%	161	194	355	16%	20%	18%
1 (code 32, 41, 42) correct and explicit statement of definition	582	517	1099	58%	53%	55%	756	676	1432	75%	69%	72%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.11 Y8A4b, Y9A4b: score frequencies

	Y9A4b score			
Y8A4b score	**0**	**0.5**	**1**	**Total**
0 (code 11, 12) Partial statement only of definition or 0 (code 91, 92, 93) other incorrect answers	70	45	149	264
0.5 (code 31) Correct statement of definition but not completely explicit	49	169	403	621
1 (code 32, 41, 42) correct and explicit statement of definition	78	141	880	1099
Total	197	355	1432	1984

Table 6-A4.12i Y8A4b by Y9A4b: score frequencies (number)

	Y9A4b score			
Y8A4b score	**0**	**0.5**	**1**	**Total**
0 (code 11, 12) Partial statement only of definition or **0** (code 91, 92, 93) other incorrect answers	4%	2%	8%	13%
0.5 (code 31) Correct statement of definition but not completely explicit	2%	9%	20%	31%
1 (code 32, 41, 42) correct and explicit statement of definition	4%	7%	44%	55%
Total	10%	18%	72%	100%

Table 6-A4.12ii Y8A4b by Y9A4b: score frequencies (percent)

	Y8A4c						Y9A4c					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	128	115	243	13%	12%	12%	62	49	111	6%	5%	6%
12	23	38	61	2%	4%	3%	44	27	71	4%	3%	4%
13	263	295	558	26%	30%	28%	294	339	633	29%	35%	32%
20	4	3	7	0%	0%	0%	4	4	8	0%	0%	0%
40	28	22	50	3%	2%	3%	96	75	171	10%	8%	9%
40N	2	3	5	0%	0%	0%						
91	305	266	571	30%	27%	29%	293	274	567	29%	28%	29%
92	18	15	33	2%	2%	2%	12	14	26	1%	1%	1%
93	232	224	456	23%	23%	23%	198	199	397	20%	20%	20%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.13 Y8A4c, Y9A4c: full code frequencies

	Y8A4c						Y9A4c					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	128	115	243	13%	12%	12%	62	49	111	6%	5%	6%
12	23	38	61	2%	4%	3%	44	27	71	4%	3%	4%
13	263	295	558	26%	30%	28%	294	339	633	29%	35%	32%
20	4	3	7	0%	0%	0%	4	4	8	0%	0%	0%
40	30	25	55	3%	3%	3%	96	75	171	10%	8%	9%
91	305	266	571	30%	27%	29%	293	274	567	29%	28%	29%
92	18	15	33	2%	2%	2%	12	14	26	1%	1%	1%
93	232	224	456	23%	23%	23%	198	199	397	20%	20%	20%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.14 Y8A4c, Y9A4c: stripped code frequencies

	Y8A4c						Y9A4c					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Incorrect or irrelevant reason or 'can't explain' (code **1**)	414	448	862	41%	46%	43%	400	415	815	40%	42%	41%
Reasons by (scientific) induction (code **2**)	4	3	7	0%	0%	0%	4	4	8	0%	0%	0%
Uses definition and understands divisibility (code **4**)	30	25	55	3%	3%	3%	96	75	171	10%	8%	9%
Other incorrect (code **9**)	555	505	1060	55%	51%	53%	503	487	990	50%	50%	50%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.15 Y8A4c, Y9A4c: broad code frequencies

	Y9A4c broad codes				
Y8A4c broad codes	code **1**	code **2**	code **4**	code **9**	**Total**
Incorrect or irrelevant reason or 'can't explain' (code **1**)	381	6	53	422	862
Reasons by (scientific) induction (code **2**)	1		1	5	7
Uses definition and understands divisibility (code **4**)	10		29	16	55
Other incorrect (code **9**)	423	2	88	547	1060
Total	815	8	171	990	1984

Table 6-A4.16i Y8A4c by Y9A4c: broad code frequencies (number)

	Y9A4c broad codes				
Y8A4c broad codes	code **1**	code **2**	code **4**	code **9**	**Total**
Incorrect or irrelevant reason or 'can't explain' (code **1**)	19%	0%	3%	21%	43%
Reasons by (scientific) induction (code **2**)	0%	0%	0%	0%	0%
Uses definition and understands divisibility (code **4**)	1%	0%	1%	1%	3%
Other incorrect (code **9**)	21%	0%	4%	28%	53%
Total	41%	0%	9%	50%	100%

Table 6-A4.16ii Y8A4c by Y9A4c: broad code frequencies (percent)

	Y8A4c						Y9A4c					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (codes 11,12, 13) Incorrect or irrelevant reason or 'can't explain'	969	953	1922	9%	11%	10%	903	902	1805	90%	92%	91%
2 (code 20) Reasons by (scientific) induction	4	3	7	16%	20%	18%	4	4	8	0%	0%	0%
3 (codes 91,92, 93) Other incorrect answers	30	25	55	75%	69%	72%	96	75	171	10%	8%	9%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-A4.17 Y8A4c, Y9A4c: score frequencies

	Y9A4c score			
Y8A4c Score	**0**	**2**	**3**	**Total**
0 (code 11,12,13) Incorrect or irrelevant reason, 'can't explain' or **0** (code 91, 92, 93) Other incorrect answers	1773	8	141	1922
2 (code 20) Reasons by (scientific) induction	6		1	7
3 (code 40) Uses definition and understands divisibility	26		29	55
Total	1805	8	171	1984

Table 6-A4.18i Y8A4c by Y9A4c: score frequencies (number)

	Y9A4c score			
Y8A4c score	**0**	**2**	**3**	**Total**
0 (code 11,12,13) Incorrect or irrelevant reason, 'can't explain' or **0** (code 91, 92, 93) Other incorrect answers	89%	0%	7%	97%
2 (code 20) Reasons by (scientific) induction	0%	0%	0%	0%
3 (code 40) Uses definition and understands divisibility	1%	0%	1%	3%
Total	91%	0%	9%	100%

Table 6-A4.18ii Y8A4c by Y9A4c: score frequencies (percent)

Frequencies for Items Y8L1, Y9LA1

	Y8L1a						Y9LA1a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	733	654	1387	73%	67%	70%	650	578	1228	65%	59%	62%
31	150	158	308	15%	16%	16%	149	131	280	15%	13%	14%
32	113	158	271	11%	16%	14%	168	217	385	17%	22%	19%
91	5	11	16	0%	1%	1%	25	41	66	2%	4%	3%
92							11	7	18	1%	1%	1%
93	2		2	0%		0%		7	7		1%	0%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.1 Y8L1a, Y9LA1a: full code frequencies

	Y8L1a						Y9LA1a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
"Yes (statements are the same)" (code **1**)	733	654	1387	73%	67%	70%	650	578	1228	65%	59%	62%
“Yes” changed to “No” (code **31**)	150	158	308	15%	16%	16%	149	131	280	15%	13%	14%
"No (statements are not the same)" (code **32**)	113	158	271	11%	16%	14%	168	217	385	17%	22%	19%
Other incorrect (code **9**)	7	11	18	1%	1%	1%	36	55	91	4%	6%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.2 Y8L1a, Y9LA1a: broad code frequencies

	Y9LA1a broad codes			
Y8L1a broad codes	code **1**	code **3**	code **9**	**Total**
"Yes (statements are the same)" (code **1**)	949	384	54	1387
"No (statements are not the same)" (code **3**)	269	276	34	579
Other incorrect (code **9**)	10	5	3	18
Total	1228	665	91	1984

Table 6-LA1.3i Y8L1a by Y9LA1a: broad code frequencies (number)

	Y9LA1a broad codes			
Y8L1a broad codes	code **1**	code **3**	code **9**	**Total**
"Yes (statements are the same)" (code **1**)	48%	19%	3%	70%
"No (statements are not the same)" (code **3**)	14%	14%	2%	29%
Other incorrect (code **9**)	1%	0%	0%	1%
Total	62%	34%	5%	100%

Table 6-LA1.3ii Y8L1a by Y9LA1a: broad code frequencies (percent)

	Y8L1a						Y9LA1a					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 10) "Yes (statements are the same)" or **0** (code 9) Incorrect	740	665	1405	74%	68%	71%	686	633	1319	68%	65%	66%
1 (code 31) "Yes" changed to "No**"**	150	158	308	15%	16%	16%	149	131	280	15%	13%	14%
2 (code 32) "No (statements are not the same)"	113	158	271	11%	16%	14%	168	217	385	17%	22%	19%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.4 Y8L1a, Y9LA1a: score frequencies

	Y9LA1a Score			
Y8L1a score	**0**	**1**	**2**	**Total**
0 (code 10) "Yes (statements are the same)" or **0** (code 9) Incorrect	1016	180	209	1405
1 (code 31) "Yes" changed to "No**"**	155	65	88	308
2 (code 32) "No (statements are not the same)"	148	35	88	271
Total	1319	280	385	1984

Table 6-LA1.5i Y8L1a by Y9LA1: score frequencies (number)

	Y9LA1a Score			
Y8L1a score	**0**	**1**	**2**	**Total**
0 (code 10) "Yes (statements are the same)" or **0** (code 9) Incorrect	51%	9%	11%	71%
1 (code 31) "Yes" changed to "No"	8%	3%	4%	16%
2 (code 32) "No (statements are not the same)"	7%	2%	4%	14%
Total	66%	14%	19%	100%

Table 6-LA1.5ii Y8L1a by Y9LA1: score frequencies (percent)

	Y8L1b						Y9LA1b					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	433	433	866	43%	44%	44%	207	212	419	21%	22%	21%
30	515	489	1004	51%	50%	51%	725	646	1371	72%	66%	69%
91	11	11	22	1%	1%	1%	25	44	69	2%	4%	3%
92							11	7	18	1%	1%	1%
93	44	48	92	4%	5%	5%	35	72	107	3%	7%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.6 Y8L1b, Y9LA1b: full code frequencies

	Y8L1b						Y9LA1b					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
"Can't be sure" (code **10**)	433	433	866	43%	44%	44%	207	212	419	21%	22%	21%
"Sum is EVEN" (code **30**)	515	489	1004	51%	50%	51%	725	646	1371	72%	66%	69%
Other incorrect including "sum is ODD" and choice of more than one option (code **9**)	55	59	114	5%	6%	6%	71	123	194	7%	13%	10%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.7 Y8L1b, Y9LA1b: broad code frequencies

	Y9LA1b broad codes			
Y8L1b broad codes	code **10**	code **30**	code **9**	**Total**
"Can't be sure" (code **10**)	239	524	103	866
"Sum is EVEN" (code **30**)	149	771	84	1004
Other incorrect including "sum is ODD" and choice of more than one option (code **9**)	31	76	7	114
Total	419	1371	194	1984

Table 6-LA1.8i Y8L1b by Y9LA1b: broad code frequencies (number)

	Y9LA1b broad codes			
Y8L1b broad codes	code **10**	code **30**	code **9**	**Total**
"Can't be sure" (code **10**)	12%	26%	5%	44%
"Sum is EVEN" (code **30**)	8%	39%	4%	51%
Other incorrect including "sum is ODD" and choice of more than one option (code **9**)	2%	4%	0%	6%
Total	21%	69%	10%	100%

Table 6-LA1.8ii Y8L1b by Y9LA1b: broad code frequencies (percent)

	Y8L1b						Y9LA1b					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 19) "Can't be sure" or **0** (code 9) Other incorrect including "Sum is ODD" and choice of more than one option	488	492	980	49%	50%	49%	278	335	613	28%	34%	31%
2 (code 30) "Sum is EVEN"	515	489	1004	51%	50%	51%	725	646	1371	72%	66%	69%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.9 Y8L1b, Y9LA1b: score frequencies

	Y9LA1b score		
Y8L1b2 score	**0**	**2**	**Total**
0 (code 19) "Can't be sure" or **0** (code 9) Other incorrect including "Sum is ODD" and choice of more than one option	380	600	980
2 (code 30) "Sum is EVEN"	233	771	1004
Total	613	1371	1984

Table 6-LA1.10i Y8L1b2 by Y9LA1b: score frequencies (number)

	Y9LA1b score		
Y8L1b2 score	**0**	**2**	**Total**
0 (code 19) "Can't be sure" or **0** (code 9) Other incorrect including "Sum is ODD" and choice of more than one option	19%	30%	49%
2 (code 30) "Sum is EVEN"	12%	39%	51%
Total	31%	69%	100%

Table 6-LA1.10ii Y8L1b2 by Y9LA1b: score frequencies (percent)

Y8L1c **Y9LA1c**

Code	N Girls	N Boys	N All	% Girls	% Boys	% All	N Girls	N Boys	N All	% Girls	% Boys	% All
11	100	117	217	10%	12%	11%	107	142	249	11%	14%	13%
11S	36	26	62	4%	3%	3%	18	11	29	2%	1%	1%
13	27	41	68	3%	4%	3%	27	55	82	3%	6%	4%
13S	2	3	5	0%	0%	0%		4	4	0%	0%	0%
14	62	61	123	6%	6%	6%	33	31	64	3%	3%	3%
21	15	7	22	1%	1%	1%	9	5	14	1%	1%	1%
22	203	162	365	20%	17%	18%	171	142	313	17%	14%	16%
22S	10	2	12	1%	0%	1%	1		1	0%	0%	0%
23	23	23	46	2%	2%	2%	17	14	31	2%	1%	2%
31	62	91	153	6%	9%	8%	76	100	176	8%	10%	9%
32	234	222	456	23%	23%	23%	261	228	489	26%	23%	25%
41	13	11	24	1%	1%	1%	14	8	22	1%	1%	1%
41S		1	1	0%	0%	0%						
42	4	20	24	0%	2%	1%	9	13	22	1%	1%	1%
43	16	18	34	2%	2%	2%	8	12	20	1%	1%	1%
44	50	38	88	5%	4%	4%	67	55	122	7%	6%	6%
44L		1	1	0%	0%	0%		1	1	0%	0%	0%
91	37	51	88	4%	5%	4%	91	94	185	9%	10%	9%
92	1	2	3	0%	0%	0%	14	12	26	1%	1%	1%
93	105	83	188	10%	8%	9%	80	54	134	8%	6%	7%
93S	3	1	4	0%	0%	0%						
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.11 Y8L1c, Y9LA1c: full code frequencies

Note: The code S (Sometimes) which was used on Y8L1cd and Y9LA1cd occurred very rarely and has been stripped from the data for this table; instead, codes F (same as Fred), J (same as Joe), P (same as Pam), V (same as Viv) have been replaced by S (Same as other person). This makes coding consistent with Y10LA1cd and Y9 and Y10LG1cd.

	Y8L1c						Y9LA1c					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	136	143	279	14%	15%	14%	125	153	278	16%	12%	14%
13	29	44	73	3%	4%	4%	27	59	86	6%	3%	4%
14	62	61	123	6%	6%	6%	33	31	64	3%	3%	3%
21	15	7	22	1%	1%	1%	9	5	14	1%	1%	1%
22	213	164	377	21%	17%	19%	172	142	314	14%	17%	16%
23	23	23	46	2%	2%	2%	17	14	31	1%	2%	2%
31	62	91	153	6%	9%	8%	76	100	176	10%	8%	9%
32	234	222	456	23%	23%	23%	261	228	489	23%	26%	25%
41	13	12	25	1%	1%	1%	14	8	22	1%	1%	1%
42	4	20	24	0%	2%	1%	9	13	22	1%	1%	1%
43	16	18	34	2%	2%	2%	8	12	20	1%	1%	1%
44	50	39	89	5%	4%	4%	67	56	123	6%	7%	6%
91	37	51	88	4%	5%	4%	91	94	185	10%	9%	9%
92	1	2	3	0%	0%	0%	14	12	26	1%	1%	1%
93	108	84	192	11%	9%	10%	80	54	134	6%	8%	7%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.12 Y8L1c, Y9LA1c: stripped code frequencies

	Y8L1c						Y9LA1c					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct or incorrect decision; no valid justification (code **1**)	229	249	478	23%	25%	24%	185	243	428	18%	25%	22%
Correct or incorrect decision; incomplete or flawed justification (code **2**)	250	193	443	25%	20%	22%	198	161	359	20%	16%	18%
Correct decision; valid justification, specific (code **3**)	296	313	609	30%	32%	31%	337	328	665	34%	33%	34%
Correct decision; valid justification, general (code **4**)	83	89	172	8%	9%	9%	98	89	187	10%	9%	9%
Other incorrect (code **9**)	145	137	282	14%	14%	14%	185	160	345	18%	16%	17%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.13 Y8L1c, Y9LA1c: broad code frequencies

Y9LA1c broad codes

Y8L1c broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	124	90	136	22	106	478
Correct or incorrect decision; incomplete or flawed justification (code **2**)	93	100	140	41	69	443
Correct decision; valid justification, specific (code **3**)	115	93	260	66	75	609
Correct decision; valid justification, general (code **4**)	32	31	55	34	20	172
Other incorrect (code **9**)	64	45	74	24	75	282
Total	428	359	665	187	345	1984

Table 6-LA1.14i Y8L1c by Y9LA1c: broad code frequencies (number)

	Y9LA1c broad codes					
Y8L1c broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	6%	5%	7%	1%	5%	24%
Correct or incorrect decision; incomplete or flawed justification (code **2**)	5%	5%	7%	2%	3%	22%
Correct decision; valid justification, specific (code **3**)	6%	5%	13%	3%	4%	31%
Correct decision; valid justification, general (code **4**)	2%	2%	3%	2%	1%	9%
Other incorrect (code **9**)	3%	2%	4%	1%	4%	14%
Total	22%	18%	34%	9%	17%	100%

Table 6-LA1.14ii Y8L1c by Y9LA1c: broad code frequencies (oercent)

	Y8L1c						**Y9LA1c**					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 1) Correct or incorrect decision; no valid justification or **0** (code 9) Other incorrect	374	386	760	37%	39%	38%	370	403	773	37%	41%	39%
2 (code 2) Correct or incorrect decision; incomplete or flawed justification	250	193	443	25%	20%	22%	198	161	359	20%	16%	18%
2.5 (code 31) Correct decision; valid justification, specific and not explicit	62	91	153	6%	9%	8%	76	100	176	8%	10%	9%
3 (code 32,4) Correct decision; valid justification, general and/or specific	317	311	628	32%	32%	32%	359	317	676	36%	32%	34%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.15 Y8L1c, Y9LA1c: score frequencies

	Y9LA1c score				
Y8L1c score	**0**	**2**	**2.5**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification or **0** (code 9) Other incorrect	369	135	67	189	760
2 (code 2) Correct or incorrect decision; incomplete or flawed justification	162	100	28	153	443
2.5 (code 31) Correct decision; valid justification, specific and not explicit	54	15	31	53	153
3 (code 32,4) Correct decision; valid justification, general and/or specific	188	109	50	281	628
Total	773	359	176	676	1984

Table 6-LA1.16i Y8L1c by Y9LA1c: score frequencies (number)

	Y9LA1c score				
Y8L1c score	**0**	**2**	**2.5**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification or **0** (code 9) Other incorrect	19%	7%	3%	10%	38%
2 (code 2) Correct or incorrect decision; incomplete or flawed justification	8%	5%	1%	8%	22%
2.5 (code 31) Correct decision; valid justification, specific and not explicit	3%	1%	2%	3%	8%
3 (code 32,4) Correct decision; valid justification, general and/or specific	9%	5%	3%	14%	32%
Total	39%	18%	9%	34%	100%

Table 6-LA1.16ii Y8L1c by Y9LA1c: score frequencies (percent)

	Y8L1d						Y9LA1d					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	154	174	328	15%	18%	17%	152	169	321	15%	17%	16%
11S	123	101	224	12%	10%	11%	90	65	155	9%	7%	8%
13	123	167	290	12%	17%	15%	121	183	304	12%	19%	15%
13S	89	65	154	9%	7%	8%	54	40	94	5%	4%	5%
21	112	117	229	11%	12%	12%	97	99	196	10%	10%	10%
21S	34	27	61	3%	3%	3%	24	13	37	2%	1%	2%
22	67	46	113	7%	5%	6%	85	63	148	8%	6%	7%
22S	15	9	24	1%	1%	1%	16	7	23	2%	1%	1%
23	1	1	2	0%	0%	0%	1		1	0%	0%	0%
23S		1	1	0%	0%	0%						
24	25	28	53	2%	3%	3%	28	23	51	3%	2%	3%
24S	4	5	9	0%	1%	0%	4	6	10	0%	1%	1%
41	9	3	12	1%	0%	1%	8	6	14	1%	1%	1%
41S		1	1	0%	0%	0%	2	3	5	0%	0%	0%
42	4	5	9	0%	1%	0%	5	4	9	0%	0%	0%
42S	2		2	0%	0%	0%	1		1	0%	0%	0%
43	19	26	45	2%	3%	2%	17	11	28	2%	1%	1%
43S	3	3	6	0%	0%	0%	1	1	2	0%	0%	0%
44	52	57	109	5%	6%	5%	77	93	170	8%	9%	9%
44S	11	5	16	1%	1%	1%	19	9	28	2%	1%	1%
44L		1	1	0%	0%	0%	1	2	3	0%	0%	0%
50	2	1	3	0%	0%	0%		4	4	0%	0%	0%
91	57	66	123	6%	7%	6%	117	109	226	12%	11%	11%
92	1	3	4	0%	0%	0%	21	15	36	2%	2%	2%
93	76	55	131	8%	6%	7%	48	48	96	5%	5%	5%
93S	20	14	34	2%	1%	2%	14	8	22	1%	1%	1%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.17 Y8L1d, Y9LA1d: full code frequencies

Note: The code S (Sometimes) which was used on Y8L1cd and Y9LA1cd occurred very rarely and has been stripped from the data for this table; instead, codes F (same as Fred), J (same as Joe), P (same as Pam), V (same as Viv) have been replace by S (Same as other person). This makes the coding consistent with Y10LA1cd and Y9 and Y10 LG1cd.

	Y8L1d						Y9LA1d					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	277	275	552	28%	28%	28%	242	234	476	24%	24%	24%
13	212	232	444	21%	24%	22%	175	223	398	17%	23%	20%
21	146	144	290	15%	15%	15%	121	112	233	12%	11%	12%
22	82	55	137	8%	6%	7%	101	70	171	10%	7%	9%
23	1	2	3	0%	0%	0%	1		1	0%	0%	0%
24	29	33	62	3%	3%	3%	32	29	61	3%	3%	3%
41	9	4	13	1%	0%	1%	10	9	19	1%	1%	1%
42	6	5	11	1%	1%	1%	6	4	10	1%	0%	1%
43	22	29	51	2%	3%	3%	18	12	30	2%	1%	2%
44	63	63	126	6%	6%	6%	97	104	201	10%	11%	10%
50	2	1	3	0%	0%	0%		4	4	0%	0%	0%
91	57	66	123	6%	7%	6%	117	109	226	12%	11%	11%
92	1	3	4	0%	0%	0%	21	15	36	2%	2%	2%
93	96	69	165	10%	7%	8%	62	56	118	6%	6%	6%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.18 Y8L1d, Y9LA1d: stripped code frequencies

	Y8L1d						Y9LA1d					
Broad code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct or incorrect decision; no valid justification (code **1**)	491	509	1000	49%	52%	50%	417	457	874	42%	47%	44%
Correct decision; incomplete justification (code **2**)	256	233	489	26%	24%	25%	255	211	466	25%	22%	23%
Correct decision; valid, general justification (code **4**)	100	100	200	10%	10%	10%	131	129	260	13%	13%	13%
Correct decision; valid justification, general, plus explanation of why justification true (code **5**)	2	1	3	0%	0%	0%		4	4		0%	0%
Other incorrect (code **9**)	154	138	292	15%	14%	15%	200	180	380	20%	18%	19%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.19 Y8L1d, Y9LA1d: broad code frequencies

	Y9LA1d broad codes					
Y8L1d broad codes	code **1**	code **2**	code **4**	code **5**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	473	224	106	2	195	1000
Correct decision; incomplete justification (code **2**)	218	147	55		69	489
Correct decision; valid, general justification (code **4**)	64	34	70	1	31	200
Correct decision; valid justification, general, plus explanation of why justification true (code **5**)	1	1		1		3
Other incorrect (code **9**)	118	60	29		85	292
Total	874	466	260	4	380	1984

Table 6-LA1.20i Y8L1d by Y9LA1d: broad code frequencies (number)

	Y9LA1d broad codes					
Y8L1d broad codes	code **1**	code **2**	code **4**	code **5**	code **9**	Total
Correct or incorrect decision; no valid justification (code **1**)	24%	11%	5%	0%	10%	50%
Correct decision; incomplete justification (code **2**)	11%	7%	3%	0%	3%	25%
Correct decision; valid, general justification (code **4**)	3%	2%	4%	0%	2%	10%
Correct decision; valid justification, general, plus explanation of why justification true (code **5**)	0%	0%	0%	0%	0%	0%
Other incorrect (code **9**)	6%	3%	1%	0%	4%	15%
Total	44%	23%	13%	0%	19%	100%

Table 6-LA1.20ii Y8L1d by Y9LA1d: broad code frequencies (percent)

	Y8L1d						Y9LA1d					
Score	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 1) Correct or incorrect decision; no valid justification or **0** (code 9) Other incorrect	645	647	1292	64%	66%	65%	617	637	1254	62%	65%	63%
2 (code 2) Correct decision; incomplete justification	256	233	489	26%	24%	25%	255	211	466	25%	22%	23%
3 (code 4, 50) Correct decision; valid, general justification	102	101	203	10%	10%	10%	131	133	264	13%	14%	13%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LA1.21 Y8L1d, Y9LA1d: score frequencies

	Y9LA1d score			
Y8L1d score	**0**	**2**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification or **0** (code 9) Other incorrect	871	284	137	1292
2 (code 2) Correct decision; incomplete justification	287	147	55	489
3 (code 4, 50) Correct decision; valid, general justification	96	35	72	203
Total	1254	466	264	1984

Table 6-LA1.22i Y8L1d by Y9LA1d: score frequencies (number)

	Y9LA1d score			
Y8L1d score	**0**	**2**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification or **0** (code 9) Other incorrect	44%	14%	7%	65%
2 (code 2) Correct decision; incomplete justification	14%	7%	3%	25%
3 (code 4, 50) Correct decision; valid, general justification	5%	2%	4%	10%
Total	63%	23%	13%	100%

Table 6-LA1.22ii Y8L1d by Y9LA1d: score frequencies (percent)

Frequencies for Items Y8G1, Y9G1

	Y8G1						Y9G1					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	457	337	794	46%	34%	40%	519	434	953	52%	44%	48%
12	40	69	109	4%	7%	5%	71	81	152	7%	8%	8%
21	55	46	101	5%	5%	5%	86	78	164	9%	8%	8%
22	25	28	53	2%	3%	3%	9	15	24	1%	2%	1%
31	224	225	449	22%	23%	23%	196	209	405	20%	21%	20%
31H							7	5	12	1%	1%	1%
32D	128	176	304	13%	18%	15%	47	87	134	5%	9%	7%
32DH							3	2	5	0%	0%	0%
32N	22	37	59	2%	4%	3%						
41D	3	9	12	0%	1%	1%		1	1		0%	0%
41N	5	6	11	0%	1%	1%	2	4	6	0%	0%	0%
42D	14	12	26	1%	1%	1%	3		3	0%		0%
42N	12	9	21	1%	1%	1%	3	7	10	0%	1%	1%
91	5	13	18	0%	1%	1%	40	38	78	4%	4%	4%
92							1	1	2	0%	0%	0%
93	13	14	27	1%	1%	1%	16	19	35	2%	2%	2%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table6-G1.1 Y8G1, Y9G1: full code frequencies

	Y8G1						Y9G1					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	457	337	794	46%	34%	40%	519	434	953	52%	44%	48%
12	40	69	109	4%	7%	5%	71	81	152	7%	8%	8%
21	55	46	101	5%	5%	5%	86	78	164	9%	8%	8%
22	25	28	53	2%	3%	3%	9	15	24	1%	2%	1%
31	224	225	449	22%	23%	23%	203	214	417	20%	22%	21%
32	150	213	363	15%	22%	18%	50	89	139	5%	9%	7%
41	8	15	23	1%	2%	1%	2	5	7	0%	1%	0%
42	26	21	47	3%	2%	2%	6	7	13	1%	1%	1%
91	5	13	18	0%	1%	1%	40	38	78	4%	4%	4%
92							1	1	2	0%	0%	0%
93	13	14	27	1%	1%	1%	16	19	35	2%	2%	2%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G1.2 Y8G1, Y9G1: stripped code frequencies

	Y8G1						Y9G1					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Incorrect decision, or correct but no explanation (code **1**)	497	406	903	50%	41%	46%	590	515	1105	59%	52%	56%
Correct decision, weak explanation or counter example (code **2**)	80	74	154	8%	8%	8%	95	93	188	9%	9%	9%
Correct decision; explicit counter example (code **3**)	374	438	812	37%	45%	41%	253	303	556	25%	31%	28%
Correct decision; correct analytic reason (code **4**)	34	36	70	3%	4%	4%	8	12	20	1%	1%	1%
Other incorrect (code **9**)	18	27	45	2%	3%	2%	57	58	115	6%	6%	6%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G1.3 Y8G1, Y9G1: broad code frequencies

	Y9G1 broad codes					
Y8G1 broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Incorrect decision, or correct but no explanation (code **1**)	579	97	169	3	55	903
Correct decision, weak explanation or counter example (code **2**)	103	12	33	1	5	154
Correct decision; explicit counter example (code **3**)	362	71	319	13	47	812
Correct decision; correct analytic reason (code **4**)	34	4	26	3	3	70
Other incorrect (code **9**)	27	4	9		5	45
Total	1105	188	556	20	115	1984

Table 6-G1.4i Y8G1 by Y9G1: broad code frequencies (number)

	Y9G1 broad codes					
Y8G1 broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Incorrect decision, or correct but no explanation (code **1**)	29%	5%	9%	0%	3%	46%
Correct decision, weak explanation or counter example (code **2**)	5%	1%	2%	0%	0%	8%
Correct decision; explicit counter example (code **3**)	18%	4%	16%	1%	2%	41%
Correct decision; correct analytic reason (code **4**)	2%	0%	1%	0%	0%	4%
Other incorrect (code **9**)	1%	0%	0%	0%	0%	2%
Total	56%	9%	28%	1%	6%	100%

Table 6-G1.4ii Y8G1 by Y9G1: broad code frequencies (percent)

	Y8G1						Y9G1					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 11) Incorrect decision or **0** (code 91,92,93) other incorrect answers	475	364	839	47%	37%	42%	576	492	1068	57%	50%	54%
1 (code 12) Correct answer; no or incorrect explanation	40	69	109	4%	7%	5%	71	81	152	7%	8%	8%
2 (code 21, 22) Correct answer; weak explanation or weak diagram	80	74	154	8%	8%	8%	95	93	188	9%	9%	9%
2.5 (code 31) Correct answer; clear counter example	224	225	449	22%	23%	23%	203	214	417	20%	22%	21%
3 (code 32, 41, 42) Correct answer; 'absolute' counter example or analytic reason	184	249	433	18%	25%	22%	58	101	159	6%	10%	8%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G1.5 Y8G1, Y9G1: score frequencies

	Y9G1 score					
Y8G1 score	**0**	**1**	**2**	**2.5**	**3**	**Total**
0 (code 11) Incorrect decision or **0** (code 91,92,93) other incorrect answers	542	63	84	111	39	839
1 (code 12) Correct answer; no or incorrect explanation	49	12	17	25	6	109
2 (code 21, 22) Correct answer; weak explanation or weak diagram	86	22	12	21	13	154
2.5 (code 31) Correct answer; clear counter example	209	24	47	128	41	449
3 (code 32, 41, 42) Correct answer; 'absolute' counter example or analytic reason	182	31	28	132	60	433
Total	1068	152	188	417	159	1984

Table 6-G1.6i Y8G1 by Y9G1: score frequencies (number)

	Y9G1 score					
Y8G1 score	**0**	**1**	**2**	**2.5**	**3**	**Total**
0 (code 11) Incorrect decision or **0** (code 91,92,93) other incorrect answers	27%	3%	4%	6%	2%	42%
1 (code 12) Correct answer; no or incorrect explanation	2%	1%	1%	1%	0%	5%
2 (code 21, 22) Correct answer; weak explanation or weak diagram	4%	1%	1%	1%	1%	8%
2.5 (code 31) Correct answer; clear counter example	11%	1%	2%	6%	2%	23%
3 (code 32, 41, 42) Correct answer; 'absolute' counter example or analytic reason	9%	2%	1%	7%	3%	22%
Total	54%	8%	9%	21%	8%	100%

Table 6-G1.6ii Y8G1 by Y9G1: score frequencies (percent)

Code	Y8G1 N Girls	Y8G1 N Boys	Y8G1 N All	Y8G1 % Girls	Y8G1 % Boys	Y8G1 % All	Y9G1 N Girls	Y9G1 N Boys	Y9G1 N All	Y9G1 % Girls	Y9G1 % Boys	Y9G1 % All
Correct, no diagram (c21, 32N, 41N, 42N)	94	98	192	9%	10%	10%	91	89	180	9%	9%	9%
Correct, use of diagram (c22, 31, 32D, 41D, 42D)	394	450	844	39%	46%	43%	265	319	584	26%	33%	29%
Total sample	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G1.7 Y8G1, Y9G1: use of diagram

Frequencies for Items Y8G2, Y9G2

	Y8G2a						Y9G2a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	360	303	663	36%	31%	33%	200	186	386	20%	19%	19%
12	143	139	282	14%	14%	14%	83	97	180	8%	10%	9%
12A		4	4		0%	0%	1	1	2	0%	0%	0%
13	8	5	13	1%	1%	1%	1	2	3	0%	0%	0%
20	35	47	82	3%	5%	4%	21	32	53	2%	3%	3%
20A	2	4	6	0%	0%	0%	1	1	2	0%	0%	0%
31	263	296	559	26%	30%	28%	407	425	832	41%	43%	42%
31A	16	23	39	2%	2%	2%	2	1	3	0%	0%	0%
32	129	101	230	13%	10%	12%	190	128	318	19%	13%	16%
32A	11	10	21	1%	1%	1%	1	4	5	0%	0%	0%
32L	2	2	4	0%	0%	0%	18	15	33	2%	2%	2%
91	22	33	55	2%	3%	3%	37	52	89	4%	5%	4%
92	1	3	4	0%	0%	0%		1	1		0%	0%
93	11	11	22	1%	1%	1%	41	36	77	4%	4%	4%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.1 Y8G2a, Y9G2a: full code frequencies

	Y8G2a						Y9G2a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	360	303	663	36%	31%	33%	200	186	386	20%	19%	19%
12	143	143	286	14%	15%	14%	84	98	182	8%	10%	9%
13	8	5	13	1%	1%	1%	1	2	3	0%	0%	0%
20	37	51	88	4%	5%	4%	22	33	55	2%	3%	3%
31	279	319	598	28%	33%	30%	409	426	835	41%	43%	42%
32	142	113	255	14%	12%	13%	209	147	356	21%	15%	18%
91	22	33	55	2%	3%	3%	37	52	89	4%	5%	4%
92	1	3	4	0%	0%	0%		1	1		0%	0%
93	11	11	22	1%	1%	1%	41	36	77	4%	4%	4%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.2 Y8G2a, Y9G2a: stripped code frequencies

Broad codes	Y8G2a N Girls	Y8G2a N Boys	Y8G2a N All	Y8G2a % Girls	Y8G2a % Boys	Y8G2a % All	Y9G2a N Girls	Y9G2a N Boys	Y9G2a N All	Y9G2a % Girls	Y9G2a % Boys	Y9G2a % All
Incorrect or correct decision, no logical argument (code **1**)	511	451	962	51%	46%	48%	285	286	571	28%	29%	29%
Correct decision; reference to specific example (code **2**)	37	51	88	4%	5%	4%	22	33	55	2%	3%	3%
Correct decision; general logical argument (code **3**)	421	432	853	42%	44%	43%	618	573	1191	62%	58%	60%
Other incorrect (code **9**)	34	47	81	3%	5%	4%	78	89	167	8%	9%	8%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.3 Y8G2a, Y9G2a: broad code frequencies

	Y9G2a broad codes				
Y8G2a broad codes	code **1**	code **2**	code **3**	code **9**	**Total**
Incorrect or correct decision, no logical argument (code **1**)	373	21	456	112	962
Correct decision; reference to specific example (code **2**)	14	4	65	5	88
Correct decision; general logical argument (code **3**)	160	28	630	35	853
Other incorrect (code **9**)	24	2	40	15	81
Total	571	55	1191	167	1984

Table 6-G2.4i Y8G2a by Y9G2a: broad code frequencies (number)

	Y9G2a broad codes				
Y8G2a broad codes	code **1**	code **2**	code **3**	code **9**	**Total**
Incorrect or correct decision, no logical argument (code **1**)	19%	1%	23%	6%	48%
Correct decision; reference to specific example (code **2**)	1%	0%	3%	0%	4%
Correct decision; general logical argument (code **3**)	8%	1%	32%	2%	43%
Other incorrect (code **9**)	1%	0%	2%	1%	4%
Total	29%	3%	60%	8%	100%

Table 6-G2.4ii Y8G2a by Y9G2a: broad code frequencies (percent)

Score	Y8G2a N Girls	Y8G2a N Boys	Y8G2a N All	Y8G2a % Girls	Y8G2a % Boys	Y8G2a % All	Y9G2a N Girls	Y9G2a N Boys	Y9G2a N All	Y9G2a % Girls	Y9G2a % Boys	Y9G2a % All
0 (code 11) Incorrect decision or 0 (code 91, 92, 93) other incorrect answers	394	350	744	39%	36%	38%	278	275	553	28%	28%	28%
1 (code 12, 13) Correct answer; no logical argument	151	148	299	15%	15%	15%	85	100	185	8%	10%	9%
2 (code 20) Correct answer; reference to specific example	37	51	88	4%	5%	4%	22	33	55	2%	3%	3%
2.5 (code 31) Correct answer; logical argument but not explicit	279	319	598	28%	33%	30%	409	426	835	41%	43%	42%
3 (code 32) Correct answer; explicit logical argument	142	113	255	14%	12%	13%	209	147	356	21%	15%	18%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.5 Y8G2a, Y9G2a: score frequencies

	Y9G2a score					
Y8G2a score	**0**	**1**	**2**	**2.5**	**3**	**Total**
0 (code 11) Incorrect decision or **0** (code 91, 92, 93) other incorrect answers	300	87	16	247	94	744
1 (code 12, 13) Correct answer; no logical argument	99	38	7	115	40	299
2 (code 20) Correct answer; reference to specific example	13	6	4	45	20	88
2.5 (code 31) Correct answer; logical argument but not explicit	104	39	19	323	113	598
3 (code 32) Correct answer; explicit logical argument	37	15	9	105	89	255
Total	553	185	55	835	356	1984

Table 6-G2.6i Y8G2a by Y9G2a: score frequencies (number)

	Y9G2a score					
Y8G2a score	**0**	**1**	**2**	**2.5**	**3**	**Total**
0 (code 11) Incorrect decision or **0** (code 91, 92, 93) other incorrect answers	15%	4%	1%	12%	5%	38%
1 (code 12, 13) Correct answer; no logical argument	5%	2%	0%	6%	2%	15%
2 (code 20) Correct answer; reference to specific example	1%	0%	0%	2%	1%	4%
2.5 (code 31) Correct answer; logical argument but not explicit	5%	2%	1%	16%	6%	30%
3 (code 32) Correct answer; explicit logical argument	2%	1%	0%	5%	4%	13%
Total	28%	9%	3%	42%	18%	100%

Table 6-G2.6ii Y8G2a by Y9G2a: score frequencies (percent)

	Y8G2b						Y9G2b					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	41	49	90	4%	5%	5%	18	12	30	2%	1%	2%
12	129	163	292	13%	17%	15%	127	161	288	13%	16%	15%
12A	1	4	5	0%	0%	0%	4	1	5	0%	0%	0%
13	9	3	12	1%	0%	1%	3	1	4	0%	0%	0%
13E	2	1	3	0%	0%	0%	1		1	0%		0%
20	215	203	418	21%	21%	21%	235	221	456	23%	23%	23%
20A	47	83	130	5%	8%	7%	99	135	234	10%	14%	12%
31AD	24	34	58	2%	3%	3%	28	26	54	3%	3%	3%
31AN	13	19	32	1%	2%	2%	18	22	40	2%	2%	2%
31D	123	121	244	12%	12%	12%	149	138	287	15%	14%	14%
31N	102	83	185	10%	8%	9%	125	111	236	12%	11%	12%
32AD							3	7	10	0%	1%	1%
32AN							1	1	2	0%	0%	0%
32D	93	58	151	9%	6%	8%	61	33	94	6%	3%	5%
32N	52	33	85	5%	3%	4%	33	17	50	3%	2%	3%
40AD							1	1	2	0%	0%	0%
40AN								2	2		0%	0%
40D	44	28	72	4%	3%	4%	47	31	78	5%	3%	4%
40N	10	12	22	1%	1%	1%	6	6	12	1%	1%	1%
91	51	52	103	5%	5%	5%	29	35	64	3%	4%	3%
92	6	3	9	1%	0%	0%	1	1	2	0%	0%	0%
93	41	32	73	4%	3%	4%	14	19	33	1%	2%	2%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.7 Y8G2b, Y9G2b: full code frequencies

	Y8G2b						Y9G2b					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	41	49	90	4%	5%	5%	18	12	30	2%	1%	2%
12	130	167	297	13%	17%	15%	131	162	293	13%	17%	15%
13	11	4	15	1%	0%	1%	4	1	5	0%	0%	0%
20	262	286	548	26%	29%	28%	334	356	690	33%	36%	35%
31	262	257	519	26%	26%	26%	320	297	617	32%	30%	31%
32	145	91	236	14%	9%	12%	98	58	156	10%	6%	8%
40	54	40	94	5%	4%	5%	54	40	94	5%	4%	5%
91	51	52	103	5%	5%	5%	29	35	64	3%	4%	3%
92	6	3	9	1%	0%	0%	1	1	2	0%	0%	0%
93	41	32	73	4%	3%	4%	14	19	33	1%	2%	2%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.8 Y8G2b, Y9G2b: stripped code frequencies

	Y8G2b						Y9G2b					
Broad codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct or close estimate; no structural explanation (code **1**)	182	220	402	18%	22%	20%	153	175	328	15%	18%	17%
Correct answer; reason not fully explicit (code **2**)	262	286	548	26%	29%	28%	334	356	690	33%	36%	35%
Correct answer; relates to four identical overlaps (code **3**)	407	348	755	41%	35%	38%	418	355	773	42%	36%	39%
Correct answer, uses compensation argument (code **4**)	54	40	94	5%	4%	5%	54	40	94	5%	4%	5%
Other incorrect (code **9**)	98	87	185	10%	9%	9%	44	55	99	4%	6%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.9 Y8G2b, Y9G2b: broad code frequencies

	Y9G2b broad codes					
Y8G2b broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or close estimate; no structural explanation (code **1**)	96	123	139	17	27	402
Correct answer; reason not fully explicit (code **2**)	75	270	167	18	18	548
Correct answer; relates to four identical overlaps (code **3**)	96	230	368	36	25	755
Correct answer, uses compensation argument (code **4**)	13	22	43	14	2	94
Other incorrect (code **9**)	48	45	56	9	27	185
Total	328	690	773	94	99	1984

Table 6-G2.10i Y8G2b by Y9G2b: broad code frequencies (number)

	Y9G2b broad codes					
Y8G2b broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or close estimate; no structural explanation (code **1**)	5%	6%	7%	1%	1%	20%
Correct answer; reason not fully explicit (code **2**)	4%	14%	8%	1%	1%	28%
Correct answer; relates to four identical overlaps (code **3**)	5%	12%	19%	2%	1%	38%
Correct answer, uses compensation argument (code **4**)	1%	1%	2%	1%	0%	5%
Other incorrect (code **9**)	2%	2%	3%	0%	1%	9%
Total	17%	35%	39%	5%	5%	100%

Table 6-G2.10ii Y8G2b by Y9G2b: broad code frequencies (percent)

	Y8G2b						Y9G2b					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 11) close but wrong estimate or **0** (code 91, 92, 93) other incorrect answers	139	136	275	14%	14%	14%	62	67	129	6%	7%	7%
1 (code 12, 13) correct answer; no structural explanation	141	171	312	14%	17%	16%	135	163	298	13%	17%	15%
2 (code 20) correct answer; reason not fully explicit	262	286	548	26%	29%	28%	334	356	690	33%	36%	35%
3 (code 31, 32, 40) correct answer; explicit logical argument	461	388	849	46%	40%	43%	472	395	867	47%	40%	44%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.11 Y8G2b, Y9G2b: score frequencies

	Y9G2b score				
Y8G2b score	**0**	**1**	**2**	**3**	**Total**
0 (code 11) close but wrong estimate or **0** (code 91, 92, 93) other incorrect answers	48	62	65	100	275
1 (code 12, 13) correct answer; no structural explanation	23	65	103	121	312
2 (code 20) correct answer; reason not fully explicit	23	70	270	185	548
3 (code 31, 32, 40) correct answer; explicit logical argument	35	101	252	461	849
Total	129	298	690	867	1984

Table 6-G2.12i Y8G2b by Y9G2b: score frequencies (number)

	Y9G2b score				
Y8G2b score	**0**	**1**	**2**	**3**	**Total**
0 (code 11) close but wrong estimate or **0** (code 91, 92, 93) other incorrect answers	2%	3%	3%	5%	14%
1 (code 12, 13) correct answer; no structural explanation	1%	3%	5%	6%	16%
2 (code 20) correct answer; reason not fully explicit	1%	4%	14%	9%	28%
3 (code 31, 32, 40) correct answer; explicit logical argument	2%	5%	13%	23%	43%
Total	7%	15%	35%	44%	100%

Table 6-G2.12ii Y8G2b by Y9G2b: score frequencies (percent)

	Y8G2b						Y9G2b					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct decision, structural explanation, no diagram (c31N, 32N, 40N)	177	147	324	18%	15%	16%	183	159	342	18%	16%	17%
Correct decision, structural explanation, use of diagram (c31D, 32D, 40D)	284	241	525	28%	25%	26%	289	236	525	29%	24%	26%
Total sample	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G2.13 Y8G2b by Y9G2b: use of diagram (correct decision, structural explanation)

Frequencies for Items Y8G3, Y9G3

	Y8G3a 'own approach'						Y8G3b 'best mark'					
Choice	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Choice A	451	332	783	45%	34%	39%	116	100	216	12%	10%	11%
Choice B	343	343	686	34%	35%	35%	248	177	425	25%	18%	21%
Choice C	80	130	210	8%	13%	11%	476	533	1009	47%	54%	51%
Choice D	90	137	227	9%	14%	11%	106	120	226	11%	12%	11%
c9	39	39	78	4%	4%	4%	57	51	108	6%	5%	5%
Total sample	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G3.1 Y8G3a, Y8G3b: choice frequencies

	Y9G3a 'like best'						Y9G3b 'own approach'						Y9G3c 'best mark'					
Choice	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Choice A	159	153	312	16%	16%	16%	230	227	457	23%	23%	23%	175	181	356	17%	18%	18%
Choice B	200	199	399	20%	20%	20%	209	194	403	21%	20%	20%	238	198	436	24%	20%	22%
Choice C	268	223	491	27%	23%	25%	290	226	516	29%	23%	26%	111	111	222	11%	11%	11%
Choice D	99	145	244	10%	15%	12%	102	150	252	10%	15%	13%	162	140	302	16%	14%	15%
Choice E	228	197	425	23%	20%	21%	116	110	226	12%	11%	11%	227	261	488	23%	27%	25%
c9	49	64	113	5%	7%	6%	56	74	130	6%	8%	7%	90	90	180	9%	9%	9%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G3.2 Y9G3a, Y9G3b, Y9G3c: choice frequencies

	Y9G3b 'own approach'						
Y9G3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	210	34	32	23	10	3	312
Choice B	54	228	55	41	18	3	399
Choice C	72	43	291	53	23	9	491
Choice D	40	42	46	95	18	3	244
Choice E	80	55	90	40	155	5	425
c9	1	1	2		2	107	113
Total	457	403	516	252	226	130	1984

Table 6-G3.3i Y9G3a by Y9G3b: choice code frequencies (number)

	Y9G3b 'own approach'						
Y9G3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	11%	2%	2%	1%	1%	0%	16%
Choice B	3%	11%	3%	2%	1%	0%	20%
Choice C	4%	2%	15%	3%	1%	0%	25%
Choice D	2%	2%	2%	5%	1%	0%	12%
Choice E	4%	3%	5%	2%	8%	0%	21%
c9	0%	0%	0%	0%	0%	5%	6%
Total	23%	20%	26%	13%	11%	7%	100%

Table 6-G3.3ii Y9G3a by Y9G3b: choice code frequencies (percent)

	Y9G3c 'best mark'						
Y9G3b 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	126	91	47	68	103	22	457
Choice B	63	125	42	56	102	15	403
Choice C	102	112	71	88	126	17	516
Choice D	40	64	28	59	56	5	252
Choice E	25	41	27	27	97	9	226
c9		3	7	4	4	112	130
Total	356	436	222	302	488	180	1984

Table 6-G3.4i Y9G3b by Y9G3c: choice code frequencies (number)

	Y9G3c 'best mark'						
Y9G3b 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	6%	5%	2%	3%	5%	1%	23%
Choice B	3%	6%	2%	3%	5%	1%	20%
Choice C	5%	6%	4%	4%	6%	1%	26%
Choice D	2%	3%	1%	3%	3%	0%	13%
Choice E	1%	2%	1%	1%	5%	0%	11%
c9	0%	0%	0%	0%	0%	6%	7%
Total	18%	22%	11%	15%	25%	9%	100%

Table 6-G3.4ii Y9G3b by Y9G3c: choice code frequencies (percent)

	Y9G3c 'best mark'						
Y9G3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	117	55	25	47	48	20	312
Choice B	62	159	35	48	82	13	399
Choice C	94	111	95	75	98	18	491
Choice D	30	46	32	79	51	6	244
Choice E	53	63	34	53	206	16	425
c9		2	1		3	107	113
Total	356	436	222	302	488	180	1984

Table 6-G3.5i Y9G3a by Y9G3c: choice code frequencies (number)

	Y9G3c 'best mark'						
Y9G3a 'like best'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**Choice E**	**c9**	**Total**
Choice A	6%	3%	1%	2%	2%	1%	16%
Choice B	3%	8%	2%	2%	4%	1%	20%
Choice C	5%	6%	5%	4%	5%	1%	25%
Choice D	2%	2%	2%	4%	3%	0%	12%
Choice E	3%	3%	2%	3%	10%	1%	21%
c9	0%	0%	0%	0%	0%	5%	6%
Total	18%	22%	11%	15%	25%	9%	100%

Table 6-G3.5ii Y9G3a by Y9G3c: choice code frequencies (percent)

	Y8G3b 'best mark'					
Y8G3a 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**c9**	**Total**
Choice A	139	192	370	64	18	783
Choice B	58	196	355	59	18	686
Choice C	12	17	165	9	7	210
Choice D	6	18	110	88	5	227
c9	1	2	9	6	60	78
Total	216	425	1009	226	108	1984

Table 6-G3.6i Y8G3a by Y8G3b: choice code frequencies (number)

	Y8G3b 'best mark'					
Y8G3a 'own approach'	**Choice A**	**Choice B**	**Choice C**	**Choice D**	**c9**	**Total**
Choice A	7%	10%	19%	3%	1%	39%
Choice B	3%	10%	18%	3%	1%	35%
Choice C	1%	1%	8%	0%	0%	11%
Choice D	0%	1%	6%	4%	0%	11%
c9	0%	0%	0%	0%	3%	4%
Total	11%	21%	51%	11%	5%	100%

Table 6-G3.6ii Y8G3a by Y8G3b: choice code frequencies (percent)

	Y9G3a 'like best'						
Y9G3d VR	Students who selected choice **A** for 'like best'	Students who selected choice **B** for 'like best'	Students who selected choice **C** for 'like best'	Students who selected choice **D** for 'like best'	Students who selected choice **E** for 'like best'	Students who gave a c**9** response for 'like best'	**Total mean**
Mean validity rating of choice **A**	0.61	0.87	0.78	0.78	1.04	0.28	0.80
Mean validity rating of choice **B**	0.87	1.32	0.82	0.92	1.09	0.28	0.97
Mean validity rating of choice **C**	0.93	1.05	0.76	0.89	1.31	0.25	0.95
Mean validity rating of choice **D**	0.15	0.10	0.13	0.08	0.14	0.04	0.12
Mean validity rating of choice **E**	0.77	0.91	0.77	0.59	1.39	0.26	0.88
Total mean validity rating of choices **A, B, C, D, E**	3.32	4.25	3.25	3.27	4.97	1.12	3.71
Total number of students	312	399	491	244	425	113	1984

Note: Maximum possible validity rating (VR) is 2 for each choice

Table 6-G3.7 Y9G3d by Y9G3a: validity rating

	Y9G3b 'own approach'						
Y9G3d VR	Students who selected choice **A** for 'own approach'	Students who selected choice **B** for 'own approach'	Students who selected choice **C** for 'own approach'	Students who selected choice **D** for 'own approach'	Students who selected choice **E** for 'own approach'	Students who gave a c**9** response for 'own approach'	**Total mean**
Mean validity rating of choice **A**	0.71	0.99	0.76	0.87	0.93	0.32	0.80
Mean validity rating of choice **B**	0.89	1.35	0.91	0.92	1.00	0.32	0.97
Mean validity rating of choice **C**	0.98	1.12	0.88	0.90	1.17	0.29	0.95
Mean validity rating of choice **D**	0.13	0.11	0.14	0.08	0.14	0.05	0.12
Mean validity rating of choice **E**	0.88	0.96	0.83	0.79	1.30	0.28	0.88
Total mean validity rating of choices **A, B, C, D, E**	3.58	4.53	3.52	3.56	4.55	1.26	3.71
Total number of students	457	403	516	252	226	130	1984

Note: Maximum possible validity rating (VR) is 2 for each choice

Table 6-G3.8 Y9G3d by Y9G3b: validity rating

	Y9G3c 'best mark'						
Y9G3d VR	Students who selected choice **A** for 'best mark'	Students who selected choice **B** for 'best mark'	Students who selected choice **C** for 'best mark'	Students who selected choice **D** for 'best mark'	Students who selected choice **E** for 'best mark'	Students who gave a c**9** response for 'best mark'	**Total mean**
Mean validity rating of choice **A**	0.65	0.88	0.81	0.80	0.96	0.43	0.80
Mean validity rating of choice **B**	0.70	1.29	0.86	1.00	1.09	0.46	0.97
Mean validity rating of choice **C**	0.93	1.08	0.64	0.89	1.17	0.53	0.95
Mean validity rating of choice **D**	0.15	0.12	0.17	0.03	0.15	0.06	0.12
Mean validity rating of choice **E**	0.67	0.89	0.81	0.78	1.30	0.39	0.88
Total mean validity rating of choices **A, B, C, D, E**	3.10	4.27	3.29	3.51	4.66	1.88	3.71
Total number of students	356	436	222	302	488	180	1984

Note: Maximum possible validity rating (VR) is 2 for each choice

Table 6-G3.9 Y9G3d by Y9G3c: validity rating

	Y9G3a 'like best'						
Y9G3d EP	Students who selected choice **A** for 'like best'	Students who selected choice **B** for 'like best'	Students who selected choice **C** for 'like best'	Students who selected choice **D** for 'like best'	Students who selected choice **E** for 'like best'	Students who gave a c**9** response for 'like best'	**Total mean**
Mean explanatory power of choice **A**	0.65	0.23	0.35	0.11	0.21	0.10	0.30
Mean explanatory power of choice **B**	0.36	0.65	0.39	0.36	0.39	0.13	0.42
Mean explanatory power of choice **C**	-0.18	-0.16	0.17	-0.19	-0.27	-0.09	-0.10
Mean explanatory power of choice **D**	0.39	0.34	0.27	0.49	0.30	0.02	0.32
Mean explanatory power of choice **E**	0.44	0.48	0.38	0.13	0.78	0.06	0.44
Total number of students	312	399	491	244	425	113	1984

Note: Mean explanatory power (EP) = [mean of N(agree) – mean of N(disagree)]. EP ranges from -1 to 1

Table 6-G3.10 Y9G3d by Y9G3a: explanatory power

	Y9G3b 'own approach'						
Y9G3d EP	Students who selected choice **A** for 'own approach'	Students who selected choice **B** for 'own approach'	Students who selected choice **C** for 'own approach'	Students who selected choice **D** for 'own approach'	Students who selected choice **E** for 'own approach'	Students who gave a c**9** response for 'own approach'	**Total mean**
Mean explanatory power of choice **A**	0.47	0.23	0.33	0.19	0.22	0.13	0.30
Mean explanatory power of choice **B**	0.33	0.59	0.45	0.45	0.34	0.18	0.42
Mean explanatory power of choice **C**	-0.21	-0.18	0.08	-0.09	-0.27	0.02	-0.10
Mean explanatory power of choice **D**	0.34	0.39	0.31	0.42	0.20	0.06	0.32
Mean explanatory power of choice **E**	0.48	0.50	0.39	0.30	0.72	0.16	0.44
Total number of students	457	403	516	252	226	130	1984

Note: Mean explanatory power (EP) = [mean of N(agree) – mean of N(disagree)]. EP ranges from -1 to 1

Table 6-G3.11 Y9G3d by Y9G3b: explanatory power

	Y9G3c 'best mark'						
Y9G3d EP	Students who selected choice **A** for 'best mark'	Students who selected choice **B** for 'best mark'	Students who selected choice **C** for 'best mark'	Students who selected choice **D** for 'best mark'	Students who selected choice **E** for 'best mark'	Students who gave a c**9** response for 'best mark'	**Total mean**
Mean explanatory power of choice **A**	0.53	0.24	0.37	0.26	0.22	0.19	0.30
Mean explanatory power of choice **B**	0.30	0.67	0.37	0.45	0.38	0.17	0.42
Mean explanatory power of choice **C**	-0.02	-0.23	0.23	-0.16	-0.18	-0.07	-0.10
Mean explanatory power of choice **D**	0.28	0.35	0.29	0.57	0.26	0.10	0.32
Mean explanatory power of choice **E**	0.35	0.44	0.32	0.31	0.73	0.24	0.44
Total number of students	356	436	222	302	488	180	1984

Note: Mean explanatory power (EP) = [mean of N(agree) – mean of N(disagree)]. EP ranges from -1 to 1

Table 6-G3.12 Y9G3d by Y9G3c: explanatory power

Frequencies for Items Y8G4, Y9G4

	Y9G4a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
002	1		1	0%	0%	0%
003C	5	5	10	0%	1%	1%
024	3	2	5	0%	0%	0%
030		2	2	0%	0%	0%
033C	1		1	0%	0%	0%
044	1	2	3	0%	0%	0%
200	1	2	3	0%	0%	0%
202	3		3	0%	0%	0%
220	1		1	0%	0%	0%
224	2	3	5	0%	0%	0%
242		1	1	0%	0%	0%
244	10	8	18	1%	1%	1%
300	6	6	12	1%	1%	1%
302		1	1	0%	0%	0%
303C		1	1	0%	0%	0%
333C		1	1	0%	0%	0%
334C	1		1	0%	0%	0%
342	2		2	0%	0%	0%
344C	4	8	12	0%	1%	1%
344CE		2	2	0%	0%	0%
400	51	37	88	5%	4%	4%
400E	4	4	8	0%	0%	0%
400P	1		1	0%	0%	0%
402	18	10	28	2%	1%	1%
403C		2	2	0%	0%	0%
404C		1	1	0%	0%	0%
420	1	1	2	0%	0%	0%
422	2	2	4	0%	0%	0%
422E	1		1	0%	0%	0%
424	42	44	86	4%	4%	4%
424P	2		2	0%	0%	0%
424T		1	1	0%	0%	0%
434	1	2	3	0%	0%	0%
434C	3	6	9	0%	1%	0%
440	2		2	0%	0%	0%
440E		1	1	0%	0%	0%
442	11	5	16	1%	1%	1%
442C		1	1	0%	0%	0%
444C	642	618	1260	64%	63%	64%
444CE	77	65	142	8%	7%	7%
444CEP	1		1	0%	0%	0%
444CP	5	3	8	0%	0%	0%
91	77	100	177	8%	10%	9%
92	3	6	9	0%	1%	0%
93	18	28	46	2%	3%	2%
Total	1003	981	1984	100%	100%	100%

Table 6-G4.1 Y9G4a: full code frequencies

Y9G4a						
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
002	1		1	0%	0%	0%
003C	5	5	10	0%	1%	1%
024	3	2	5	0%	0%	0%
030		2	2	0%	0%	0%
033C	1		1	0%	0%	0%
044	1	2	3	0%	0%	0%
200	1	2	3	0%	0%	0%
202	3		3	0%	0%	0%
220	1		1	0%	0%	0%
224	2	3	5	0%	0%	0%
242		1	1	0%	0%	0%
244	10	8	18	1%	1%	1%
300	6	6	12	1%	1%	1%
302		1	1	0%	0%	0%
303C		1	1	0%	0%	0%
333C		1	1	0%	0%	0%
334C	1		1	0%	0%	0%
342	2		2	0%	0%	0%
344	4	10	14	0%	1%	1%
400	56	41	97	6%	4%	5%
402	18	10	28	2%	1%	1%
403C		2	2	0%	0%	0%
404C		1	1	0%	0%	0%
420	1	1	2	0%	0%	0%
422	3	2	5	0%	0%	0%
424	44	45	89	4%	5%	4%
434	4	8	12	0%	1%	1%
440	2	1	3	0%	0%	0%
442	11	6	17	1%	1%	1%
444	725	686	1411	72%	70%	71%
c9	98	134	232	10%	14%	12%
Total	1003	981	1984	100%	100%	100%

Table 6-G4.2i Y9G4a: semi-stripped code frequencies

	Y9G4a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
002	1		1	0%	0%	0%
005	5	5	10	0%	1%	1%
025	3	2	5	0%	0%	0%
050		2	2	0%	0%	0%
055	2	2	4	0%	0%	0%
200	1	2	3	0%	0%	0%
202	3		3	0%	0%	0%
220	1		1	0%	0%	0%
225	2	3	5	0%	0%	0%
252		1	1	0%	0%	0%
255	10	8	18	1%	1%	1%
500	62	47	109	6%	5%	5%
502	18	11	29	2%	1%	1%
505		4	4	0%	0%	0%
520	1	1	2	0%	0%	0%
522	3	2	5	0%	0%	0%
525	44	45	89	4%	5%	4%
550	2	1	3	0%	0%	0%
552	13	6	19	1%	1%	1%
555	734	705	1439	73%	72%	73%
c9	98	134	232	10%	14%	12%
Total	1003	981	1984	100%	100%	100%

This table is derived from the previous table, with 3 and 4 changed to 5

Table 6-G4.2ii Y9G4a: stripped and amalgamated code frequencies

	Y8G4a						Y9G4a					
Score	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 Incorrect	218	242	460	22%	25%	23%	120	154	274	12%	16%	14%
1 Correct first step of calculation	246	202	448	25%	21%	23%	144	114	258	14%	12%	13%
2 Correct calculation	539	537	1076	54%	55%	54%	739	713	1452	74%	73%	73%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G4.3 Y8G4a, Y9G4a: score frequencies

	Y8G4b						Y8G4c					
Score	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct order of claculations (b) or reasons (c) (code **30**)	733	654	1387	73%	67%	70%	470	420	890	47%	43%	45%
Incorrect (code **9**)	270	327	597	27%	33%	30%	533	561	1094	53%	57%	55%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G4.4 Y8G4b, Y8G4c: broad code frequencies

	Y9G4a score			
Y8G4a score	**0**	**1**	**2**	**Total**
0 Incorrect	107	91	262	460
1 Correct first step of calculation	69	65	314	448
2 Correct calculation	98	102	876	1076
Total	274	258	1452	1984

Table 6-G4.5i Y8G4a by Y9G4a: score frequencies (number)

	Y9G4a score			
Y8G4a score	**0**	**1**	**2**	**Total**
0 Incorrect	5%	5%	13%	23%
1 Correct first step of calculation	3%	3%	16%	23%
2 Correct calculation	5%	5%	44%	54%
Total	14%	13%	73%	100%

Table 6-G4.5ii Y8G4a by Y9G4a: score frequencies (percent)

	Y9G4aA Calculating angle *u*						**Y9G4aB** Calculating *v* + *w*						**Y9G4aC** Calculating angle *v*					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
No discernable value anywhere on page (code **0**)	11	11	22	1%	1%	1%	90	69	159	9%	7%	8%	67	53	120	7%	5%	6%
Incorrect value due to factual or method error (code **2**)	17	14	31	2%	1%	2%	54	53	107	5%	5%	5%	38	20	58	4%	2%	3%
Correct result but no evidence of where it came from (code **3**)	13	19	32	1%	2%	2%	6	11	17	1%	1%	1%	6	9	15	1%	1%	1%
Correct result with evidence of where it came from (code **4**)	864	803	1667	86%	82%	84%	755	714	1469	75%	73%	74%	794	765	1559	79%	78%	79%
Other incorrect (code **9**)	98	134	232	10%	14%	12%	98	134	232	10%	14%	12%	98	134	232	10%	14%	12%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G4.6 Y9G4aA, Y9G4aB, Y9G4aC: codes for each calculation

Y9G4b

Code	N Girls	N Boys	N All	% Girls	% Boys	% All
003	2	3	5	0%	0%	0%
004T	1		1	0%	0%	0%
011	1	2	3	0%	0%	0%
014	2	2	4	0%	0%	0%
020	2	1	3	0%	0%	0%
024	2	3	5	0%	0%	0%
030		1	1	0%	0%	0%
031		1	1	0%	0%	0%
040		1	1	0%	0%	0%
041	1	2	3	0%	0%	0%
044	3	3	6	0%	0%	0%
100	13	19	32	1%	2%	2%
101	3	5	8	0%	1%	0%
102	5	7	12	0%	1%	1%
103	2	3	5	0%	0%	0%
104	8	17	25	1%	2%	1%
110	5	3	8	0%	0%	0%
111	33	63	96	3%	6%	5%
112	1	1	2	0%	0%	0%
113	20	26	46	2%	3%	2%
114	62	91	153	6%	9%	8%
120	1	1	2	0%	0%	0%
124	3	2	5	0%	0%	0%
130		1	1	0%	0%	0%
131F	1		1	0%	0%	0%
133	3	6	9	0%	1%	0%
134	5	4	9	0%	0%	0%
140	1	6	7	0%	1%	0%
141	16	16	32	2%	2%	2%
142	1	1	2	0%	0%	0%
143	12	9	21	1%	1%	1%
144	22	27	49	2%	3%	2%
144F	22	14	36	2%	1%	2%
144FT	15	10	25	1%	1%	1%
144T	27	24	51	3%	2%	3%
200	3	1	4	0%	0%	0%
202	3		3	0%	0%	0%

Y9G4b, continued

Code	N Girls	N Boys	N All	% Girls	% Boys	% All
204	3	1	4	0%	0%	0%
214	1	1	2	0%	0%	0%
220	1	1	2	0%	0%	0%
224T		1	1	0%	0%	0%
241	1		1	0%	0%	0%
244	3	3	6	0%	0%	0%
301		1	1	0%	0%	0%
314		1	1	0%	0%	0%
333T		1	1	0%	0%	0%
334F		1	1	0%	0%	0%
340		1	1	0%	0%	0%
343FT		1	1	0%	0%	0%
344		1	1	0%	0%	0%
400	42	33	75	4%	3%	4%
401	3	1	4	0%	0%	0%
402	7	2	9	1%	0%	0%
403	4	1	5	0%	0%	0%
404	10	14	24	1%	1%	1%
411	7	7	14	1%	1%	1%
412F		1	1	0%	0%	0%
413	6	12	18	1%	1%	1%
414	31	27	58	3%	3%	3%
421		1	1	0%	0%	0%
422	3		3	0%	0%	0%
423T	1		1	0%	0%	0%
424	2	4	6	0%	0%	0%
430		2	2	0%	0%	0%
433	2	3	5	0%	0%	0%
434	5	8	13	0%	1%	1%
440	15	13	28	1%	1%	1%
441	29	16	45	3%	2%	2%
442	4	5	9	0%	1%	0%
443	34	21	55	3%	2%	3%
444	350	231	581	35%	24%	29%
c9	138	189	327	14%	19%	16%
Total	1003	981	1984	100%	100%	100%

Table 6-G4.7 Y9G4b: broad code frequencies

Y9G4b						
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
005	3	3	6	0%	0%	0%
011	1	2	3	0%	0%	0%
015	2	2	4	0%	0%	0%
020	2	1	3	0%	0%	0%
025	2	3	5	0%	0%	0%
050		2	2	0%	0%	0%
051	1	3	4	0%	0%	0%
055	3	3	6	0%	0%	0%
100	13	19	32	1%	2%	2%
101	3	5	8	0%	1%	0%
102	5	7	12	0%	1%	1%
105	10	20	30	1%	2%	2%
110	5	3	8	0%	0%	0%
111	33	63	96	3%	6%	5%
112	1	1	2	0%	0%	0%
115	82	117	199	8%	12%	10%
120	1	1	2	0%	0%	0%
125	3	2	5	0%	0%	0%
150	1	7	8	0%	1%	0%
151	17	16	33	2%	2%	2%
152	1	1	2	0%	0%	0%
155	106	94	200	11%	10%	10%
200	3	1	4	0%	0%	0%
202	3		3	0%	0%	0%
205	3	1	4	0%	0%	0%
215	1	1	2	0%	0%	0%
220	1	1	2	0%	0%	0%
225		1	1	0%	0%	0%
251	1		1	0%	0%	0%
255	3	3	6	0%	0%	0%
500	42	33	75	4%	3%	4%
501	3	2	5	0%	0%	0%
502	7	2	9	1%	0%	0%
505	14	15	29	1%	2%	1%
511	7	7	14	1%	1%	1%
512		1	1	0%	0%	0%
515	37	40	77	4%	4%	4%
521		1	1	0%	0%	0%
522	3		3	0%	0%	0%
525	3	4	7	0%	0%	0%
550	15	16	31	1%	2%	2%
551	29	16	45	3%	2%	2%
552	4	5	9	0%	1%	0%
555	391	267	658	39%	27%	33%
C9	138	189	327	14%	19%	16%
Total	1003	981	1984	100%	100%	100%

This table is derived from the previous table, with 3 and 4 changed to 5

Table 6-G4.8 Y9G4b: stripped and amalgamated code frequencies

Code	Y9G4b Use of a reason involving foresight (code **F**)						Y9G4b Use of a reason involving explicit reference to 'isosceles triangle' (code **T**)					
	N Girls	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Code present	150	135	285	15%	14%	14%	364	314	678	36%	32%	34%
Code absent	853	846	1699	85%	86%	86%	639	667	1306	64%	68%	66%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G4.9 Y9G4b: use of foresight/reference to isosceles triangle

Code	Y9G4bA Reason for calculating angle *u*						Y9G4bB Reason for calculating *v* + *w*						Y9G4bC Reason for calculating angle *v*					
	N Girls	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
No discernable reason anywhere on page (code **0**)	14	19	33	1%	2%	2%	109	108	217	11%	11%	11%	83	84	167	8%	9%	8%
Non-mathematical reason only (code **1**)	281	356	637	28%	36%	32%	169	237	406	17%	24%	20%	95	115	210	9%	12%	11%
Incorrect or unclear mathematical reason (code **2**)	15	8	23	1%	1%	1%	15	14	29	1%	1%	1%	24	17	41	2%	2%	2%
Correct reason, but not connected to the calculation (code **3**)		7	7	0%	1%	0%	16	28	44	2%	3%	2%	86	86	172	9%	9%	9%
Correct reason, connected to the calculation (code **4**)	555	402	957	55%	41%	48%	556	405	961	55%	41%	48%	577	490	1067	58%	50%	54%
Other incorrect reason or no response at all (code **9**)	138	189	327	14%	19%	16%	138	189	327	14%	19%	16%	138	189	327	14%	19%	16%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G4.10 Y9G4bA, Y9G4bB, Y9G4bC: codes for each calculation

Score	Y9G4bA Reason for calculating angle *u*						Y9G4bB Reason for calculating *v* + *w*						Y9G4bC Reason for calculating angle *v*					
	N Girls	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 Incorrect reason, or no reason	448	572	1020	45%	58%	51%	431	548	979	43%	56%	49%	340	405	745	34%	41%	38%
1 Correct reason, but not connected to the calculation		7	7	0%	1%	0%	16	28	44	2%	3%	2%	86	86	172	9%	9%	9%
1.33 Correct reason, connected to the calculation	555	402	957	55%	41%	48%	556	405	961	55%	41%	48%	577	490	1067	58%	50%	54%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-G4.11 Y9G4bA, Y9G4bB, Y9G4bC: scores for each calculation

Frequencies for Items Y9LA1, Y9LG1

	Y9LA1a						Y9LG1a					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	650	578	1228	65%	59%	62%	647	604	1251	65%	62%	63%
31	149	131	280	15%	13%	14%	179	175	354	18%	18%	18%
32	168	217	385	17%	22%	19%	135	148	283	13%	15%	14%
91	25	41	66	2%	4%	3%	36	40	76	4%	4%	4%
92	11	7	18	1%	1%	1%	6	12	18	1%	1%	1%
93		7	7		1%	0%		2	2		0%	0%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.1 Y9LA1a, Y9LG1a: full code frequencies

	Y9LA1a						Y9LG1a					
Broad code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
"Yes, statements are the same" (code **10**)	650	578	1228	65%	59%	62%	647	604	1251	65%	62%	63%
"Yes" changed to "No" (code **31**)	149	131	280	15%	13%	14%	179	175	354	18%	18%	18%
"No (statements are not the same)" **32**	168	217	385	17%	22%	19%	135	148	283	13%	15%	14%
Other incorrect (code **9**)	36	55	91	4%	6%	5%	42	54	96	4%	6%	5%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.2 Y9LA1a, Y9LG1a: broad code frequencies

	Y9LG1a broad codes			
Y9LA1a broad codes	code **1**	code **3**	code **9**	**Total**
"Yes, statements are the same" (code **10**)	956	228	44	1228
"No (statements are not the same)" (codes **31, 32)**	247	373	45	665
Other incorrect (code **9**)	48	36	7	91
Total	1251	637	96	1984

Table-LG1.3i Y9LA1a by Y9LG1a: broad code frequencies (number)

	Y9LG1a broad codes			
Y9LA1a broad codes	code **1**	code **3**	code **9**	**Total**
"Yes, statements are the same" (code **10**)	48%	11%	2%	62%
"No (statements are not the same)" (codes **31, 32)**	12%	19%	2%	34%
Other incorrect (code **9**)	2%	2%	0%	5%
Total	63%	32%	5%	100%

Table-LG1.3ii Y9LA1a by Y9LG1a: broad code frequencies (percent)

	Y9LA1a						Y9LG1a					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 10) "Yes, statements are the same"; and **0** (code 9) Other incorrect	686	633	1319	68%	65%	66%	689	658	1347	69%	67%	68%
1 (code 31) "Yes" changed to "No"	149	131	280	15%	13%	14%	179	175	354	18%	18%	18%
2 (code 32) "No (statements are not the same)"	168	217	385	17%	22%	19%	135	148	283	13%	15%	14%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.4 Y9LA1a, Y9LG1a: score frequencies

	Y9LG1a Score			
Y9LA1a score	**0**	**1**	**2**	**Total**
0 (code 10) "Yes, statements are the same"; and **0** (code 9) Other incorrect	1055	169	95	1319
1 (code 31) "Yes" changed to "No"	121	77	82	280
2 (code 32) "No (statements are not the same)"	171	108	106	385
Total	1347	354	283	1984

Table 6-LG1.5i Y9LA1a by Y9LG1a: score frequencies (number)

	Y9LG1a score			
Y9LA1a score	**0**	**1**	**2**	**Total**
0 (code 10) "Yes, statements are the same"; and **0** (code 9) Other incorrect	53%	9%	5%	66%
1 (code 31) "Yes" changed to "No"	6%	4%	4%	14%
2 (code 32) "No (statements are not the same)"	9%	5%	5%	19%
Total	68%	18%	14%	100%

Table 6-LG1.5ii Y9LA1a by Y9LG1a: score frequencies (percent)

	Y9LA1b						Y9LG1b					
Codes	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
10	207	212	419	21%	22%	21%	109	103	212	11%	10%	11%
30	725	646	1371	72%	66%	69%	822	798	1620	82%	81%	82%
91	25	44	69	2%	4%	3%	36	35	71	4%	4%	4%
92	11	7	18	1%	1%	1%	6	12	18	1%	1%	1%
93	35	72	107	3%	7%	5%	30	33	63	3%	3%	3%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.6 Y9LA1b, Y9LG1b: full code frequencies

	Y9LA1b						Y9LG1b					
Broad code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
"Can't be sure" (code **10**)	647	604	1251	65%	62%	63%	109	103	212	11%	10%	11%
"Sum is EVEN" (code **30**)	314	323	637	31%	33%	32%	822	798	1620	82%	81%	82%
Other incorrect including "Sum is ODD" and choice of more than one option (c**9**)	42	54	96	4%	6%	5%	72	80	152	7%	8%	8%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.7 Y9LA1b, Y9LG1b: broad code frequencies

	Y9LG1b broad codes			
Y9LA1b broad codes	code **10**	code **30**	code **9**	**Total**
"Can't be sure" (code **10**)	103	266	50	419
"Sum is EVEN" (code **30**)	82	1213	76	1371
Other incorrect including "Sum is ODD" and choice of more than one option (code **9**)	27	141	26	194
Total	212	1620	152	1984

Table 6-LG1.8i Y9LA1b by Y9LG1b: broad code frequencies (number)

	Y9LG1b broad codes			
Y9LA1b broad codes	code **10**	code **30**	code **9**	**Total**
"Can't be sure" (code **10**)	5%	13%	3%	21%
"Sum is EVEN" (code **30**)	4%	61%	4%	69%
Other incorrect including "Sum is ODD" and choice of more than one option (code **9**)	1%	7%	1%	10%
Total	11%	82%	8%	100%

Table 6-LG1.8ii Y9LA1b by Y9LG1b: broad code frequencies (percent)

	Y9LA1b						Y9LG1b					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 10) "Can't be sure" or **0** (code 9) other incorrect including "Sum is ODD" and choice of more than one option	278	335	613	28%	34%	31%	181	183	364	18%	19%	18%
2 (code 30) "Sum is EVEN"	725	646	1371	72%	66%	69%	822	798	1620	82%	81%	82%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.9 Y9LA1b, Y9LG1b: score frequencies

	Y9LG1b score		
Y9LA1b score	**0**	**2**	**Total**
0 (code 10) "Can't be sure" or **0** (code 9) other incorrect including "Sum is ODD" and choice of more than one option	206	407	613
2 (code 30) "Sum is EVEN"	158	1213	1371
Total	364	1620	1984

Table 6-LG1.10i Y9LA1b by Y9LG1b: score frequencies (number)

	Y9LG1b score		
Y9LA1b score	**0**	**2**	**Total**
0 (code 10) "Can't be sure" or **0** (code 9) other incorrect including "Sum is ODD" and choice of more than one option	10%	21%	31%
2 (code 30) "Sum is EVEN"	8%	61%	69%
Total	18%	82%	100%

Table 6-LG1.10ii Y9LA1b by Y9LG1b: score frequencies (percent)

	Y9LA1c						Y9LG1c					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	107	142	249	11%	14%	13%	85	123	208	8%	13%	10%
11S	18	11	29	2%	1%	1%	11	11	22	1%	1%	1%
13	27	55	82	3%	6%	4%	62	62	124	6%	6%	6%
13S		4	4	0%	0%	0%						
14	33	31	64	3%	3%	3%	4	1	5	0%	0%	0%
21	9	5	14	1%	1%	1%		3	3		0%	0%
22	171	142	313	17%	14%	16%	36	26	62	4%	3%	3%
22B							11	13	24	1%	1%	1%
22BG							103	102	205	10%	10%	10%
22BGS							2		2	0%		0%
22BM								1	1		0%	0%
22BV							13	13	26	1%	1%	1%
22BVS								1	1		0%	0%
22G							97	70	167	10%	7%	8%
22GS							2	1	3	0%	0%	0%
22S	1		1	0%	0%	0%						
22V							20	10	30	2%	1%	2%
23	17	14	31	2%	1%	2%	6	5	11	1%	1%	1%
23N							9	12	21	1%	1%	1%
31	76	100	176	8%	10%	9%	17	6	23	2%	1%	1%
31M							14	19	33	1%	2%	2%
31N								5	5		1%	0%
31NV							1	2	3	0%	0%	0%
31T							18	26	44	2%	3%	2%
31V							3	1	4	0%	0%	0%
32	261	228	489	26%	23%	25%	89	80	169	9%	8%	9%
32M							65	69	134	6%	7%	7%
32MT							2		2	0%		0%
32N							24	19	43	2%	2%	2%
32NT								1	1		0%	0%
32NV								1	1		0%	0%
32T							112	137	249	11%	14%	13%
32V							16	15	31	2%	2%	2%
41	14	8	22	1%	1%	1%	1	2	3	0%	0%	0%
42	9	13	22	1%	1%	1%		4	4		0%	0%
43	8	12	20	1%	1%	1%	6	3	9	1%	0%	0%
44	67	55	122	7%	6%	6%	3	5	8	0%	1%	0%
44L		1	1	0%	0%	0%						
91	91	94	185	9%	10%	9%	88	73	161	9%	7%	8%
92	14	12	26	1%	1%	1%	9	13	22	1%	1%	1%
93	80	54	134	8%	6%	7%	73	46	119	7%	5%	6%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.11 Y9LA1c, Y9LG1c: full code frequencies

Note: The code S (Sometimes) which was used on Y8L1cd and Y9LA1cd occurred very rarely and has been stripped from the data for this table; instead, codes F (same as Fred), J (same as Joe), P (same as Pam), V (same as Viv) have been replace by S (Same as other person). This makes the coding consistent with Y10LA1cd and Y9 and Y10 LG1cd.

	Y9LA1c						Y9LG1c					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	125	153	278	16%	12%	14%	97	134	231	10%	14%	12%
13	27	59	86	6%	3%	4%	62	62	124	6%	6%	6%
14	33	31	64	3%	3%	3%	4	1	5	0%	0%	0%
21	9	5	14	1%	1%	1%		3	3		0%	0%
22	172	142	314	14%	17%	16%	284	237	521	28%	24%	26%
23	17	14	31	1%	2%	2%	15	17	32	1%	2%	2%
31	76	100	176	10%	8%	9%	53	59	112	5%	6%	6%
32	261	228	489	23%	26%	25%	308	322	630	31%	33%	32%
41	14	8	22	1%	1%	1%	1	2	3	0%	0%	0%
42	9	13	22	1%	1%	1%		4	4		0%	0%
43	8	12	20	1%	1%	1%	6	3	9	1%	0%	0%
44	67	56	123	6%	7%	6%	3	5	8	0%	1%	0%
91	91	94	185	10%	9%	9%	88	73	161	9%	7%	8%
92	14	12	26	1%	1%	1%	9	13	22	1%	1%	1%
93	80	54	134	6%	8%	7%	73	46	119	7%	5%	6%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.12 Y9LA1c, Y9LG1c: stripped code frequencies

	Y9LA1c						Y9LG1c					
Broad code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct or incorrect decision; no valid justification (code **1**)	185	243	428	18%	25%	22%	163	197	360	16%	20%	18%
Correct or incorrect decision; incomplete or flawed justification (code **2**)	198	161	359	20%	16%	18%	299	257	556	30%	26%	28%
Correct decision; valid justification, specific (code **3**)	337	328	665	34%	33%	34%	361	381	742	36%	39%	37%
Correct decision; valid justification, general (code **4**)	98	89	187	10%	9%	9%	10	14	24	1%	1%	1%
Other incorrect (code **9**)	185	160	345	18%	16%	17%	170	132	302	17%	13%	15%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.13 Y9LA1c, Y9LG1c: broad code frequencies

	Y9LG1c broad codes					
Y9LA1c broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	136	132	93	2	65	428
Correct or incorrect decision; incomplete or flawed justification (code **2**)	56	136	105	3	59	359
Correct decision; valid justification, specific (code **3**)	78	166	333	6	82	665
Correct decision; valid justification, general (code **4**)	25	35	99	8	20	187
Other incorrect (code **9**)	65	87	112	5	76	345
Total	360	556	742	24	302	1984

Table 6-LG1.14i Y9LA1c by Y9LG1c: broad code frequencies (number)

	Y9LG1c broad code					
Y9LA1c broad code	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	7%	7%	5%	0%	3%	22%
Correct or incorrect decision; incomplete or flawed justification (code **2**)	3%	7%	5%	0%	3%	18%
Correct decision; valid justification, specific (code **3**)	4%	8%	17%	0%	4%	34%
Correct decision; valid justification, general (code **4**)	1%	2%	5%	0%	1%	9%
Other incorrect (code **9**)	3%	4%	6%	0%	4%	17%
Total	18%	28%	37%	1%	15%	100%

Table 6-LG1.14ii Y9LA1c by Y9LG1c: broad code frequencies (percent)

	Y9LA1c						**Y9LG1c**					
Scores	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 1) Correct or incorrect decision; no valid justification	370	403	773	37%	41%	39%	333	329	662	33%	34%	33%
2(code 2) Correct or incorrect decision; incomplete or flawed justification	198	161	359	20%	16%	18%	299	257	556	30%	26%	28%
2.5 (code 31) Correct decision; valid justification, specific and not explicit	76	100	176	8%	10%	9%	53	59	112	5%	6%	6%
3 (code 32, 34) Correct decision; valid justification, general and/or explicit	359	317	676	36%	32%	34%	318	336	654	32%	34%	33%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.15 Y9LA1c, Y9LG1c: score frequencies

	Y9LG1c score				
Y9LA1c score	**0**	**2**	**2.5**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification	342	219	40	172	773
2(code 2) Correct or incorrect decision; incomplete or flawed justification	115	136	15	93	359
2.5 (code 31) Correct decision; valid justification, specific and not explicit	44	51	16	65	176
3 (code 32, 34) Correct decision; valid justification, general and/or explicit	161	150	41	324	676
Total	662	556	112	654	1984

Table 6-LG1.16i Y9LA1c by Y9LG1c: score frequencies (number)

	Y9LG1c score				
Y9LA1c score	**0**	**2**	**2.5**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification	17%	11%	2%	9%	39%
2(code 2) Correct or incorrect decision; incomplete or flawed justification	6%	7%	1%	5%	18%
2.5 (code 31) Correct decision; valid justification, specific and not explicit	2%	3%	1%	3%	9%
3 (code 32, 34) Correct decision; valid justification, general and/or explicit	8%	8%	2%	16%	34%
Total	33%	28%	6%	33%	100%

Table 6-LG1.16ii Y9LA1c by Y9LG1c: score frequencies (percent)

Code	Y9LA1d						Y9LG1d					
	N Girls	N Boys	N All	% Girls	% Boys	% All	N Girls	N Boys	N All	% Girls	% Boys	% All
11	152	169	321	15%	17%	16%	82	74	156	8%	8%	8%
11S	90	65	155	9%	7%	8%	36	49	85	4%	5%	4%
13	121	183	304	12%	19%	15%	118	159	277	12%	16%	14%
13S	54	40	94	5%	4%	5%	63	45	108	6%	5%	5%
21	97	99	196	10%	10%	10%	46	33	79	5%	3%	4%
21B							2	1	3	0%	0%	0%
21BS								1	1		0%	0%
21BV								1	1		0%	0%
21M							49	54	103	5%	6%	5%
21MS								5	5		1%	0%
21MV								2	2		0%	0%
21S	24	13	37	2%	1%	2%	11	6	17	1%	1%	1%
21SV							2	2	4	0%	0%	0%
21V							10	11	21	1%	1%	1%
22	85	63	148	8%	6%	7%	9	6	15	1%	1%	1%
22B								1	1		0%	0%
22M							5	5	10	0%	1%	1%
22S	16	7	23	2%	1%	1%	2	1	3	0%	0%	0%
22SV							5		5	0%		0%
22V							5	2	7	0%	0%	0%
23	1		1	0%	0%	0%						
24	28	23	51	3%	2%	3%	3	1	4	0%	0%	0%
24S	4	6	10	0%	1%	1%	1		1	0%		0%
31							77	102	179	8%	10%	9%
31S							14	13	27	1%	1%	1%
31SV							6	3	9	1%	0%	0%
31V							23	29	52	2%	3%	3%
32							23	23	46	2%	2%	2%
32S							3	2	5	0%	0%	0%
32SV							1		1	0%		0%
32V							7	7	14	1%	1%	1%
41	8	6	14	1%	1%	1%	3	3	6	0%	0%	0%
41S	2	3	5	0%	0%	0%						
42	5	4	9	0%	0%	0%	90	91	181	9%	9%	9%
42L							1		1	0%		0%
42S	1		1	0%	0%	0%	18	20	38	2%	2%	2%
43	17	11	28	2%	1%	1%	2	2	4	0%	0%	0%
43S	1	1	2	0%	0%	0%						
44	77	93	170	8%	9%	9%	71	55	126	7%	6%	6%
44L	1	2	3	0%	0%	0%	1	1	2	0%	0%	0%
44S	19	9	28	2%	1%	1%	11	8	19	1%	1%	1%
50		4	4	0%	0%	0%						
91	117	109	226	12%	11%	11%	110	93	203	11%	9%	10%
92	21	15	36	2%	2%	2%	9	13	22	1%	1%	1%
93	48	48	96	5%	5%	5%	84	57	141	8%	6%	7%
93S	14	8	22	1%	1%	1%						
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.17 Y9LA1d, Y9LG1d: full code frequencies

Note: The code S (Sometimes) which was used on Y8L1cd and Y9LA1cd occurred very rarely and has been stripped from the data for this table; instead, codes F (same as Fred), J (same as Joe), P (same as Pam), V (same as Viv) have been replaced by S (Same as other person). This makes the coding consistent with Y10LA1cd and Y9 and Y10 LG1cd.

	Y9LA1d						Y9LG1d					
Code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
11	242	234	476	24%	24%	24%	118	123	241	12%	13%	8%
13	175	223	398	17%	23%	20%	181	204	385	18%	21%	19%
21	121	112	233	12%	11%	12%	120	116	236	12%	12%	12%
22	101	70	171	10%	7%	9%	26	15	41	3%	2%	2%
23	1		1	0%	0%	0%						
24	32	29	61	3%	3%	3%	4	1	5	0%	0%	0%
31							120	147	267	12%	15%	13%
32							34	32	66	3%	3%	3%
41	10	9	19	1%	1%	1%	3	3	6	0%	0%	0%
42	6	4	10	1%	0%	1%	109	111	220	11%	11%	11%
43	18	12	30	2%	1%	2%	2	2	4	0%	0%	0%
44	97	104	201	10%	11%	10%	83	64	147	8%	7%	7%
50		4	4	0%	0%	0%						
91	117	109	226	12%	11%	11%	110	93	203	11%	9%	10%
92	21	15	36	2%	2%	2%	9	13	22	1%	1%	1%
93	62	56	118	6%	6%	6%	84	57	141	8%	6%	7%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.18 Y9LA1d, Y9LG1d: stripped code frequencies

	Y9LA1d						Y9LG1d					
Broad code	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
Correct or incorrect decision; no valid justification (code **1**)	417	457	874	42%	47%	44%	299	327	626	30%	33%	32%
Correct decision; incomplete justification (code **2**)	255	211	466	25%	22%	23%	150	132	282	15%	13%	14%
Correct decision; valid use of 'counter counter-example' (code **3**)							154	179	333	15%	18%	17%
Correct decision; valid, general justification (code **4**)	131	129	260	13%	13%	13%	197	180	377	20%	18%	19%
Correct decision; valid justification, general, plus explanation of why justification true (c**5**)		4	4		0%	0%						
Other incorrect (code **9**)	200	180	380	20%	18%	19%	203	163	366	20%	17%	18%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

Table 6-LG1.19 Y9LA1d, Y9LG1d: broad code frequencies

	Y9LG1d broad codes					
Y9LA1d broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	334	94	137	163	146	874
Correct decision; incomplete justification (code **2**)	117	117	66	89	77	466
Correct decision; valid, general justification (code **4**)	64	31	62	75	28	260
Correct decision; valid justification, general, plus explanation of why justification true (code **5**)	1		1	1	1	4
Other incorrect (code **9**)	110	40	67	49	114	380
Total	626	282	333	377	366	1984

Table 6-LG1.20i Y9LA1d by Y9LG1d: broad code frequencies (number)

	Y9LG1d broad codes					
Y9LA1d broad codes	code **1**	code **2**	code **3**	code **4**	code **9**	**Total**
Correct or incorrect decision; no valid justification (code **1**)	17%	5%	7%	8%	7%	44%
Correct decision; incomplete justification (code **2**)	6%	6%	3%	4%	4%	23%
Correct decision; valid, general justification (code **4**)	3%	2%	3%	4%	1%	13%
Correct decision; valid justification, general, plus explanation of why justification true (code **5**)	0%	0%	0%	0%	0%	0%
Other incorrect (code **9**)	6%	2%	3%	2%	6%	19%
Total	32%	14%	17%	19%	18%	100%

Table 6-LG1.20ii Y9LA1d by Y9LG1d: broad code frequencies (percent)

	Y9LA1d						Y9LG1d					
Score	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**	**N Girls**	**N Boys**	**N All**	**% Girls**	**% Boys**	**% All**
0 (code 1) Correct or incorrect decision; no valid justification, or **0** (code 9) Other incorrect	617	637	1254	62%	65%	63%	502	490	992	50%	50%	50%
2 (code 2) Correct decision; incomplete justification	255	211	466	25%	22%	23%	150	132	282	15%	13%	14%
2.5* (code 31) valid counter counter-example, conclusion implicit							120	147	267	12%	15%	13%
3 (code 4, 50) Correct decision; valid, general justification; or **3*** (code 32) valid counter counter-example	131	133	264	13%	14%	13%	231	212	443	23%	22%	22%
Total	1003	981	1984	100%	100%	100%	1003	981	1984	100%	100%	100%

**Y9LG1d only*

Table 6-LG1.21 Y9LA1d, Y9LG1d: score frequencies

	Y9LA1d score			
Y9LG1d score	**0**	**2**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification, or **0** (code 9) Other incorrect	704	194	94	992
2 (code 2) Correct decision; incomplete justification	134	117	31	282
2.5* (code 31) valid counter counter-example, conclusion implicit	160	57	50	267
3 (code 4, 50) Correct decision; valid, general justification; or **3*** (code 32) valid counter counter-example	256	98	89	443
Total	1254	466	264	1984

**Y9LG1d only*

Table 6-LG1.22i Y9LG1d by Y9LA1d: score frequencies (number)

	Y9LA1d score			
Y9LG1d score	**0**	**2**	**3**	**Total**
0 (code 1) Correct or incorrect decision; no valid justification, or **0** (code 9) Other incorrect	35%	10%	5%	50%
2 (code 2) Correct decision; incomplete justification	7%	6%	2%	14%
2.5* (code 31) valid counter counter-example, conclusion implicit	8%	3%	3%	13%
3 (code 4, 50) Correct decision; valid, general justification; or **3*** (code 32) valid counter counter-example	13%	5%	4%	22%
Total	63%	23%	13%	100%

**Y9LG1d only*

Table 6-LG1.22ii Y9LG1d by Y9LA1d: score frequencies (percent)

6.2 Changes in pupil scores between Y8 and Y9

The following tables report the results of analyses conducted on data of pupil scores, looking at progress from Y8 to Y9. The Wilcoxon test was performed on the data. This test shows the number of pupils that improved their score from Y8 to Y9 (shown as Positive Ranks), the number who got a lower score in Y9 (shown as Negative Ranks) and the number of pupils that kept the same score in Y8 and Y9 (shown as Ties). The crosstabulation shows, for each grade of the score in Y8, the distribution of scores in Y9. Finally, the correlation table shows whether the score in Y8 is related to the score in Y9. A strong positive correlation (e.g. over 0.5) indicates that the order of scores for pupils in Y9 was similar to their order in Y8; a lower correlation indicates that the relation is weak. With such a large sample even quite small effects can be statistically significant, so it is important to pay attention to the size of the improvement or correlation rather than its statistical significance. Even very small correlations may be statistically significant, but they still only represent a weak relationship.

Analysis of Y8A1 by Y9A1a

Y8A1 * Y9A1A Crosstabulation

			Y9A1A				
			0	1	2	3	Total
Y8A1	.0	Count	369	66	9	471	915
		% within Y8A1	40.3%	7.2%	1.0%	51.5%	100.0%
		% within Y9A1A	68.2%	54.5%	36.0%	36.3%	46.1%
	1.0	Count	21	7	3	65	96
		% within Y8A1	21.9%	7.3%	3.1%	67.7%	100.0%
		% within Y9A1A	3.9%	5.8%	12.0%	5.0%	4.8%
	2.0	Count	13	8	2	37	60
		% within Y8A1	21.7%	13.3%	3.3%	61.7%	100.0%
		% within Y9A1A	2.4%	6.6%	8.0%	2.9%	3.0%
	3.0	Count	138	40	11	724	913
		% within Y8A1	15.1%	4.4%	1.2%	79.3%	100.0%
		% within Y9A1A	25.5%	33.1%	44.0%	55.8%	46.0%
Total		Count	541	121	25	1297	1984
		% within Y8A1	27.3%	6.1%	1.3%	65.4%	100.0%
		% within Y9A1A	100.0%	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9A1A - Y8A1	Negative Ranks	231[a]	406.21	93834.00
	Positive Ranks	651[b]	454.02	295569.00
	Ties	1102[c]		
	Total	1984		

a. Y9A1A < Y8A1

b. Y9A1A > Y8A1

c. Y8A1 = Y9A1A

Test Statistics[b]

	Y9A1A - Y8A1
Z	-13.926[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables left and above show that 651 pupils increased their score in Y9, 231 pupils decreased their score in Y9, and 1102 pupils kept the same score. Therefore, more pupils had a positive improvement in their scores. (This positive change is statistically significant.)

The first test score is weakly correlated with the second test score (see table below)

Correlations

			Y8A1	Y9A1A
Spearman's rho	Y8A1	Correlation Coefficient	1.000	.288**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9A1A	Correlation Coefficient	.288**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8A2 by Y9A2ab

Y8A2 * Y9A2AB Crosstabulation

			Y9A2AB									
			.0	.5	1.0	1.3	1.5	2.0	2.5	2.8	3.0	Total
Y8A2	.0	Count	142	2	10	30	152	4	16	26	277	659
		% within Y8A2	21.5%	.3%	1.5%	4.6%	23.1%	.6%	2.4%	3.9%	42.0%	100.0%
		% within Y9A2AB	59.7%	40.0%	62.5%	50.0%	41.5%	66.7%	43.2%	29.5%	23.7%	33.2%
	1.0	Count	12			4	17			1	29	63
		% within Y8A2	19.0%			6.3%	27.0%			1.6%	46.0%	100.0%
		% within Y9A2AB	5.0%			6.7%	4.6%			1.1%	2.5%	3.2%
	2.0	Count	16		4	2	28		3	5	66	124
		% within Y8A2	12.9%		3.2%	1.6%	22.6%		2.4%	4.0%	53.2%	100.0%
		% within Y9A2AB	6.7%		25.0%	3.3%	7.7%		8.1%	5.7%	5.7%	6.3%
	2.5	Count	34	1	1	8	79	1	11	23	228	386
		% within Y8A2	8.8%	.3%	.3%	2.1%	20.5%	.3%	2.8%	6.0%	59.1%	100.0%
		% within Y9A2AB	14.3%	20.0%	6.3%	13.3%	21.6%	16.7%	29.7%	26.1%	19.5%	19.5%
	3.0	Count	34	2	1	16	90	1	7	33	568	752
		% within Y8A2	4.5%	.3%	.1%	2.1%	12.0%	.1%	.9%	4.4%	75.5%	100.0%
		% within Y9A2AB	14.3%	40.0%	6.3%	26.7%	24.6%	16.7%	18.9%	37.5%	48.6%	37.9%
Total		Count	238	5	16	60	366	6	37	88	1168	1984
		% within Y8A2	12.0%	.3%	.8%	3.0%	18.4%	.3%	1.9%	4.4%	58.9%	100.0%
		% within Y9A2AB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9A2AB - Y8A2	Negative Ranks	370[a]	584.67	216327.50
	Positive Ranks	893[b]	651.61	581888.50
	Ties	721[c]		
	Total	1984		

a. Y9A2AB < Y8A2

b. Y9A2AB > Y8A2

c. Y8A2 = Y9A2AB

Test Statistics[b]

	Y9A2AB - Y8A2
Z	-14.163[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables left and above show that 893 pupils increased their score in Y9, 370 pupils decreased their score in Y9, and 721 pupils kept the same score. Therefore, more pupils had a positive improvement in their scores (this positive change is statistically significant).

The first test score is positively correlated with the second test score (see table below)

Correlations

			Y8A2	Y9A2AB
Spearman's rho	Y8A2	Correlation Coefficient	1.000	.314**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9A2AB	Correlation Coefficient	.314**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8A4abc by Y9A4abc

Y8A4ABC * Y9A4ABC Crosstabulation

			Y9A4ABC								
			.0	.5	1.0	3.0	3.5	4.0	6.0	6.5	7.0	Total
Y8A4ABC	.0	Count	22	7	23	13	19	36	1	1	3	125
		% within Y8A4ABC	17.6%	5.6%	18.4%	10.4%	15.2%	28.8%	.8%	.8%	2.4%	100.0%
		% within Y9A4ABC	25.0%	11.3%	10.9%	12.3%	7.0%	3.4%	9.1%	5.0%	2.1%	6.3%
	.5	Count	10	11	30	6	18	53		1	9	138
		% within Y8A4ABC	7.2%	8.0%	21.7%	4.3%	13.0%	38.4%		.7%	6.5%	100.0%
		% within Y9A4ABC	11.4%	17.7%	14.2%	5.7%	6.6%	5.0%		5.0%	6.2%	7.0%
	1.0	Count	6	6	49	12	26	115			11	225
		% within Y8A4ABC	2.7%	2.7%	21.8%	5.3%	11.6%	51.1%			4.9%	100.0%
		% within Y9A4ABC	6.8%	9.7%	23.2%	11.3%	9.5%	10.8%			7.5%	11.3%
	3.0	Count	11	3	13	24	14	69	1	1	4	140
		% within Y8A4ABC	7.9%	2.1%	9.3%	17.1%	10.0%	49.3%	.7%	.7%	2.9%	100.0%
		% within Y9A4ABC	12.5%	4.8%	6.2%	22.6%	5.1%	6.5%	9.1%	5.0%	2.7%	7.1%
	3.5	Count	9	22	31	22	99	239	5	11	25	463
		% within Y8A4ABC	1.9%	4.8%	6.7%	4.8%	21.4%	51.6%	1.1%	2.4%	5.4%	100.0%
		% within Y9A4ABC	10.2%	35.5%	14.7%	20.8%	36.3%	22.4%	45.5%	55.0%	17.1%	23.3%
	4.0	Count	29	12	59	29	93	535	4	2	70	833
		% within Y8A4ABC	3.5%	1.4%	7.1%	3.5%	11.2%	64.2%	.5%	.2%	8.4%	100.0%
		% within Y9A4ABC	33.0%	19.4%	28.0%	27.4%	34.1%	50.1%	36.4%	10.0%	47.9%	42.0%
	5.5	Count						2				2
		% within Y8A4ABC						100.0%				100.0%
		% within Y9A4ABC						.2%				.1%
	6.0	Count						4				4
		% within Y8A4ABC						100.0%				100.0%
		% within Y9A4ABC						.4%				.2%
	6.5	Count	1	1			3	3		3	7	18
		% within Y8A4ABC	5.6%	5.6%			16.7%	16.7%		16.7%	38.9%	100.0%
		% within Y9A4ABC	1.1%	1.6%			1.1%	.3%		15.0%	4.8%	.9%
	7.0	Count			6		1	11		1	17	36
		% within Y8A4ABC			16.7%		2.8%	30.6%		2.8%	47.2%	100.0%
		% within Y9A4ABC			2.8%		.4%	1.0%		5.0%	11.6%	1.8%
Total		Count	88	62	211	106	273	1067	11	20	146	1984
		% within Y8A4ABC	4.4%	3.1%	10.6%	5.3%	13.8%	53.8%	.6%	1.0%	7.4%	100.0%
		% within Y9A4ABC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9A4ABC - Y8A4ABC	Negative Ranks	388[a]	605.08	234770.00
	Positive Ranks	836[b]	615.94	514930.00
	Ties	760[c]		
	Total	1984		

a. Y9A4ABC < Y8A4ABC

b. Y9A4ABC > Y8A4ABC

c. Y8A4ABC = Y9A4ABC

Test Statistics[b]

	Y9A4ABC - Y8A4ABC
Z	-11.419[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables left and above show that 836 pupils increased their score in Y9, 388 pupils decreased their score in Y9, and 760 pupils kept the same score. Therefore, most pupils had a positive improvement in their scores (this positive change is statistically significant).

The first test score is weakly correlated with the second test score (table below).

Correlations

			Y8A4ABC	Y9A4ABC
Spearman's rho	Y8A4ABC	Correlation Coefficient	1.000	.264**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9A4ABC	Correlation Coefficient	.264**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8G1 by Y9G1

Y8G1 * Y9G1 Crosstabulation

			Y9G1					
			.0	1.0	2.0	2.5	3.0	Total
Y8G1	.0	Count	542	63	84	111	39	839
		% within Y8G1	64.6%	7.5%	10.0%	13.2%	4.6%	100.0%
		% within Y9G1	50.7%	41.4%	44.7%	26.6%	24.5%	42.3%
	1.0	Count	49	12	17	25	6	109
		% within Y8G1	45.0%	11.0%	15.6%	22.9%	5.5%	100.0%
		% within Y9G1	4.6%	7.9%	9.0%	6.0%	3.8%	5.5%
	2.0	Count	86	22	12	21	13	154
		% within Y8G1	55.8%	14.3%	7.8%	13.6%	8.4%	100.0%
		% within Y9G1	8.1%	14.5%	6.4%	5.0%	8.2%	7.8%
	2.5	Count	209	24	47	128	41	449
		% within Y8G1	46.5%	5.3%	10.5%	28.5%	9.1%	100.0%
		% within Y9G1	19.6%	15.8%	25.0%	30.7%	25.8%	22.6%
	3.0	Count	182	31	28	132	60	433
		% within Y8G1	42.0%	7.2%	6.5%	30.5%	13.9%	100.0%
		% within Y9G1	17.0%	20.4%	14.9%	31.7%	37.7%	21.8%
Total		Count	1068	152	188	417	159	1984
		% within Y8G1	53.8%	7.7%	9.5%	21.0%	8.0%	100.0%
		% within Y9G1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9G1 - Y8G1	Negative Ranks	810[a]	637.05	516011.00
	Positive Ranks	420[b]	573.94	241054.00
	Ties	754[c]		
	Total	1984		

a. Y9G1 < Y8G1

b. Y9G1 > Y8G1

c. Y8G1 = Y9G1

Test Statistics[b]

	Y9G1 - Y8G1
Z	-11.088[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

The tables left and above show that 420 pupils increased their score in Y9, 810 pupils decreased their score in Y9, and 754 pupils kept the same score. Therefore, most pupils had a negative change in their scores (This change is statistically significant).

The first test score is weakly correlated with the second test score (see below).

Correlations

			Y8G1	Y9G1
Spearman's rho	Y8G1	Correlation Coefficient	1.000	.224**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9G1	Correlation Coefficient	.224**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8G2a by Y9G2a

Y8G2A * Y9G2A Crosstabulation

			Y9G2A					
			.0	1.0	2.0	2.5	3.0	Total
Y8G2A	.0	Count	300	87	16	247	94	744
		% within Y8G2A	40.3%	11.7%	2.2%	33.2%	12.6%	100.0%
		% within Y9G2A	54.2%	47.0%	29.1%	29.6%	26.4%	37.5%
	1.0	Count	99	38	7	115	40	299
		% within Y8G2A	33.1%	12.7%	2.3%	38.5%	13.4%	100.0%
		% within Y9G2A	17.9%	20.5%	12.7%	13.8%	11.2%	15.1%
	2.0	Count	13	6	4	45	20	88
		% within Y8G2A	14.8%	6.8%	4.5%	51.1%	22.7%	100.0%
		% within Y9G2A	2.4%	3.2%	7.3%	5.4%	5.6%	4.4%
	2.5	Count	104	39	19	323	113	598
		% within Y8G2A	17.4%	6.5%	3.2%	54.0%	18.9%	100.0%
		% within Y9G2A	18.8%	21.1%	34.5%	38.7%	31.7%	30.1%
	3.0	Count	37	15	9	105	89	255
		% within Y8G2A	14.5%	5.9%	3.5%	41.2%	34.9%	100.0%
		% within Y9G2A	6.7%	8.1%	16.4%	12.6%	25.0%	12.9%
Total		Count	553	185	55	835	356	1984
		% within Y8G2A	27.9%	9.3%	2.8%	42.1%	17.9%	100.0%
		% within Y9G2A	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9G2A - Y8G2A	Negative Ranks	446[a]	548.53	244642.50
	Positive Ranks	784[b]	653.60	512422.50
	Ties	754[c]		
	Total	1984		

a. Y9G2A < Y8G2A

b. Y9G2A > Y8G2A

c. Y8G2A = Y9G2A

Test Statistics[b]

	Y9G2A - Y8G2A
Z	-10.806[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables above show that 784 pupils increased their score in Y9, 446 pupils decreased their score in Y9, and 754 pupils kept the same score. Therefore, a large number of pupils had a positive improvement in their scores (this positive change is statistically significant). Although, it also seems that a large number (754) had no change in scores. The first test score is weakly correlated with the second test score (see below).

Correlations

			Y8G2A	Y9G2A
Spearman's rho	Y8G2A	Correlation Coefficient	1.000	.274**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9G2A	Correlation Coefficient	.274**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8G2b by Y9G2b

Y8G2B * Y9G2B Crosstabulation

			Y9G2B				
			.0	1.0	2.0	3.0	Total
Y8G2B	.0	Count	48	62	65	100	275
		% within Y8G2B	17.5%	22.5%	23.6%	36.4%	100.0%
		% within Y9G2B	37.2%	20.8%	9.4%	11.5%	13.9%
	1.0	Count	23	65	103	121	312
		% within Y8G2B	7.4%	20.8%	33.0%	38.8%	100.0%
		% within Y9G2B	17.8%	21.8%	14.9%	14.0%	15.7%
	2.0	Count	23	70	270	185	548
		% within Y8G2B	4.2%	12.8%	49.3%	33.8%	100.0%
		% within Y9G2B	17.8%	23.5%	39.1%	21.3%	27.6%
	3.0	Count	35	101	252	461	849
		% within Y8G2B	4.1%	11.9%	29.7%	54.3%	100.0%
		% within Y9G2B	27.1%	33.9%	36.5%	53.2%	42.8%
Total		Count	129	298	690	867	1984
		% within Y8G2B	6.5%	15.0%	34.8%	43.7%	100.0%
		% within Y9G2B	100.0%	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9G2B - Y8G2B	Negative Ranks	504[a]	521.98	263077.00
	Positive Ranks	636[b]	608.95	387293.00
	Ties	844[c]		
	Total	1984		

a. Y9G2B < Y8G2B

b. Y9G2B > Y8G2B

c. Y8G2B = Y9G2B

Test Statistics[b]

	Y9G2B - Y8G2B
Z	-5.768[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables left and above show that 636 pupils increased their score in Y9, 504 pupils decreased their score in Y9, and 844 pupils kept the same score. This means that the majority of pupils actually kept the same scores in the second test from the first test. However, the positive change is still statistically significant.

The correlation here is barely significant (see below).

Correlations

			Y8G2B	Y9G2B
Spearman's rho	Y8G2B	Correlation Coefficient	1.000	.195**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9G2B	Correlation Coefficient	.195**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8G4a by Y9G4a

Y8G4A * Y9G4A Crosstabulation

			Y9G4A			
			.0	1.0	2.0	Total
Y8G4A	.0	Count	107	91	262	460
		% within Y8G4A	23.3%	19.8%	57.0%	100.0%
		% within Y9G4A	39.1%	35.3%	18.0%	23.2%
	1.0	Count	69	65	314	448
		% within Y8G4A	15.4%	14.5%	70.1%	100.0%
		% within Y9G4A	25.2%	25.2%	21.6%	22.6%
	2.0	Count	98	102	876	1076
		% within Y8G4A	9.1%	9.5%	81.4%	100.0%
		% within Y9G4A	35.8%	39.5%	60.3%	54.2%
Total		Count	274	258	1452	1984
		% within Y8G4A	13.8%	13.0%	73.2%	100.0%
		% within Y9G4A	100.0%	100.0%	100.0%	100.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9G4A - Y8G4A	Negative Ranks	269[a]	459.00	123470.50
	Positive Ranks	667[b]	472.33	315045.50
	Ties	1048[c]		
	Total	1984		

a. Y9G4A < Y8G4A

b. Y9G4A > Y8G4A

c. Y8G4A = Y9G4A

Test Statistics[b]

	Y9G4A - Y8G4A
Z	-12.021[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables left and above show that 667 pupils increased their score in Y9, 269 pupils decreased their score in Y9, and 1048 pupils kept the same score. Therefore, more pupils had a positive improvement in their scores.

Correlations

			Y8G4A	Y9G4A
Spearman's rho	Y8G4A	Correlation Coefficient	1.000	.224**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9G4A	Correlation Coefficient	.224**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8G4abc by Y9G4ab

Y8G4ABC * Y9G4AB Crosstabulation

		Y9G4AB																	
		.00	1.00	1.33	2.00	2.33	2.66	3.00	3.33	3.66	3.99	4.00	4.33	4.66	5.00	5.33	5.66	5.99	Total
Y8G4A .0	Count	50	18	3	16	14	2	3	19	7		4	3	24		1	5	27	196
	% within Y8(	25.5%	9.2%	1.5%	8.2%	7.1%	1.0%	1.5%	9.7%	3.6%		2.0%	1.5%	12.2%		.5%	2.6%	13.8%	00.0%
	% within Y9(	20.0%	16.5%	20.0%	10.7%	12.3%	33.3%	5.5%	8.5%	21.9%		44.4%	5.2%	7.8%		14.3%	7.4%	4.7%	9.9%
1.0	Count	20	6	1	16	9		6	8	1			4	21			3	19	114
	% within Y8(	17.5%	5.3%	.9%	14.0%	7.9%		5.3%	7.0%	.9%			3.5%	18.4%			2.6%	16.7%	00.0%
	% within Y9(	8.0%	5.5%	6.7%	10.7%	7.9%		10.9%	3.6%	3.1%			6.9%	6.9%			4.4%	3.3%	5.7%
2.0	Count	59	23	5	34	28	1	10	38	5			6	31			9	58	307
	% within Y8(	19.2%	7.5%	1.6%	11.1%	9.1%	.3%	3.3%	12.4%	1.6%			2.0%	10.1%			2.9%	18.9%	00.0%
	% within Y9(	23.6%	21.1%	33.3%	22.8%	24.6%	16.7%	18.2%	17.0%	15.6%			10.3%	10.1%			13.2%	10.0%	15.5%
3.0	Count	35	14	1	12	17		4	23	3	1		7	36		1	10	49	213
	% within Y8(	16.4%	6.6%	.5%	5.6%	8.0%		1.9%	10.8%	1.4%	.5%		3.3%	16.9%		.5%	4.7%	23.0%	00.0%
	% within Y9(	14.0%	12.8%	6.7%	8.1%	14.9%		7.3%	10.3%	9.4%	00.0%		12.1%	11.8%		14.3%	14.7%	8.4%	10.7%
4.0	Count	44	28	1	37	24	2	10	60	7		1	16	91	1		14	172	508
	% within Y8(	8.7%	5.5%	.2%	7.3%	4.7%	.4%	2.0%	11.8%	1.4%		.2%	3.1%	17.9%	.2%		2.8%	33.9%	00.0%
	% within Y9(	17.6%	25.7%	6.7%	24.8%	21.1%	33.3%	18.2%	26.8%	21.9%		11.1%	27.6%	29.7%	00.0%		20.6%	29.7%	25.6%
5.0	Count	10	5	1	8	8		10	14	2		1	1	15			7	39	121
	% within Y8(	8.3%	4.1%	.8%	6.6%	6.6%		8.3%	11.6%	1.7%		.8%	.8%	12.4%			5.8%	32.2%	00.0%
	% within Y9(	4.0%	4.6%	6.7%	5.4%	7.0%		18.2%	6.3%	6.3%		11.1%	1.7%	4.9%			10.3%	6.7%	6.1%
6.0	Count	32	15	3	26	14	1	12	62	7		3	21	88		5	20	216	525
	% within Y8(	6.1%	2.9%	.6%	5.0%	2.7%	.2%	2.3%	11.8%	1.3%		.6%	4.0%	16.8%		1.0%	3.8%	41.1%	00.0%
	% within Y9(	12.8%	13.8%	20.0%	17.4%	12.3%	16.7%	21.8%	27.7%	21.9%		33.3%	36.2%	28.8%		71.4%	29.4%	37.2%	26.5%
Total	Count	250	109	15	149	114	6	55	224	32	1	9	58	306	1	7	68	580	1984
	% within Y8(	12.6%	5.5%	.8%	7.5%	5.7%	.3%	2.8%	11.3%	1.6%	.1%	.5%	2.9%	15.4%	.1%	.4%	3.4%	29.2%	00.0%
	% within Y9(	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%

Ranks

		N	Mean Rank	Sum of Ranks
Y9G4AB - Y8G4ABC	Negative Ranks	999[a]	882.64	881760.50
	Positive Ranks	890[b]	1014.99	903344.50
	Ties	95[c]		
	Total	1984		

a. Y9G4AB < Y8G4ABC

b. Y9G4AB > Y8G4ABC

c. Y8G4ABC = Y9G4AB

Test Statistics[b]

	Y9G4AB - Y8G4ABC
Z	-.455[a]
Asymp. Sig. (2-tailed)	.649

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables left and below shows that 890 pupils increased their score in Y9, 999 pupils decreased their score in Y9, and only 95 pupils kept the same score. Therefore, the majority of pupils had a negative change in scores between the two years (there is no statistical significance).

The first test score is weakly correlated with the second test score (see below).

Correlations

			Y8G4ABC	Y9G4AB
Spearman's rho	Y8G4ABC	Correlation Coefficient	1.000	.283**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9G4AB	Correlation Coefficient	.283**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

Analysis of Y8L1abcd by Y9LA1abcd

	Y9LA1abcd score																		
Y8L1abcd score	**0**	**1**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**6**	**6.5**	**7**	**7.5**	**8**	**8.5**	**9**	**9.5**	**10**	**Total**
0	59	3	109	4	18		27	9	35	2	21	7	18	1	13		6		2	334
1	9		5		1		3	2			4				1		2			27
2	48	2	96	4	24	1	29	10	35	4	34	7	25	6	14		6	3	9	357
2.5	3	1	4	1	3		1	1	3	1	2	1	2			3	1			27
3	13	2	35	2	8		9	4	18	2	17	5	15	1	7	1	8	1	1	149
3.5	1		3																	4
4	28	2	49	2	10		24	4	23		27	4	23	2	14	3	13		4	232
4.5	3		14	1	2		5	3	3		5	4	3	1	3		1	1	1	50
5	25	2	43	2	7		18	8	41	2	35	3	19	2	9		12		9	237
5.5	1		5		3		1	1	2		1			1	1	2	1			19
6	26		41	3	7		18	6	30	1	31	3	27	4	6	1	12		8	224
6.5	1		2	1	1		3	1	2		2	1	3	2	4		2			25
7	10		21	2	3		9		11	1	20	2	14	1	8	1	9		5	117
7.5	2		3				2	1	1		1			1	1		2			14
8	2		6		4		5	1	10		11	2	10	1	11		6		7	76
8.5	1						2	1			1	2	2		1		1		1	12
9	3	1	3	1	3		2	1	2		4	2	6		2	2	10	1	11	54
9.5																			2	2
10	1		3				1		4		1						2	1	11	24
Total	236	13	442	23	94	1	159	53	220	13	217	43	167	23	95	13	94	7	71	1984

Ranks

		N	Mean Rank	Sum of Ranks
Y9LA1 - Y8L1ABCD	Negative Ranks	698[a]	791.41	552402.50
	Positive Ranks	975[b]	869.64	847898.50
	Ties	311[c]		
	Total	1984		

a. Y9LA1 < Y8L1ABCD

b. Y9LA1 > Y8L1ABCD

c. Y8L1ABCD = Y9LA1

Test Statistics[b]

	Y9LA1 - Y8L1ABCD
Z	-7.497[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The tables above show that 975 pupils increased their score in Y9, 698 pupils decreased their score in Y9, and 311 pupils kept the same score. Therefore, the majority of pupils had a positive improvement (this positive change is statistically significant).

Correlations

			Y8L1ABCD	Y9LA1
Spearman's rho	Y8L1ABCD	Correlation Coefficient	1.000	.266**
		Sig. (2-tailed)	.	.000
		N	1984	1984
	Y9LA1	Correlation Coefficient	.266**	1.000
		Sig. (2-tailed)	.000	.
		N	1984	1984

**. Correlation is significant at the .01 level (2-tailed).

The first test score is weakly correlated with the second test score.

Item by item correlations Y8, Y9

Year 8 item by item correlations

Y8	A1	A2	A4abc	G1	G2a	G2b	G4abc	L1a	L1b	L1c	L1d	$L1_{abcd}$	
A1		.24	.10	.17	.11	.10	.13	.08	.12	.09	.05	.13	A1
A2			.18	.24	.17	.12	.26	.08	.18	.14	.11	.19	A2
A4abc				.13	.13	.13	.21	.04	.17	.13	.06	.16	A4abc
G1					.14	.14	.19	.12	.12	.18	.09	.20	G1
G2a						.14	.15	.05	.09	.09	.05	.11	G2a
G2b							.13	.03	.05	.12	.08	.12	G2b
G4abc								.04	.16	.21	.12	.22	G4abc
L1a									.002	24	.20	.44	L1a
L1b										.13	.07	.47	L1b
L1c											.35	.77	L1c
L1d												70	L1d
L1abcd													$L1_{abcd}$

Year 9 item by item correlations

Y9	A1ab	$A2_{abc}$	$A4_{abc}$	G1	G2a	G2b	G4ab	LA1a	LA1b	LA1c	LA1d	LA1	LG1a	LG1b	LG1c	LG1d	LG1	
A1ab		.29	.13	.13	.17	.03	.16	.14	.14	.13	.11	.19	.12	.08	.13	.13	.17	A1ab
A2abc			.26	.14	.19	.13	.30	.17	.25	.26	.22	.33	.17	.19	.24	.24	.30	A2abc
A4abc				.10	.16	.07	.21	.21	.10	.20	.20	.26	.11	.08	.14	.15	.17	A4abc
G1					.11	.07	.10	.12	.08	.08	.09	.13	.11	.03	.10	.09	.12	G1
G2a						.11	.18	.12	.13	.09	.12	.16	.07	.09	.13	.13	.15	G2a
G2b							.07	.03	.05	.07	.06	.07	.03	.07	.14	.08	.12	G2b
G4ab								.11	.17	.2	.13	.23	.13	.18	.25	.26	.30	G4ab
LA1a									.04	.29	.24	.50	.37	.02	.19	.16	.25	LA1a
LA1b										.17	.16	.47	.07	.26	.13	.09	.18	LA1b
LA1c											.43	.79	.18	.09	.25	.21	.27	LA1c
LA1d												.76	.14	.07	.17	.14	.19	LA1d
LA1													.25	.16	.28	.23	.33	LA1
LG1a														.06	.36	.28	.53	LG1a
LG1b															.27	.27	.50	LG1b
LG1c																.51	.82	LG1c
LG1d																	.83	LG1d
LG1																		LG1

Note:
Most of these correlations involved about 1984 students and, because of the large numbers, most were significant at the 0.01 level (2-tailed)

6.3 Level of agreement between pupil choices and teacher choices

Y8A3

The following tables show the distribution of teacher choices for every pupil choice, with the percentages in the diagonal of the table indicating the level of agreement between the teachers and pupils. Following each table is a 'Kappa' table. Kappa tests measure the degree of agreement - in this case, how much the pupil choices are in agreement with teacher choices. A value of 1 in the table means perfect agreement; the closer the value is to 0, the poorer the agreement. The Kappa table also shows if this level of agreement value is statistically significant or not - i.e. a chance agreement or a real one. With such a large sample even quite small effects can be statistically significant, so it is important to pay attention to the size of the value in the Kappa table rather than its statistical significance. Even very small values may be statistically significant, but they still only represent a weak agreement between the teacher and pupils.

Y8A3A * Y8A3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them		
			A	B	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	122	479	601
		% within Y8A3A	20.3%	79.7%	100.0%
	B	Count	83	345	428
		% within Y8A3A	19.4%	80.6%	100.0%
	C	Count	111	342	453
		% within Y8A3A	24.5%	75.5%	100.0%
	D	Count	29	107	136
		% within Y8A3A	21.3%	78.7%	100.0%
Total		Count	345	1273	1618
		% within Y8A3A	21.3%	78.7%	100.0%

Whilst only 20% of pupils that picked option 'A' (as the mark that would get the best mark from teachers) had teachers agreeing with them, 81% of pupils who picked option 'B' had teachers agreeing with them. None of the teachers picked options 'C' or 'D' for QY8a3a.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1618

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y8A3A * Y8A3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves		
			A	B	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	92	502	594
		% within Y8A3A	15.5%	84.5%	100.0%
	B	Count	55	378	433
		% within Y8A3A	12.7%	87.3%	100.0%
	C	Count	87	371	458
		% within Y8A3A	19.0%	81.0%	100.0%
	D	Count	27	108	135
		% within Y8A3A	20.0%	80.0%	100.0%
Total		Count	261	1359	1620
		% within Y8A3A	16.1%	83.9%	100.0%

Whilst only 15% of pupils that picked option ‘A’ had teachers agreeing with them that this is the option they would do themselves. However, 87% of pupils who picked option ‘B’ had teachers agreeing with them. None of the teachers picked options ‘C’ or ‘D’ for QY8a3a as the options they would pick themselves.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1620

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y8A3B * Y8A3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the bnest mark from them		
			A	B	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	64	255	319
		% within Y8A3B	20.1%	79.9%	100.0%
	B	Count	177	685	862
		% within Y8A3B	20.5%	79.5%	100.0%
	C	Count	87	286	373
		% within Y8A3B	23.3%	76.7%	100.0%
	D	Count	17	29	46
		% within Y8A3B	37.0%	63.0%	100.0%
Total		Count	345	1255	1600
		% within Y8A3B	21.6%	78.4%	100.0%

The majority of teachers selected option ‘B’ as the option they thought most of the pupils would select as being the option the teachers would select for the best mark. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Twenty percent of pupils that chose option ‘A’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, whilst 80% of pupils who chose option ‘B’

as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice. The teachers did not select either option ‘C’ or option ‘D’ as the mark that would get the best mark from them.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.003	.015	.223	.824
N of Valid Cases		1600			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y8A3B * Y8A3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves		
			A	B	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	53	267	320
		% within Y8A3B	16.6%	83.4%	100.0%
	B	Count	130	734	864
		% within Y8A3B	15.0%	85.0%	100.0%
	C	Count	62	309	371
		% within Y8A3B	16.7%	83.3%	100.0%
	D	Count	12	34	46
		% within Y8A3B	26.1%	73.9%	100.0%
Total		Count	257	1344	1601
		% within Y8A3B	16.1%	83.9%	100.0%

The majority of teachers selected option ‘B’ as the option they would do themselves. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Seventeen percent of pupils who chose option ‘A’ as the mark that they thought would get the best mark from the teachers had teachers who agreed that option was the closest to what they would do themselves, whilst 85% of pupils that chose option ‘B’ as the mark that they thought would get the best mark from the teachers had teachers who agreed that option was the closest to what they would do themselves. The teachers did not select either option ‘C’ or option ‘D’ as the option they thought was the closest to what they would do themselves.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.013	.014	.902	.367
N of Valid Cases		1601			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y8G3

Y8G3A * Y8G3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them			
			A	B	C	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	32	64	550	646
		% within Y8G3A	5.0%	9.9%	85.1%	100.0%
	B	Count	31	53	482	566
		% within Y8G3A	5.5%	9.4%	85.2%	100.0%
	C	Count	5	22	151	178
		% within Y8G3A	2.8%	12.4%	84.8%	100.0%
	D	Count	6	21	166	193
		% within Y8G3A	3.1%	10.9%	86.0%	100.0%
Total		Count	74	160	1349	1583
		% within Y8G3A	4.7%	10.1%	85.2%	100.0%

Most of the teachers picked option C. So, only five percent of pupils that picked option A as what the teachers would award the best mark for had teachers agreeing with them and only 9% of pupils that picked option B as what the teachers would award the best mark for had teachers agreeing with them. Whereas 85% of pupils that picked option C as what the teachers would award the best mark for, had teachers agreeing with them. None of the teachers picked option D, as the option they thought pupils would think would get the best mark from them.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	-.002	.007	-.329	.742
N of Valid Cases		1583			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y8G3A * Y8G3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves				
			A	B	C	D	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	11	69	545	10	635
		% within Y8G3A	1.7%	10.9%	85.8%	1.6%	100.0%
	B	Count	17	68	470	6	561
		% within Y8G3A	3.0%	12.1%	83.8%	1.1%	100.0%
	C	Count	1	18	147	1	167
		% within Y8G3A	.6%	10.8%	88.0%	.6%	100.0%
	D	Count	2	22	167	2	193
		% within Y8G3A	1.0%	11.4%	86.5%	1.0%	100.0%
Total		Count	31	177	1329	19	1556
		% within Y8G3A	2.0%	11.4%	85.4%	1.2%	100.0%

Most of the teachers picked option C as the option they would do themselves. So, only two percent of pupils that picked option A as what the teachers would award the best mark for had teachers agreeing with them and only 12% of pupils that picked option B as what the teachers would award the best mark for had teachers agreeing with them and only 1% of pupils that picked option D as what teachers would award the best mark for, had teachers agreeing with them. Whereas 85% of

pupils that picked option C as what the teachers would award the best mark for, had teachers agreeing they would do this themselves.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.005	.007	.732	.464
N of Valid Cases		1556			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y8G3B * Y8G3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the bnest mark from them			
			A	B	C	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	9	25	143	177
		% within Y8G3B	5.1%	14.1%	80.8%	100.0%
	B	Count	20	52	284	356
		% within Y8G3B	5.6%	14.6%	79.8%	100.0%
	C	Count	35	68	730	833
		% within Y8G3B	4.2%	8.2%	87.6%	100.0%
	D	Count	9	13	165	187
		% within Y8G3B	4.8%	7.0%	88.2%	100.0%
Total		Count	73	158	1322	1553
		% within Y8G3B	4.7%	10.2%	85.1%	100.0%

The majority of teachers selected option ‘C’ as the option they thought most of the pupils would select as being the option the teachers would select for the best mark. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Only 5% of pupils who chose option ‘A’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, 15% of pupils who chose option ‘B’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice and 88% of pupils who chose option ‘C’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice. None of the teachers agreed with the pupils that option ‘D’ would get the best mark from them.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.046	.015	3.324	.001
N of Valid Cases		1553			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows poor agreement between the teachers and pupils.

Y8G3B * Y8G3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves				
			A	B	C	D	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	3	30	145	1	179
		% within Y8G3B	1.7%	16.8%	81.0%	.6%	100.0%
	B	Count	11	52	286	4	353
		% within Y8G3B	3.1%	14.7%	81.0%	1.1%	100.0%
	C	Count	12	74	706	11	803
		% within Y8G3B	1.5%	9.2%	87.9%	1.4%	100.0%
	D	Count	4	17	166	1	188
		% within Y8G3B	2.1%	9.0%	88.3%	.5%	100.0%
Total		Count	30	173	1303	17	1523
		% within Y8G3B	2.0%	11.4%	85.6%	1.1%	100.0%

Again, the majority of teachers selected option ‘C’ as the option they would do themselves. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Only 2% of pupils who choose option ‘A’ as the mark they thought would get the best mark from the teachers had teachers who agreed this was the option closest to what they would do themselves, 15% of pupils that chose option ‘B’ as the mark they thought would get the best mark from the teachers had teachers who agreed that this was the option closest to what they would do themselves and 88% of pupils that chose option ‘C’ as the mark they thought would get the best mark from the teachers had teachers who agreed that this option was the closest to what they would do themselves. Finally, half a percent of pupils that chose option ‘D’ as the mark they thought would get the best mark from the teachers had teachers who agreed that this option was the closest to what they would do themselves.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.037	.014	2.665	.008
N of Valid Cases		1523			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows poor agreement between the teachers and pupils.

Y9A3A * Y9A3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	55	418	16	489
		% within Y9A3A	11.2%	85.5%	3.3%	100.0%
	B	Count	31	309	12	352
		% within Y9A3A	8.8%	87.8%	3.4%	100.0%
	C	Count	25	249	12	286
		% within Y9A3A	8.7%	87.1%	4.2%	100.0%
	D	Count	37	301	15	353
		% within Y9A3A	10.5%	85.3%	4.2%	100.0%
	E	Count	9	88	2	99
		% within Y9A3A	9.1%	88.9%	2.0%	100.0%
Total		Count	157	1365	57	1579
		% within Y9A3A	9.9%	86.4%	3.6%	100.0%

The majority of teachers selected option ‘C’ as the option they thought pupils would think would get the best mark from them. So, none of the pupils who picked either options A or D had teachers agreeing with this choice, only 9% of pupils who chose option B as the best mark had teachers who agreed with that choice, and only 2% of pupils who chose option E as the best mark had teachers who agreed with that choice. Whereas, 87% of pupils who chose option ‘C’ as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1579

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y9A3A * Y9A3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	103	423	6	532
		% within Y9A3A	19.4%	79.5%	1.1%	100.0%
	B	Count	72	312	2	386
		% within Y9A3A	18.7%	80.8%	.5%	100.0%
	C	Count	54	259	10	323
		% within Y9A3A	16.7%	80.2%	3.1%	100.0%
	D	Count	67	313	2	382
		% within Y9A3A	17.5%	81.9%	.5%	100.0%
	E	Count	21	84	4	109
		% within Y9A3A	19.3%	77.1%	3.7%	100.0%
Total		Count	317	1391	24	1732
		% within Y9A3A	18.3%	80.3%	1.4%	100.0%

The majority of teachers selected option ‘C’ as the option they thought they would do themselves. So, none of the pupils who picked either options A or D had teachers agreeing with this choice, only

19% of pupils who chose option B as the best mark had teachers who agreed with that choice, and only 4% of pupils who chose option E as the best mark had teachers who agreed with that choice. Whereas, 80% of pupils who chose option 'C' as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1732

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y9A3B * Y9A3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them - Y9			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark - Y9	A	Count	51	418	16	485
		% within Y9A3B	10.5%	86.2%	3.3%	100.0%
	B	Count	22	202	12	236
		% within Y9A3B	9.3%	85.6%	5.1%	100.0%
	C	Count	10	152	4	166
		% within Y9A3B	6.0%	91.6%	2.4%	100.0%
	D	Count	72	531	23	626
		% within Y9A3B	11.5%	84.8%	3.7%	100.0%
	E	Count	2	54	2	58
		% within Y9A3B	3.4%	93.1%	3.4%	100.0%
Total		Count	157	1357	57	1571
		% within Y9A3B	10.0%	86.4%	3.6%	100.0%

The majority of the teachers selected option 'C' as the option they thought the pupils would select as the option that would get the best mark from them. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Ten percent of pupils who chose option 'B' as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, 92% of pupils who chose option 'C' as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, 3% of pupils who chose option 'E' as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice. The teachers did not select either option 'A' or 'D' as the option they thought the pupils would select as the option that would get the best mark from them.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.005	.004	1.133	.257
N of Valid Cases		1571			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y9A3B * Y9A3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves - Y9			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark - Y9	A	Count	107	423	2	532
		% within Y9A3B	20.1%	79.5%	.4%	100.0%
	B	Count	50	205	6	261
		% within Y9A3B	19.2%	78.5%	2.3%	100.0%
	C	Count	34	147	3	184
		% within Y9A3B	18.5%	79.9%	1.6%	100.0%
	D	Count	112	561	10	683
		% within Y9A3B	16.4%	82.1%	1.5%	100.0%
	E	Count	10	50	3	63
		% within Y9A3B	15.9%	79.4%	4.8%	100.0%
Total		Count	313	1386	24	1723
		% within Y9A3B	18.2%	80.4%	1.4%	100.0%

The majority of the teachers selected option ‘C’ as the option they would do themselves. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Twenty percent of pupils who chose option ‘B’ as the mark that they thought would get the best mark from the teachers had teachers who thought this option was the closest to what they would do themselves, 80% of pupils that chose option ‘C’ as the mark that they thought would get the best mark from the teachers had teachers who thought this option was the closest to what they would do themselves, 5% of pupils that chose option ‘E’ as the mark that they thought would get the best mark from the teachers had teachers who thought this option was the closest to what they would do themselves. The teachers did not select either option ‘A’ or ‘D’ as the option closest to what they would do themselves.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.003	.006	.520	.603
N of Valid Cases		1723			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y9A3C * Y9A3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	4	87	6	97
		% within Y9A3C	4.1%	89.7%	6.2%	100.0%
	B	Count	8	81	2	91
		% within Y9A3C	8.8%	89.0%	2.2%	100.0%
	C	Count	78	688	21	787
		% within Y9A3C	9.9%	87.4%	2.7%	100.0%
	D	Count	11	75	4	90
		% within Y9A3C	12.2%	83.3%	4.4%	100.0%
	E	Count	54	397	23	474
		% within Y9A3C	11.4%	83.8%	4.9%	100.0%
Total		Count	155	1328	56	1539
		% within Y9A3C	10.1%	86.3%	3.6%	100.0%

The majority of teachers selected option ‘C’ as the option they thought pupils would think would get the best mark from them. So, none of the pupils who picked either options A or D had teachers agreeing with this choice, only 9% of pupils who chose option B as the best mark had teachers who agreed with that choice, and only 5% of pupils who chose option E as the best mark had teachers who agreed with that choice. Whereas, 87% of pupils who chose option ‘C’ as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1539

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y9A3C * Y9A3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	18	87		105
		% within Y9A3C	17.1%	82.9%		100.0%
	B	Count	17	83	1	101
		% within Y9A3C	16.8%	82.2%	1.0%	100.0%
	C	Count	151	690	13	854
		% within Y9A3C	17.7%	80.8%	1.5%	100.0%
	D	Count	24	70		94
		% within Y9A3C	25.5%	74.5%		100.0%
	E	Count	102	414	9	525
		% within Y9A3C	19.4%	78.9%	1.7%	100.0%
Total		Count	312	1344	23	1679
		% within Y9A3C	18.6%	80.0%	1.4%	100.0%

The majority of teachers selected option ‘C’ as the option they thought was closest to what they would do themselves. So, none of the pupils who picked either options A or D had teachers agreeing with this choice, only 17% of pupils who chose option B as the best mark had teachers who agreed with that choice, and only 2% of pupils who chose option E as the best mark had teachers who agreed with that choice. Whereas, 81% of pupils who chose option ‘C’ as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1679

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y9G3

Y9G3A * Y9G3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them					
			A	B	C	D	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count		102	6	8	118	234
		% within Y9G3A		43.6%	2.6%	3.4%	50.4%	100.0%
	B	Count	3	152	10	13	133	311
		% within Y9G3A	1.0%	48.9%	3.2%	4.2%	42.8%	100.0%
	C	Count	3	187	14	13	150	367
		% within Y9G3A	.8%	51.0%	3.8%	3.5%	40.9%	100.0%
	D	Count	2	92	2	4	99	199
		% within Y9G3A	1.0%	46.2%	1.0%	2.0%	49.7%	100.0%
	E	Count		128	11	26	146	311
		% within Y9G3A		41.2%	3.5%	8.4%	46.9%	100.0%
Total		Count	8	661	43	64	646	1422
		% within Y9G3A	.6%	46.5%	3.0%	4.5%	45.4%	100.0%

The majority of teachers selected option ‘B’ as the option they thought pupils would think would get the best mark from them. None of the pupils or teachers picked option ‘A’. Four percent of the pupils who picked either option ‘C’ had teachers agreeing with this choice, 2% of pupils who chose option ‘D’ as the best mark had teachers who agreed with that choice, 47% of pupils who chose option ‘E’ as the best mark had teachers who agreed with that choice and 49% of pupils who chose option ‘B’ as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.008	.012	.664	.506
N of Valid Cases		1422			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y9G3A * Y9G3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	69	3	195	267
		% within Y9G3A	25.8%	1.1%	73.0%	100.0%
	B	Count	111	3	231	345
		% within Y9G3A	32.2%	.9%	67.0%	100.0%
	C	Count	153	9	246	408
		% within Y9G3A	37.5%	2.2%	60.3%	100.0%
	D	Count	75	1	142	218
		% within Y9G3A	34.4%	.5%	65.1%	100.0%
	E	Count	80	5	268	353
		% within Y9G3A	22.7%	1.4%	75.9%	100.0%
Total		Count	488	21	1082	1591
		% within Y9G3A	30.7%	1.3%	68.0%	100.0%

The majority of teachers selected option ‘E’ as the option they thought was closest to what they would do themselves. So, none of the pupils who picked either options A or D had teachers agreeing with this choice, only 32% of pupils who chose option B as the best mark had teachers who agreed with that choice, and only 2% of pupils who chose option ‘C’ as the best mark had teachers who agreed with that choice. Whereas 76% of pupils who chose option ‘E’ as the best mark, had teachers who agreed with that choice.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1591

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

Y9G3B * Y9G3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them - Y9					
			A	B	C	D	E	Total
Option pupils selected as the option they thought teachers would award the best mark - Y9	A	Count	1	161	11	26	148	347
		% within Y9G3B	.3%	46.4%	3.2%	7.5%	42.7%	100.0%
	B	Count	2	135	10	12	140	299
		% within Y9G3B	.7%	45.2%	3.3%	4.0%	46.8%	100.0%
	C	Count	1	203	11	10	168	393
		% within Y9G3B	.3%	51.7%	2.8%	2.5%	42.7%	100.0%
	D	Count	2	83	8	9	97	199
		% within Y9G3B	1.0%	41.7%	4.0%	4.5%	48.7%	100.0%
	E	Count	1	73	3	6	90	173
		% within Y9G3B	.6%	42.2%	1.7%	3.5%	52.0%	100.0%
Total		Count	7	655	43	63	643	1411
		% within Y9G3B	.5%	46.4%	3.0%	4.5%	45.6%	100.0%

The teachers were divided between option ‘B’ and option ‘D’ as the options they thought most of the pupils would select as being the option the teachers would select for the best mark. However, the pupils were more varied in their choices of which option would get the best mark from the

teacher. Less than half a percent of pupils that chose option ‘A’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, 45% of pupils that chose option ‘B’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, 3% of pupils that chose option ‘C’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, 5% of pupils that chose option ‘D’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice, and 52% of pupils that chose option ‘E’ as the mark that they thought would get the best mark from the teachers had teachers who agreed with that choice.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.005	.010	.496	.620
N of Valid Cases		1411			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y9G3B * Y9G3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves - Y9			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark - Y9	A	Count	115	8	258	381
		% within Y9G3B	30.2%	2.1%	67.7%	100.0%
	B	Count	104	3	232	339
		% within Y9G3B	30.7%	.9%	68.4%	100.0%
	C	Count	150	5	282	437
		% within Y9G3B	34.3%	1.1%	64.5%	100.0%
	D	Count	71	4	150	225
		% within Y9G3B	31.6%	1.8%	66.7%	100.0%
	E	Count	46	1	147	194
		% within Y9G3B	23.7%	.5%	75.8%	100.0%
Total		Count	486	21	1069	1576
		% within Y9G3B	30.8%	1.3%	67.8%	100.0%

The majority of the teachers selected option ‘E’ as the options they would do themselves. However, the pupils were more varied in their choices of which option would get the best mark from the teacher. Thirty percent of pupils who chose option ‘B’ as the mark that they thought would get the best mark from the teachers had teachers who thought this option was the closest to what they would do themselves, only 1% of pupils who chose option ‘C’ as the mark that they thought would get the best mark from the teachers had teachers who thought this option was the closest to what they would do themselves, 76% of pupils who chose option ‘E’ as the mark that they thought would get the best mark from the teachers had teachers who thought this option was the closest to what they would do themselves. The teachers did not select either option ‘A’ or ‘D’ as what they would do themselves.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.010	.008	1.282	.200
N of Valid Cases		1576			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y9G3C * Y9G3BEST Crosstabulation

			Option teachers selected as the option they thought the pupils would think would get the best mark from them					
			A	B	C	D	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count		132	10	11	125	278
		% within Y9G3C		47.5%	3.6%	4.0%	45.0%	100.0%
	B	Count	3	165	12	19	141	340
		% within Y9G3C	.9%	48.5%	3.5%	5.6%	41.5%	100.0%
	C	Count	3	82	5	7	70	167
		% within Y9G3C	1.8%	49.1%	3.0%	4.2%	41.9%	100.0%
	D	Count	1	99	6	5	119	230
		% within Y9G3C	.4%	43.0%	2.6%	2.2%	51.7%	100.0%
	E	Count	1	162	11	20	172	366
		% within Y9G3C	.3%	44.3%	3.0%	5.5%	47.0%	100.0%
Total		Count	8	640	44	62	627	1381
		% within Y9G3C	.6%	46.3%	3.2%	4.5%	45.4%	100.0%

The majority of teachers selected either option ‘B’ or option ‘E’ as the options they thought pupils would think would get the best mark from them. None of the pupils picking option A had teachers agreeing with them. Forty-nine percent of the pupils who picked either option ‘B’ had teachers agreeing with this choice, 3% of pupils who chose option ‘C’ as the best mark had teachers who agreed with that choice, 2% of pupils who chose option ‘D’ as the best mark had teachers who agreed with that choice and 47% of pupils who chose option ‘E’ as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.006	.013	.435	.664
N of Valid Cases		1381			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

This Kappa test shows very poor agreement between the teachers and pupils.

Y9G3C * Y9G3OWN Crosstabulation

			Option teachers selected as the closest to what they would do themselves			
			B	C	E	Total
Option pupils selected as the option they thought teachers would award the best mark	A	Count	93	4	197	294
		% within Y9G3C	31.6%	1.4%	67.0%	100.0%
	B	Count	120	8	251	379
		% within Y9G3C	31.7%	2.1%	66.2%	100.0%
	C	Count	41	3	139	183
		% within Y9G3C	22.4%	1.6%	76.0%	100.0%
	D	Count	89	3	177	269
		% within Y9G3C	33.1%	1.1%	65.8%	100.0%
	E	Count	129	4	280	413
		% within Y9G3C	31.2%	1.0%	67.8%	100.0%
Total		Count	472	22	1044	1538
		% within Y9G3C	30.7%	1.4%	67.9%	100.0%

The majority of teachers selected option ‘E’ as the option they thought was closest to what they would do themselves. None of the pupils who picked option A or option D had teachers agreeing with them. Thirty-two percent of the pupils who picked option ‘B’ had teachers agreeing with this choice, 2% of pupils who chose option ‘C’ as the best mark had teachers who agreed with that choice, and 68% of pupils who chose option ‘E’ as the best mark had teachers who agreed with that choice.

Symmetric Measures

		Value
Measure of Agreement	Kappa	.[a]
N of Valid Cases		1538

a. Kappa statistics cannot be computed.They require a symmetric 2-way table in which the values of the first variable match the values of the second variable.

The kappa or agreement measure cannot be performed on tables that are not symmetrical (i.e. equal columns to rows) so we have no statistics for this table.

6.4 Sex differences

The following tables report the results of analyses conducted on data of pupil scores, examining differences between male and female pupils. The Mann-Whitney test for independent groups was performed on the data. This test shows how the mean rank score for the female pupils compares with the mean rank score for the male pupils and whether this difference is statistically significant or not. The crosstabulation shows, for males and females, the distribution of scores for each year examined. With such a large sample even quite small effects can be statistically significant, so it is important to pay attention to the size of the difference rather than its statistical significance. Even very small differences may be statistically significant, but they still only represent a weak relationship.

Gender differences for scores Y8A1, Y9A1a

Y8A1 * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8A1	.0	Count	495	420	915
		% within Y8A1	54.1%	45.9%	100.0%
		% within Sex of student	49.4%	42.8%	46.1%
	1.0	Count	44	52	96
		% within Y8A1	45.8%	54.2%	100.0%
		% within Sex of student	4.4%	5.3%	4.8%
	2.0	Count	33	27	60
		% within Y8A1	55.0%	45.0%	100.0%
		% within Sex of student	3.3%	2.8%	3.0%
	3.0	Count	431	482	913
		% within Y8A1	47.2%	52.8%	100.0%
		% within Sex of student	43.0%	49.1%	46.0%
Total		Count	1003	981	1984
		% within Y8A1	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9A1A * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9A1A	0	Count	286	255	541
		% within Y9A1A	52.9%	47.1%	100.0%
		% within Sex of student	28.5%	26.0%	27.3%
	1	Count	67	54	121
		% within Y9A1A	55.4%	44.6%	100.0%
		% within Sex of student	6.7%	5.5%	6.1%
	2	Count	12	13	25
		% within Y9A1A	48.0%	52.0%	100.0%
		% within Sex of student	1.2%	1.3%	1.3%
	3	Count	638	659	1297
		% within Y9A1A	49.2%	50.8%	100.0%
		% within Sex of student	63.6%	67.2%	65.4%
Total		Count	1003	981	1984
		% within Y9A1A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8A1	Female	1003	959.16	962041.49
	Male	981	1026.58	1007078.53
	Total	1984		
Y9A1A	Female	1003	975.38	978307.98
	Male	981	1010.00	990811.98
	Total	1984		

Test Statistics[a]

	Y8A1	Y9A1A
Mann-Whitney U	458535.5	474802.0
Wilcoxon W	962041.5	978308.0
Z	-2.922	-1.608
Asymp. Sig. (2-tailed)	.003	.108

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8A1 is significant (P<0.01). Males got a higher mean rank score (1027) than the female pupils (959). However, the difference between male and female pupils on score Y9A1a is not significant.

Gender differences for scores Y8A2, Y9A2ab

Y8A2 * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8A2	.0	Count	332	327	659
		% within Y8A2	50.4%	49.6%	100.0%
		% within Sex of student	33.1%	33.3%	33.2%
	1.0	Count	34	29	63
		% within Y8A2	54.0%	46.0%	100.0%
		% within Sex of student	3.4%	3.0%	3.2%
	2.0	Count	47	77	124
		% within Y8A2	37.9%	62.1%	100.0%
		% within Sex of student	4.7%	7.8%	6.3%
	2.5	Count	193	193	386
		% within Y8A2	50.0%	50.0%	100.0%
		% within Sex of student	19.2%	19.7%	19.5%
	3.0	Count	397	355	752
		% within Y8A2	52.8%	47.2%	100.0%
		% within Sex of student	39.6%	36.2%	37.9%
Total		Count	1003	981	1984
		% within Y8A2	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9A2AB * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9A2AB	.0	Count	113	125	238
		% within Y9A2AB	47.5%	52.5%	100.0%
		% within Sex of student	11.3%	12.7%	12.0%
	.5	Count	2	3	5
		% within Y9A2AB	40.0%	60.0%	100.0%
		% within Sex of student	.2%	.3%	.3%
	1.0	Count	2	14	16
		% within Y9A2AB	12.5%	87.5%	100.0%
		% within Sex of student	.2%	1.4%	.8%
	1.3	Count	22	38	60
		% within Y9A2AB	36.7%	63.3%	100.0%
		% within Sex of student	2.2%	3.9%	3.0%
	1.5	Count	178	188	366
		% within Y9A2AB	48.6%	51.4%	100.0%
		% within Sex of student	17.7%	19.2%	18.4%
	2.0	Count	4	2	6
		% within Y9A2AB	66.7%	33.3%	100.0%
		% within Sex of student	.4%	.2%	.3%
	2.5	Count	19	18	37
		% within Y9A2AB	51.4%	48.6%	100.0%
		% within Sex of student	1.9%	1.8%	1.9%
	2.8	Count	43	45	88
		% within Y9A2AB	48.9%	51.1%	100.0%
		% within Sex of student	4.3%	4.6%	4.4%
	3.0	Count	620	548	1168
		% within Y9A2AB	53.1%	46.9%	100.0%
		% within Sex of student	61.8%	55.9%	58.9%
Total		Count	1003	981	1984
		% within Y9A2AB	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8A2	Female	1003	1006.11	1009123.48
	Male	981	978.59	959996.52
	Total	1984		
Y9A2AB	Female	1003	1025.00	1028074.02
	Male	981	959.27	941045.98
	Total	1984		

Test Statistics[a]

	Y8A2	Y9A2AB
Mann-Whitney U	478325.5	459375.0
Wilcoxon W	959996.5	941046.0
Z	-1.127	-2.879
Asymp. Sig. (2-tailed)	.260	.004

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8A2 is not significant. However, the difference between male and female pupils on score Y9A2ab is significant (P<0.01). Females got a higher mean rank score (1025) than the male pupils (959).

Gender differences for scores Y8G1, Y9G1

Y8G1 * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G1	.0	Count	475	364	839
		% within Y8G1	56.6%	43.4%	100.0%
		% within Sex of student	47.4%	37.1%	42.3%
	1.0	Count	40	69	109
		% within Y8G1	36.7%	63.3%	100.0%
		% within Sex of student	4.0%	7.0%	5.5%
	2.0	Count	80	74	154
		% within Y8G1	51.9%	48.1%	100.0%
		% within Sex of student	8.0%	7.5%	7.8%
	2.5	Count	224	225	449
		% within Y8G1	49.9%	50.1%	100.0%
		% within Sex of student	22.3%	22.9%	22.6%
	3.0	Count	184	249	433
		% within Y8G1	42.5%	57.5%	100.0%
		% within Sex of student	18.3%	25.4%	21.8%
Total		Count	1003	981	1984
		% within Y8G1	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9G1 * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9G1	.0	Count	576	492	1068
		% within Y9G1	53.9%	46.1%	100.0%
		% within Sex of student	57.4%	50.2%	53.8%
	1.0	Count	71	81	152
		% within Y9G1	46.7%	53.3%	100.0%
		% within Sex of student	7.1%	8.3%	7.7%
	2.0	Count	95	93	188
		% within Y9G1	50.5%	49.5%	100.0%
		% within Sex of student	9.5%	9.5%	9.5%
	2.5	Count	203	214	417
		% within Y9G1	48.7%	51.3%	100.0%
		% within Sex of student	20.2%	21.8%	21.0%
	3.0	Count	58	101	159
		% within Y9G1	36.5%	63.5%	100.0%
		% within Sex of student	5.8%	10.3%	8.0%
Total		Count	1003	981	1984
		% within Y9G1	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8G1	Female	1003	937.05	939859.97
	Male	981	1049.19	1029260.00
	Total	1984		
Y9G1	Female	1003	949.90	952750.03
	Male	981	1036.06	1016370.01
	Total	1984		

Test Statistics[a]

	Y8G1	Y9G1
Mann-Whitney U	436354.0	449244.0
Wilcoxon W	939860.0	952750.0
Z	-4.591	-3.670
Asymp. Sig. (2-tailed)	.000	.000

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8G1 is significant (P<0.001). Females got a lower mean rank score (937) than the male pupils (1049). The difference between male and female pupils on score Y9G1 is also significant (P<0.001). Females got a lower mean rank score (950) than the male pupils (1036).

Gender differences for scores Y8G2a, Y9G2a

Y8G2A * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G2A	.0	Count	394	350	744
		% within Y8G2A	53.0%	47.0%	100.0%
		% within Sex of student	39.3%	35.7%	37.5%
	1.0	Count	151	148	299
		% within Y8G2A	50.5%	49.5%	100.0%
		% within Sex of student	15.1%	15.1%	15.1%
	2.0	Count	37	51	88
		% within Y8G2A	42.0%	58.0%	100.0%
		% within Sex of student	3.7%	5.2%	4.4%
	2.5	Count	279	319	598
		% within Y8G2A	46.7%	53.3%	100.0%
		% within Sex of student	27.8%	32.5%	30.1%
	3.0	Count	142	113	255
		% within Y8G2A	55.7%	44.3%	100.0%
		% within Sex of student	14.2%	11.5%	12.9%
Total		Count	1003	981	1984
		% within Y8G2A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9G2A * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9G2A	.0	Count	278	275	553
		% within Y9G2A	50.3%	49.7%	100.0%
		% within Sex of student	27.7%	28.0%	27.9%
	1.0	Count	85	100	185
		% within Y9G2A	45.9%	54.1%	100.0%
		% within Sex of student	8.5%	10.2%	9.3%
	2.0	Count	22	33	55
		% within Y9G2A	40.0%	60.0%	100.0%
		% within Sex of student	2.2%	3.4%	2.8%
	2.5	Count	409	426	835
		% within Y9G2A	49.0%	51.0%	100.0%
		% within Sex of student	40.8%	43.4%	42.1%
	3.0	Count	209	147	356
		% within Y9G2A	58.7%	41.3%	100.0%
		% within Sex of student	20.8%	15.0%	17.9%
Total		Count	1003	981	1984
		% within Y9G2A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8G2A	Female	1003	981.85	984799.99
	Male	981	1003.38	984319.98
	Total	1984		
Y9G2A	Female	1003	1018.57	1021625.47
	Male	981	965.85	947494.52
	Total	1984		

Test Statistics[a]

	Y8G2A	Y9G2A
Mann-Whitney U	481294.0	465823.5
Wilcoxon W	984800.0	947494.5
Z	-.875	-2.164
Asymp. Sig. (2-tailed)	.381	.030

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8G2a is not significant. However, the difference between male and female pupils on score Y9G2a is significant (P<0.03). Females got a higher mean rank score (1019) than the male pupils (966).

Gender differences for scores Y8G2b, Y9G2b

Y8G2B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G2B	.0	Count	139	136	275
		% within Y8G2B	50.5%	49.5%	100.0%
		% within Sex of student	13.9%	13.9%	13.9%
	1.0	Count	141	171	312
		% within Y8G2B	45.2%	54.8%	100.0%
		% within Sex of student	14.1%	17.4%	15.7%
	2.0	Count	262	286	548
		% within Y8G2B	47.8%	52.2%	100.0%
		% within Sex of student	26.1%	29.2%	27.6%
	3.0	Count	461	388	849
		% within Y8G2B	54.3%	45.7%	100.0%
		% within Sex of student	46.0%	39.6%	42.8%
Total		Count	1003	981	1984
		% within Y8G2B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9G2B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9G2B	.0	Count	62	67	129
		% within Y9G2B	48.1%	51.9%	100.0%
		% within Sex of student	6.2%	6.8%	6.5%
	1.0	Count	135	163	298
		% within Y9G2B	45.3%	54.7%	100.0%
		% within Sex of student	13.5%	16.6%	15.0%
	2.0	Count	334	356	690
		% within Y9G2B	48.4%	51.6%	100.0%
		% within Sex of student	33.3%	36.3%	34.8%
	3.0	Count	472	395	867
		% within Y9G2B	54.4%	45.6%	100.0%
		% within Sex of student	47.1%	40.3%	43.7%
Total		Count	1003	981	1984
		% within Y9G2B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8G2B	Female	1003	1021.83	1024896.49
	Male	981	962.51	944223.52
	Total	1984		
Y9G2B	Female	1003	1028.63	1031714.55
	Male	981	955.56	937405.50
	Total	1984		

Test Statistics[a]

	Y8G2B	Y9G2B
Mann-Whitney U	462552.5	455734.5
Wilcoxon W	944223.5	937405.5
Z	-2.439	-3.044
Asymp. Sig. (2-tailed)	.015	.002

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8G2b is significant (P<0.02). Females got a higher mean rank score (1022) than the male pupils (963).
The difference between male and female pupils on score Y9G2b is also significant (P<0.002). Females got a higher mean rank score (1029) than the male pupils (956).

Table Y8A3a by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y8A3A	A	Count	413	292	705
		% within Y8A3A	58.6%	41.4%	100.0%
		% within Sex of student	42.7%	30.9%	36.9%
	B	Count	228	289	517
		% within Y8A3A	44.1%	55.9%	100.0%
		% within Sex of student	23.6%	30.6%	27.0%
	C	Count	264	271	535
		% within Y8A3A	49.3%	50.7%	100.0%
		% within Sex of student	27.3%	28.7%	28.0%
	D	Count	63	92	155
		% within Y8A3A	40.6%	59.4%	100.0%
		% within Sex of student	6.5%	9.7%	8.1%
Total		Count	968	944	1912
		% within Y8A3A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.186[a]	3	.000
Likelihood Ratio	33.333	3	.000
Linear-by-Linear Association	19.051	1	.000
N of Valid Cases	1912		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 76.53.

Female pupils were most likely to pick option 'A' (43%) and least likely to pick option 'D' (6%) at Y8A3a. Whereas, male pupils were divided between option 'A' (31%) and option 'B' (31%) - although they too were least likely to pick option 'D' (10%) at Y8A3a.

The chi-square test shows that response to Y8A3a significantly varies by gender (P<0.000).

Table Y8A3b by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y8A3B	A	Count	201	169	370
		% within Y8A3B	54.3%	45.7%	100.0%
		% within Sex of student	21.2%	17.9%	19.6%
	B	Count	511	521	1032
		% within Y8A3B	49.5%	50.5%	100.0%
		% within Sex of student	54.0%	55.2%	54.6%
	C	Count	215	220	435
		% within Y8A3B	49.4%	50.6%	100.0%
		% within Sex of student	22.7%	23.3%	23.0%
	D	Count	20	33	53
		% within Y8A3B	37.7%	62.3%	100.0%
		% within Sex of student	2.1%	3.5%	2.8%
Total		Count	947	943	1890
		% within Y8A3B	50.1%	49.9%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.102[a]	3	.107
Likelihood Ratio	6.138	3	.105
Linear-by-Linear Association	4.007	1	.045
N of Valid Cases	1890		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 26.44.

Female pupils were most likely to pick option 'B' (54%) and least likely to pick option 'D' (2%) at Y8A3b. Male pupils were also more likely to pick option 'B' (55%) and least likely to pick option 'D' (4%) at Y8A3b.

The chi-square test shows that response to Y8A3b does not significantly vary by gender.

Table Y8G3a by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y8G3A	A	Count	451	332	783
		% within Y8G3A	57.6%	42.4%	100.0%
		% within Sex of student	46.8%	35.2%	41.1%
	B	Count	343	343	686
		% within Y8G3A	50.0%	50.0%	100.0%
		% within Sex of student	35.6%	36.4%	36.0%
	C	Count	80	130	210
		% within Y8G3A	38.1%	61.9%	100.0%
		% within Sex of student	8.3%	13.8%	11.0%
	D	Count	90	137	227
		% within Y8G3A	39.6%	60.4%	100.0%
		% within Sex of student	9.3%	14.5%	11.9%
Total		Count	964	942	1906
		% within Y8G3A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.473[a]	3	.000
Likelihood Ratio	39.724	3	.000
Linear-by-Linear Association	36.134	1	.000
N of Valid Cases	1906		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 103.79.

Female pupils were most likely to pick option 'A' (47%) and least likely (8%) to pick option 'C'. Male pupils were more divided - between picking option 'A' (35%) and option 'B' (36%). They were also almost evenly divided between the remaining options - 14% selecting option 'C' and 15% selecting option 'D'.

The chi-square test shows that response to Y8G3a significantly varies by gender ($P<0.000$).

Table Y8G3b by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y8G3B	A	Count	116	100	216
		% within Y8G3B	53.7%	46.3%	100.0%
		% within Sex of student	12.3%	10.8%	11.5%
	B	Count	248	177	425
		% within Y8G3B	58.4%	41.6%	100.0%
		% within Sex of student	26.2%	19.0%	22.7%
	C	Count	476	533	1009
		% within Y8G3B	47.2%	52.8%	100.0%
		% within Sex of student	50.3%	57.3%	53.8%
	D	Count	106	120	226
		% within Y8G3B	46.9%	53.1%	100.0%
		% within Sex of student	11.2%	12.9%	12.0%
Total		Count	946	930	1876
		% within Y8G3B	50.4%	49.6%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.998[a]	3	.001
Likelihood Ratio	17.056	3	.001
Linear-by-Linear Association	9.559	1	.002
N of Valid Cases	1876		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 107.08.

Female pupils were most likely to pick option 'C' (50%) and least likely to pick option 'D' (11%) at Y8G3b. Male pupils were also most likely to pick option 'C' (57%) but differed in what they were least likely to pick - males were least likely to pick option 'A' (11%).

The chi-square test shows that response to Y8G3b significantly varies by gender (P<0.001).

Table Y9A3a by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y9A3A	A	Count	307	282	589
		% within Y9A3A	52.1%	47.9%	100.0%
		% within Sex of student	31.7%	30.4%	31.1%
	B	Count	245	179	424
		% within Y9A3A	57.8%	42.2%	100.0%
		% within Sex of student	25.3%	19.3%	22.4%
	C	Count	163	191	354
		% within Y9A3A	46.0%	54.0%	100.0%
		% within Sex of student	16.8%	20.6%	18.7%
	D	Count	193	217	410
		% within Y9A3A	47.1%	52.9%	100.0%
		% within Sex of student	19.9%	23.4%	21.6%
	E	Count	60	59	119
		% within Y9A3A	50.4%	49.6%	100.0%
		% within Sex of student	6.2%	6.4%	6.3%
Total		Count	968	928	1896
		% within Y9A3A	51.1%	48.9%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.125[a]	4	.007
Likelihood Ratio	14.164	4	.007
Linear-by-Linear Association	4.361	1	.037
N of Valid Cases	1896		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 58.24.

Female pupils were most likely to pick option 'A' (32%) and least likely (6%) to pick option 'D' at Y9A3a. Male pupils were also most likely to pick option 'A' (30%) and they too were least likely to pick option 'D' (6%) at Y9A3a.

The chi-square test shows that response to Y9A3a significantly varies by gender (P<0.01).

Table Y9A3b by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y9A3B	A	Count	290	298	588
		% within Y9A3B	49.3%	50.7%	100.0%
		% within Sex of student	30.3%	32.2%	31.2%
	B	Count	149	134	283
		% within Y9A3B	52.7%	47.3%	100.0%
		% within Sex of student	15.6%	14.5%	15.0%
	C	Count	91	105	196
		% within Y9A3B	46.4%	53.6%	100.0%
		% within Sex of student	9.5%	11.3%	10.4%
	D	Count	399	349	748
		% within Y9A3B	53.3%	46.7%	100.0%
		% within Sex of student	41.6%	37.7%	39.7%
	E	Count	29	40	69
		% within Y9A3B	42.0%	58.0%	100.0%
		% within Sex of student	3.0%	4.3%	3.7%
Total		Count	958	926	1884
		% within Y9A3B	50.8%	49.2%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.458[a]	4	.167
Likelihood Ratio	6.467	4	.167
Linear-by-Linear Association	.430	1	.512
N of Valid Cases	1884		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 33.91.

Female pupils were most likely to pick option 'D' (42%) and least likely (3%) to pick option 'E' at Y9A3b. Male pupils were also most likely to pick option 'D' (38%) and they too were least likely to pick option 'E' (4%) at Y9A3b.

The chi-square test shows that response to Y9A3b does not significantly vary by gender.

Y9A3c by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y9A3C	A	Count	45	72	117
		% within Y9A3C	38.5%	61.5%	100.0%
		% within Sex of student	4.8%	8.0%	6.4%
	B	Count	54	59	113
		% within Y9A3C	47.8%	52.2%	100.0%
		% within Sex of student	5.8%	6.5%	6.1%
	C	Count	489	448	937
		% within Y9A3C	52.2%	47.8%	100.0%
		% within Sex of student	52.2%	49.7%	51.0%
	D	Count	45	56	101
		% within Y9A3C	44.6%	55.4%	100.0%
		% within Sex of student	4.8%	6.2%	5.5%
	E	Count	304	267	571
		% within Y9A3C	53.2%	46.8%	100.0%
		% within Sex of student	32.4%	29.6%	31.0%
Total		Count	937	902	1839
		% within Y9A3C	51.0%	49.0%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.180[a]	4	.025
Likelihood Ratio	11.237	4	.024
Linear-by-Linear Association	4.353	1	.037
N of Valid Cases	1839		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 49.54.

Female pupils were most likely to pick option ‘C’ (52%) and least likely to pick options ‘D’ (5%) and ‘A’ (5%) at Y9A3c. Male pupils were also most likely to pick option ‘C’ (50%) and least likely to pick options ‘D’ (6%) or option ‘B’ (6%) at Y9A3c.

The chi-square test shows that response to Y9A3c significantly varies by gender ($P<0.03$).

Y9G3a by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y9G3A	A	Count	159	153	312
		% within Y9G3A	51.0%	49.0%	100.0%
		% within Sex of student	16.7%	16.7%	16.7%
	B	Count	200	199	399
		% within Y9G3A	50.1%	49.9%	100.0%
		% within Sex of student	21.0%	21.7%	21.3%
	C	Count	268	223	491
		% within Y9G3A	54.6%	45.4%	100.0%
		% within Sex of student	28.1%	24.3%	26.2%
	D	Count	99	145	244
		% within Y9G3A	40.6%	59.4%	100.0%
		% within Sex of student	10.4%	15.8%	13.0%
	E	Count	228	197	425
		% within Y9G3A	53.6%	46.4%	100.0%
		% within Sex of student	23.9%	21.5%	22.7%
Total		Count	954	917	1871
		% within Y9G3A	51.0%	49.0%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.449[a]	4	.006
Likelihood Ratio	14.504	4	.006
Linear-by-Linear Association	.001	1	.979
N of Valid Cases	1871		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 119.59.

The female pupils were divided (almost evenly) between three of the options - option ‘B’ (21%), option ‘C’ (28%) and option ‘E’ (24%). The male pupils were also divided between these three options - 22% chose option ‘B’, 24% option ‘C’ and 22% option ‘E’.

The chi-square test shows that response to Y9G3a significantly varies by gender ($P<0.01$).

Y9G3b by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y9G3B	A	Count	230	227	457
		% within Y9G3B	50.3%	49.7%	100.0%
		% within Sex of student	24.3%	25.0%	24.6%
	B	Count	209	194	403
		% within Y9G3B	51.9%	48.1%	100.0%
		% within Sex of student	22.1%	21.4%	21.7%
	C	Count	290	226	516
		% within Y9G3B	56.2%	43.8%	100.0%
		% within Sex of student	30.6%	24.9%	27.8%
	D	Count	102	150	252
		% within Y9G3B	40.5%	59.5%	100.0%
		% within Sex of student	10.8%	16.5%	13.6%
	E	Count	116	110	226
		% within Y9G3B	51.3%	48.7%	100.0%
		% within Sex of student	12.2%	12.1%	12.2%
Total		Count	947	907	1854
		% within Y9G3B	51.1%	48.9%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.963[a]	4	.002
Likelihood Ratio	17.032	4	.002
Linear-by-Linear Association	.602	1	.438
N of Valid Cases	1854		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 110.56.

Female pupils were most likely to pick option ‘C’ (31%) and least likely (11%) to pick option ‘D’. Male pupils were more divided - between picking option ‘A’ (25%), option ‘B’ (21%) and option ‘C’ (25%). They were least likely to pick option ‘E’ (12%).

The chi-square test shows that response to Y9G3b significantly varies by gender ($P<0.002$).

Y9G3c by sex of student

Crosstab

			Sex of student		
			Female	Male	Total
Y9G3C	A	Count	175	181	356
		% within Y9G3C	49.2%	50.8%	100.0%
		% within Sex of student	19.2%	20.3%	19.7%
	B	Count	238	198	436
		% within Y9G3C	54.6%	45.4%	100.0%
		% within Sex of student	26.1%	22.2%	24.2%
	C	Count	111	111	222
		% within Y9G3C	50.0%	50.0%	100.0%
		% within Sex of student	12.2%	12.5%	12.3%
	D	Count	162	140	302
		% within Y9G3C	53.6%	46.4%	100.0%
		% within Sex of student	17.7%	15.7%	16.7%
	E	Count	227	261	488
		% within Y9G3C	46.5%	53.5%	100.0%
		% within Sex of student	24.9%	29.3%	27.1%
Total		Count	913	891	1804
		% within Y9G3C	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.475[a]	4	.113
Likelihood Ratio	7.483	4	.112
Linear-by-Linear Association	1.391	1	.238
N of Valid Cases	1804		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 109.65.

The female pupils were divided (almost evenly) between two of the options - option ‘B’ (26%) and option ‘E’ (25%). The male pupils were also divided between - option ‘A’ (20%), option ‘B’ (22%) and option ‘E’ (29%). They were both least likely to pick option ‘D’ (17% females and 16% males).

The chi-square test shows that response to Y9A3c does not significantly vary by gender.

Gender differences for scores Y9A4a, b, c

Y9A4A * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9A4A	.0	Count	149	214	363
		% within Y9A4A	41.0%	59.0%	100.0%
		% within Sex of student	14.9%	21.8%	18.3%
	3.0	Count	854	767	1621
		% within Y9A4A	52.7%	47.3%	100.0%
		% within Sex of student	85.1%	78.2%	81.7%
Total		Count	1003	981	1984
		% within Y9A4A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9A4B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9A4B	.0	Count	86	111	197
		% within Y9A4B	43.7%	56.3%	100.0%
		% within Sex of student	8.6%	11.3%	9.9%
	.5	Count	161	194	355
		% within Y9A4B	45.4%	54.6%	100.0%
		% within Sex of student	16.1%	19.8%	17.9%
	1.0	Count	756	676	1432
		% within Y9A4B	52.8%	47.2%	100.0%
		% within Sex of student	75.4%	68.9%	72.2%
Total		Count	1003	981	1984
		% within Y9A4B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9A4C * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9A4C	.0	Count	903	902	1805
		% within Y9A4C	50.0%	50.0%	100.0%
		% within Sex of student	90.0%	91.9%	91.0%
	2.0	Count	4	4	8
		% within Y9A4C	50.0%	50.0%	100.0%
		% within Sex of student	.4%	.4%	.4%
	3.0	Count	96	75	171
		% within Y9A4C	56.1%	43.9%	100.0%
		% within Sex of student	9.6%	7.6%	8.6%
Total		Count	1003	981	1984
		% within Y9A4C	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y9A4A	Female	1003	1026.63	1029714.06
	Male	981	957.60	939406.00
	Total	1984		
Y9A4B	Female	1003	1024.80	1027875.06
	Male	981	959.48	941245.01
	Total	1984		
Y9A4C	Female	1003	1001.95	1004951.03
	Male	981	982.84	964169.00
	Total	1984		

Test Statistics[a]

	Y9A4A	Y9A4B	Y9A4C
Mann-Whitney U	457735.0	459574.0	482498.0
Wilcoxon W	939406.0	941245.0	964169.0
Z	-4.007	-3.232	-1.496
Asymp. Sig. (2-tailed)	.000	.001	.135

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y9a4a is significant (P<0.01). Females got a higher mean rank score (1027) than the male pupils (958). The difference between male and female pupils on score Y9a4b is significant (P<0.01). Females got a higher mean rank score (1025) than the male pupils (959).

The difference between male and female pupils on score Y9a4c is not significant (P=0.14).

Gender differences for scores Y8A4abc, Y9A4abc

Y8A4ABC * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8A4ABC	.0	Count	44	81	125
		% within Y8A4ABC	35.2%	64.8%	100.0%
		% within Sex of student	4.4%	8.3%	6.3%
	.5	Count	68	70	138
		% within Y8A4ABC	49.3%	50.7%	100.0%
		% within Sex of student	6.8%	7.1%	7.0%
	1.0	Count	118	107	225
		% within Y8A4ABC	52.4%	47.6%	100.0%
		% within Sex of student	11.8%	10.9%	11.3%
	3.0	Count	72	68	140
		% within Y8A4ABC	51.4%	48.6%	100.0%
		% within Sex of student	7.2%	6.9%	7.1%
	3.5	Count	230	233	463
		% within Y8A4ABC	49.7%	50.3%	100.0%
		% within Sex of student	22.9%	23.8%	23.3%
	4.0	Count	438	395	833
		% within Y8A4ABC	52.6%	47.4%	100.0%
		% within Sex of student	43.7%	40.3%	42.0%
	5.5	Count		2	2
		% within Y8A4ABC		100.0%	100.0%
		% within Sex of student		.2%	.1%
	6.0	Count	3	1	4
		% within Y8A4ABC	75.0%	25.0%	100.0%
		% within Sex of student	.3%	.1%	.2%
	6.5	Count	8	10	18
		% within Y8A4ABC	44.4%	55.6%	100.0%
		% within Sex of student	.8%	1.0%	.9%
	7.0	Count	22	14	36
		% within Y8A4ABC	61.1%	38.9%	100.0%
		% within Sex of student	2.2%	1.4%	1.8%
Total		Count	1003	981	1984
		% within Y8A4ABC	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9A4ABC * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9A4ABC	.0	Count	30	58	88
		% within Y9A4ABC	34.1%	65.9%	100.0%
		% within Sex of student	3.0%	5.9%	4.4%
	.5	Count	23	39	62
		% within Y9A4ABC	37.1%	62.9%	100.0%
		% within Sex of student	2.3%	4.0%	3.1%
	1.0	Count	95	116	211
		% within Y9A4ABC	45.0%	55.0%	100.0%
		% within Sex of student	9.5%	11.8%	10.6%
	3.0	Count	55	51	106
		% within Y9A4ABC	51.9%	48.1%	100.0%
		% within Sex of student	5.5%	5.2%	5.3%
	3.5	Count	128	145	273
		% within Y9A4ABC	46.9%	53.1%	100.0%
		% within Sex of student	12.8%	14.8%	13.8%
	4.0	Count	573	494	1067
		% within Y9A4ABC	53.7%	46.3%	100.0%
		% within Sex of student	57.1%	50.4%	53.8%
	6.0	Count	5	6	11
		% within Y9A4ABC	45.5%	54.5%	100.0%
		% within Sex of student	.5%	.6%	.6%
	6.5	Count	10	10	20
		% within Y9A4ABC	50.0%	50.0%	100.0%
		% within Sex of student	1.0%	1.0%	1.0%
	7.0	Count	84	62	146
		% within Y9A4ABC	57.5%	42.5%	100.0%
		% within Sex of student	8.4%	6.3%	7.4%
Total		Count	1003	981	1984
		% within Y9A4ABC	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8A4ABC	Female	1003	1020.39	1023446.47
	Male	981	963.99	945673.52
	Total	1984		
Y9A4ABC	Female	1003	1043.30	1046431.05
	Male	981	940.56	922689.00
	Total	1984		

Test Statistics[a]

	Y8A4ABC	Y9A4ABC
Mann-Whitney U	464002.5	441018.0
Wilcoxon W	945673.5	922689.0
Z	-2.297	-4.358
Asymp. Sig. (2-tailed)	.022	.000

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8A4abc is significant (P<0.02). Females got a higher mean rank score (1020) than the male pupils (964). The difference between male and female pupils on score Y9A4abc is also significant (P<0.001). Females got a higher mean rank score (1043) than the male pupils (941).

Gender differences for scores Y8G4a, Y9G4a, Y8G4b, Y9G4b

Y8G4A * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G4A	.0	Count	218	242	460
		% within Y8G4A	47.4%	52.6%	100.0%
		% within Sex of student	21.7%	24.7%	23.2%
	1.0	Count	246	202	448
		% within Y8G4A	54.9%	45.1%	100.0%
		% within Sex of student	24.5%	20.6%	22.6%
	2.0	Count	539	537	1076
		% within Y8G4A	50.1%	49.9%	100.0%
		% within Sex of student	53.7%	54.7%	54.2%
Total		Count	1003	981	1984
		% within Y8G4A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9G4A * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9G4A	.0	Count	120	154	274
		% within Y9G4A	43.8%	56.2%	100.0%
		% within Sex of student	12.0%	15.7%	13.8%
	1.0	Count	144	114	258
		% within Y9G4A	55.8%	44.2%	100.0%
		% within Sex of student	14.4%	11.6%	13.0%
	2.0	Count	739	713	1452
		% within Y9G4A	50.9%	49.1%	100.0%
		% within Sex of student	73.7%	72.7%	73.2%
Total		Count	1003	981	1984
		% within Y9G4A	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y8G4B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G4B	.0	Count	270	327	597
		% within Y8G4B	45.2%	54.8%	100.0%
		% within Sex of student	26.9%	33.3%	30.1%
	2.0	Count	733	654	1387
		% within Y8G4B	52.8%	47.2%	100.0%
		% within Sex of student	73.1%	66.7%	69.9%
Total		Count	1003	981	1984
		% within Y8G4B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9G4B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9G4B	.00	Count	209	293	502
		% within Y9G4B	41.6%	58.4%	100.0%
		% within Sex of student	20.8%	29.9%	25.3%
	1.00	Count	25	36	61
		% within Y9G4B	41.0%	59.0%	100.0%
		% within Sex of student	2.5%	3.7%	3.1%
	1.33	Count	164	189	353
		% within Y9G4B	46.5%	53.5%	100.0%
		% within Sex of student	16.4%	19.3%	17.8%
	2.00	Count	3	6	9
		% within Y9G4B	33.3%	66.7%	100.0%
		% within Sex of student	.3%	.6%	.5%
	2.33	Count	28	30	58
		% within Y9G4B	48.3%	51.7%	100.0%
		% within Sex of student	2.8%	3.1%	2.9%
	2.66	Count	183	160	343
		% within Y9G4B	53.4%	46.6%	100.0%
		% within Sex of student	18.2%	16.3%	17.3%
	3.00	Count		1	1
		% within Y9G4B		100.0%	100.0%
		% within Sex of student		.1%	.1%
	3.33	Count	2	5	7
		% within Y9G4B	28.6%	71.4%	100.0%
		% within Sex of student	.2%	.5%	.4%
	3.66	Count	39	30	69
		% within Y9G4B	56.5%	43.5%	100.0%
		% within Sex of student	3.9%	3.1%	3.5%
	3.99	Count	350	231	581
		% within Y9G4B	60.2%	39.8%	100.0%
		% within Sex of student	34.9%	23.5%	29.3%
Total		Count	1003	981	1984
		% within Y9G4B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8G4A	Female	1003	995.31	998299.48
	Male	981	989.62	970820.51
	Total	1984		
Y9G4A	Female	1003	1001.63	1004635.51
	Male	981	983.16	964484.48
	Total	1984		
Y8G4B	Female	1003	1023.96	1027033.00
	Male	981	960.33	942086.98
	Total	1984		
Y9G4B	Female	1003	1073.83	1077055.49
	Male	981	909.34	892064.48
	Total	1984		

Test Statistics[a]

	Y8G4A	Y9G4A	Y8G4B	Y9G4B
Mann-Whitney U	489149.5	482813.5	460416.0	410393.5
Wilcoxon W	970820.5	964484.5	942087.0	892064.5
Z	-.245	-.924	-3.114	-6.568
Asymp. Sig. (2-tailed)	.807	.355	.002	.000

a. Grouping Variable: Sex of student

The difference between male and female pupils on scores Y8G4a and Y9G4a is not significant. However, the difference between male and female pupils on score Y8G4b is significant (P<0.002). Females got a higher mean rank score (1024) than the male pupils (960). Also, the difference between male and female pupils on score Y9G4b is also significant (P<0.001). Females got a higher mean rank score (1074) than the male pupils (909).

Y8G4C * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G4C	.0	Count	533	561	1094
		% within Y8G4C	48.7%	51.3%	100.0%
		% within Sex of student	53.1%	57.2%	55.1%
	2.0	Count	470	420	890
		% within Y8G4C	52.8%	47.2%	100.0%
		% within Sex of student	46.9%	42.8%	44.9%
Total		Count	1003	981	1984
		% within Y8G4C	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8G4C	Female	1003	1012.35	1015382.50
	Male	981	972.21	953737.49
	Total	1984		

Test Statistics[a]

	Y8G4C
Mann-Whitney U	472066.5
Wilcoxon W	953737.5
Z	-1.811
Asymp. Sig. (2-tailed)	.070

a. Grouping Variable: Sex of student

The difference between male and female pupils on score Y8G4c is not significant (P=0.07).

Gender differences for scores Y8G4abc, Y9G4ab

Y8G4ABC * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8G4ABC	.0	Count	92	104	196
		% within Y8G4ABC	46.9%	53.1%	100.0%
		% within Sex of student	9.2%	10.6%	9.9%
	1.0	Count	48	66	114
		% within Y8G4ABC	42.1%	57.9%	100.0%
		% within Sex of student	4.8%	6.7%	5.7%
	2.0	Count	142	165	307
		% within Y8G4ABC	46.3%	53.7%	100.0%
		% within Sex of student	14.2%	16.8%	15.5%
	3.0	Count	117	96	213
		% within Y8G4ABC	54.9%	45.1%	100.0%
		% within Sex of student	11.7%	9.8%	10.7%
	4.0	Count	248	260	508
		% within Y8G4ABC	48.8%	51.2%	100.0%
		% within Sex of student	24.7%	26.5%	25.6%
	5.0	Count	81	40	121
		% within Y8G4ABC	66.9%	33.1%	100.0%
		% within Sex of student	8.1%	4.1%	6.1%
	6.0	Count	275	250	525
		% within Y8G4ABC	52.4%	47.6%	100.0%
		% within Sex of student	27.4%	25.5%	26.5%
Total		Count	1003	981	1984
		% within Y8G4ABC	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9G4AB * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9G4AB	.00	Count	109	141	250
		% within Y9G4AB	43.6%	56.4%	100.0%
		% within Sex of student	10.9%	14.4%	12.6%
	1.00	Count	53	56	109
		% within Y9G4AB	48.6%	51.4%	100.0%
		% within Sex of student	5.3%	5.7%	5.5%
	1.33	Count	7	8	15
		% within Y9G4AB	46.7%	53.3%	100.0%
		% within Sex of student	.7%	.8%	.8%
	2.00	Count	49	100	149
		% within Y9G4AB	32.9%	67.1%	100.0%
		% within Sex of student	4.9%	10.2%	7.5%
	2.33	Count	70	44	114
		% within Y9G4AB	61.4%	38.6%	100.0%
		% within Sex of student	7.0%	4.5%	5.7%
	2.66	Count	4	2	6
		% within Y9G4AB	66.7%	33.3%	100.0%
		% within Sex of student	.4%	.2%	.3%
	3.00	Count	23	32	55
		% within Y9G4AB	41.8%	58.2%	100.0%
		% within Sex of student	2.3%	3.3%	2.8%
	3.33	Count	87	137	224
		% within Y9G4AB	38.8%	61.2%	100.0%
		% within Sex of student	8.7%	14.0%	11.3%
	3.66	Count	19	13	32
		% within Y9G4AB	59.4%	40.6%	100.0%
		% within Sex of student	1.9%	1.3%	1.6%
	3.99	Count		1	1
		% within Y9G4AB		100.0%	100.0%
		% within Sex of student		.1%	.1%
	4.00	Count	3	6	9
		% within Y9G4AB	33.3%	66.7%	100.0%
		% within Sex of student	.3%	.6%	.5%
	4.33	Count	28	30	58
		% within Y9G4AB	48.3%	51.7%	100.0%
		% within Sex of student	2.8%	3.1%	2.9%
	4.66	Count	160	146	306
		% within Y9G4AB	52.3%	47.7%	100.0%
		% within Sex of student	16.0%	14.9%	15.4%
	5.00	Count		1	1
		% within Y9G4AB		100.0%	100.0%
		% within Sex of student		.1%	.1%
	5.33	Count	2	5	7
		% within Y9G4AB	28.6%	71.4%	100.0%
		% within Sex of student	.2%	.5%	.4%
	5.66	Count	39	29	68
		% within Y9G4AB	57.4%	42.6%	100.0%
		% within Sex of student	3.9%	3.0%	3.4%
	5.99	Count	350	230	580
		% within Y9G4AB	60.3%	39.7%	100.0%
		% within Sex of student	34.9%	23.4%	29.2%
Total		Count	1003	981	1984
		% within Y9G4AB	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8G4ABC	Female	1003	1024.58	1027651.00
	Male	981	959.70	941469.01
	Total	1984		
Y9G4AB	Female	1003	1066.16	1069358.02
	Male	981	917.19	899762.02
	Total	1984		

Test Statistics[a]

	Y8G4ABC	Y9G4AB
Mann-Whitney U	459798.0	418091.0
Wilcoxon W	941469.0	899762.0
Z	-2.576	-5.889
Asymp. Sig. (2-tailed)	.010	.000

a. Grouping Variable: Sex of student

The difference between male and female pupils on scores Y8G4abc is significant (P<0.01). Females got a higher mean rank score (1025) than the male pupils (960). Also, the difference between male and female pupils on score Y9G4ab is significant (P<0.001). Females got a higher mean rank score (1066) than the male pupils (917).

Gender Differences for scores on various parts of LA1 and LG1 for Y8 and Y9

Y8L1ABCD * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8L1ABCD	.0	Count	175	159	334
		% within Y8L1ABCD	52.4%	47.6%	100.0%
		% within Sex of student	17.4%	16.2%	16.8%
	1.0	Count	10	17	27
		% within Y8L1ABCD	37.0%	63.0%	100.0%
		% within Sex of student	1.0%	1.7%	1.4%
	2.0	Count	173	184	357
		% within Y8L1ABCD	48.5%	51.5%	100.0%
		% within Sex of student	17.2%	18.8%	18.0%
	2.5	Count	13	14	27
		% within Y8L1ABCD	48.1%	51.9%	100.0%
		% within Sex of student	1.3%	1.4%	1.4%
	3.0	Count	71	78	149
		% within Y8L1ABCD	47.7%	52.3%	100.0%
		% within Sex of student	7.1%	8.0%	7.5%
	3.5	Count	4		4
		% within Y8L1ABCD	100.0%		100.0%
		% within Sex of student	.4%		.2%
	4.0	Count	123	109	232
		% within Y8L1ABCD	53.0%	47.0%	100.0%
		% within Sex of student	12.3%	11.1%	11.7%
	4.5	Count	20	30	50
		% within Y8L1ABCD	40.0%	60.0%	100.0%
		% within Sex of student	2.0%	3.1%	2.5%
	5.0	Count	131	106	237
		% within Y8L1ABCD	55.3%	44.7%	100.0%
		% within Sex of student	13.1%	10.8%	11.9%
	5.5	Count	9	10	19
		% within Y8L1ABCD	47.4%	52.6%	100.0%
		% within Sex of student	.9%	1.0%	1.0%
	6.0	Count	118	106	224
		% within Y8L1ABCD	52.7%	47.3%	100.0%
		% within Sex of student	11.8%	10.8%	11.3%
	6.5	Count	8	17	25
		% within Y8L1ABCD	32.0%	68.0%	100.0%
		% within Sex of student	.8%	1.7%	1.3%
	7.0	Count	65	52	117
		% within Y8L1ABCD	55.6%	44.4%	100.0%
		% within Sex of student	6.5%	5.3%	5.9%
	7.5	Count	5	9	14
		% within Y8L1ABCD	35.7%	64.3%	100.0%
		% within Sex of student	.5%	.9%	.7%
	8.0	Count	35	41	76
		% within Y8L1ABCD	46.1%	53.9%	100.0%
		% within Sex of student	3.5%	4.2%	3.8%
	8.5	Count	2	10	12
		% within Y8L1ABCD	16.7%	83.3%	100.0%
		% within Sex of student	.2%	1.0%	.6%
	9.0	Count	31	23	54
		% within Y8L1ABCD	57.4%	42.6%	100.0%
		% within Sex of student	3.1%	2.3%	2.7%
	9.5	Count	1	1	2
		% within Y8L1ABCD	50.0%	50.0%	100.0%
		% within Sex of student	.1%	.1%	.1%
	10.0	Count	9	15	24
		% within Y8L1ABCD	37.5%	62.5%	100.0%
		% within Sex of student	.9%	1.5%	1.2%
Total		Count	1003	981	1984
		% within Y8L1ABCD	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9LA1ABC * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9LA1ABC	.0	Count	99	137	236
		% within Y9LA1ABC	41.9%	58.1%	100.0%
		% within Sex of student	9.9%	14.0%	11.9%
	1.0	Count	6	7	13
		% within Y9LA1ABC	46.2%	53.8%	100.0%
		% within Sex of student	.6%	.7%	.7%
	2.0	Count	227	215	442
		% within Y9LA1ABC	51.4%	48.6%	100.0%
		% within Sex of student	22.6%	21.9%	22.3%
	2.5	Count	11	12	23
		% within Y9LA1ABC	47.8%	52.2%	100.0%
		% within Sex of student	1.1%	1.2%	1.2%
	3.0	Count	53	41	94
		% within Y9LA1ABC	56.4%	43.6%	100.0%
		% within Sex of student	5.3%	4.2%	4.7%
	3.5	Count	1		1
		% within Y9LA1ABC	100.0%		100.0%
		% within Sex of student	.1%		.1%
	4.0	Count	80	79	159
		% within Y9LA1ABC	50.3%	49.7%	100.0%
		% within Sex of student	8.0%	8.1%	8.0%
	4.5	Count	17	36	53
		% within Y9LA1ABC	32.1%	67.9%	100.0%
		% within Sex of student	1.7%	3.7%	2.7%
	5.0	Count	123	97	220
		% within Y9LA1ABC	55.9%	44.1%	100.0%
		% within Sex of student	12.3%	9.9%	11.1%
	5.5	Count	5	8	13
		% within Y9LA1ABC	38.5%	61.5%	100.0%
		% within Sex of student	.5%	.8%	.7%
	6.0	Count	113	104	217
		% within Y9LA1ABC	52.1%	47.9%	100.0%
		% within Sex of student	11.3%	10.6%	10.9%
	6.5	Count	16	27	43
		% within Y9LA1ABC	37.2%	62.8%	100.0%
		% within Sex of student	1.6%	2.8%	2.2%
	7.0	Count	90	77	167
		% within Y9LA1ABC	53.9%	46.1%	100.0%
		% within Sex of student	9.0%	7.8%	8.4%
	7.5	Count	17	6	23
		% within Y9LA1ABC	73.9%	26.1%	100.0%
		% within Sex of student	1.7%	.6%	1.2%
	8.0	Count	54	41	95
		% within Y9LA1ABC	56.8%	43.2%	100.0%
		% within Sex of student	5.4%	4.2%	4.8%
	8.5	Count	7	6	13
		% within Y9LA1ABC	53.8%	46.2%	100.0%
		% within Sex of student	.7%	.6%	.7%
	9.0	Count	58	36	94
		% within Y9LA1ABC	61.7%	38.3%	100.0%
		% within Sex of student	5.8%	3.7%	4.7%
	9.5	Count	2	5	7
		% within Y9LA1ABC	28.6%	71.4%	100.0%
		% within Sex of student	.2%	.5%	.4%
	10.0	Count	24	47	71
		% within Y9LA1ABC	33.8%	66.2%	100.0%
		% within Sex of student	2.4%	4.8%	3.6%
Total		Count	1003	981	1984
		% within Y9LA1ABC	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y8L1B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8L1B	.0	Count	488	492	980
		% within Y8L1B	49.8%	50.2%	100.0%
		% within Sex of student	48.7%	50.2%	49.4%
	2.0	Count	515	489	1004
		% within Y8L1B	51.3%	48.7%	100.0%
		% within Sex of student	51.3%	49.8%	50.6%
Total		Count	1003	981	1984
		% within Y8L1B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8A3B	Female	947	924.89	875866.97
	Male	943	966.20	911127.99
	Total	1890		
Y8G4C	Female	1003	1012.35	1015382.50
	Male	981	972.21	953737.49
	Total	1984		
Y8L1B	Female	1003	999.85	1002851.48
	Male	981	984.98	966268.47
	Total	1984		
Y8L1ABCD	Female	1003	992.27	995247.50
	Male	981	992.73	973872.48
	Total	1984		

Test Statistics[a]

	Y8A3B	Y8G4C	Y8L1B	Y8L1ABCD
Mann-Whitney U	426989.0	472066.5	484597.5	491741.500
Wilcoxon W	875867.0	953737.5	966268.5	995247.500
Z	-1.820	-1.811	-.667	-.018
Asymp. Sig. (2-tailed)	.069	.070	.504	.985

a. Grouping Variable: Sex of student

As shown in the tables above, none of the scores (Y8A3b, Y8G4c, Y8L1b or Y8L1abcd significantly vary by gender. Please ignore the row for Y8A3B - this test is not relevant for this variable given it is a categorical response.

Y9LA1B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9LA1B	.0	Count	278	335	613
		% within Y9LA1B	45.4%	54.6%	100.0%
		% within Sex of student	27.7%	34.1%	30.9%
	2.0	Count	725	646	1371
		% within Y9LA1B	52.9%	47.1%	100.0%
		% within Sex of student	72.3%	65.9%	69.1%
Total		Count	1003	981	1984
		% within Y9LA1B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9LG1B * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9LG1B	.0	Count	181	183	364
		% within Y9LG1B	49.7%	50.3%	100.0%
		% within Sex of student	18.0%	18.7%	18.3%
	2.0	Count	822	798	1620
		% within Y9LG1B	50.7%	49.3%	100.0%
		% within Sex of student	82.0%	81.3%	81.7%
Total		Count	1003	981	1984
		% within Y9LG1B	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Y9LGABCD * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y9LGABCD	.0	Count	91	96	187
		% within Y9LGABCD	48.7%	51.3%	100.0%
		% within Sex of student	9.1%	9.8%	9.4%
	1.0	Count	11	4	15
		% within Y9LGABCD	73.3%	26.7%	100.0%
		% within Sex of student	1.1%	.4%	.8%
	2.0	Count	176	183	359
		% within Y9LGABCD	49.0%	51.0%	100.0%
		% within Sex of student	17.5%	18.7%	18.1%
	2.5	Count	3	7	10
		% within Y9LGABCD	30.0%	70.0%	100.0%
		% within Sex of student	.3%	.7%	.5%
	3.0	Count	18	18	36
		% within Y9LGABCD	50.0%	50.0%	100.0%
		% within Sex of student	1.8%	1.8%	1.8%
	3.5	Count	2	1	3
		% within Y9LGABCD	66.7%	33.3%	100.0%
		% within Sex of student	.2%	.1%	.2%
	4.0	Count	119	86	205
		% within Y9LGABCD	58.0%	42.0%	100.0%
		% within Sex of student	11.9%	8.8%	10.3%
	4.5	Count	29	30	59
		% within Y9LGABCD	49.2%	50.8%	100.0%
		% within Sex of student	2.9%	3.1%	3.0%
	5.0	Count	78	65	143
		% within Y9LGABCD	54.5%	45.5%	100.0%
		% within Sex of student	7.8%	6.6%	7.2%
	5.5	Count	8	10	18
		% within Y9LGABCD	44.4%	55.6%	100.0%
		% within Sex of student	.8%	1.0%	.9%
	6.0	Count	67	66	133
		% within Y9LGABCD	50.4%	49.6%	100.0%
		% within Sex of student	6.7%	6.7%	6.7%
	6.5	Count	52	55	107
		% within Y9LGABCD	48.6%	51.4%	100.0%
		% within Sex of student	5.2%	5.6%	5.4%
	7.0	Count	111	101	212
		% within Y9LGABCD	52.4%	47.6%	100.0%
		% within Sex of student	11.1%	10.3%	10.7%
	7.5	Count	25	34	59
		% within Y9LGABCD	42.4%	57.6%	100.0%
		% within Sex of student	2.5%	3.5%	3.0%
	8.0	Count	61	62	123
		% within Y9LGABCD	49.6%	50.4%	100.0%
		% within Sex of student	6.1%	6.3%	6.2%
	8.5	Count	23	36	59
		% within Y9LGABCD	39.0%	61.0%	100.0%
		% within Sex of student	2.3%	3.7%	3.0%
	9.0	Count	72	78	150
		% within Y9LGABCD	48.0%	52.0%	100.0%
		% within Sex of student	7.2%	8.0%	7.6%
	9.5	Count	15	19	34
		% within Y9LGABCD	44.1%	55.9%	100.0%
		% within Sex of student	1.5%	1.9%	1.7%
	10.0	Count	42	30	72
		% within Y9LGABCD	58.3%	41.7%	100.0%
		% within Sex of student	4.2%	3.1%	3.6%
Total		Count	1003	981	1984
		% within Y9LGABCD	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y9A3B	Female	958	951.16	911207.98
	Male	926	933.54	864461.98
	Total	1884		
Y9A4C	Female	1003	1001.95	1004951.03
	Male	981	982.84	964169.00
	Total	1984		
Y9LA1B	Female	1003	1024.05	1027120.97
	Male	981	960.24	941999.02
	Total	1984		
Y9LG1B	Female	1003	995.49	998471.50
	Male	981	989.45	970648.49
	Total	1984		
Y9LGABCD	Female	1003	985.79	988747.47
	Male	981	999.36	980372.50
	Total	1984		

Test Statistics[a]

	Y9A3B	Y9A4C	Y9LA1B	Y9LG1B	Y9LGABCD
Mann-Whitney U	435261.0	482498.0	460328.0	488977.5	485241.500
Wilcoxon W	864462.0	964169.0	941999.0	970648.5	988747.500
Z	-.740	-1.496	-3.099	-.350	-.530
Asymp. Sig. (2-tailed)	.460	.135	.002	.726	.596

a. Grouping Variable: Sex of student

As shown in the tables above, none of the scores significantly vary by gender. Please ignore the row for Y9A3b - this test is not relevant for this variable given it is a categorical response.

Total Geometry score for Y8 by gender

Y8ALLOG * Sex of student Crosstabulation

			Sex of student		Total
			Female	Male	
Y8ALLOG	.0	Count	4	10	14
		% within Y8ALLOG	28.6%	71.4%	100.0%
		% within Sex of student	.4%	1.0%	.7%
	.5	Count	6	5	11
		% within Y8ALLOG	54.5%	45.5%	100.0%
		% within Sex of student	.6%	.5%	.6%
	1.0	Count	9	9	18
		% within Y8ALLOG	50.0%	50.0%	100.0%
		% within Sex of student	.9%	.9%	.9%
	1.5	Count	1	1	2
		% within Y8ALLOG	50.0%	50.0%	100.0%
		% within Sex of student	.1%	.1%	.1%
	2.0	Count	3	9	12
		% within Y8ALLOG	25.0%	75.0%	100.0%
		% within Sex of student	.3%	.9%	.6%
	2.5	Count	4	5	9
		% within Y8ALLOG	44.4%	55.6%	100.0%
		% within Sex of student	.4%	.5%	.5%
	3.0	Count	16	23	39
		% within Y8ALLOG	41.0%	59.0%	100.0%
		% within Sex of student	1.6%	2.3%	2.0%
	3.5	Count	20	17	37
		% within Y8ALLOG	54.1%	45.9%	100.0%
		% within Sex of student	2.0%	1.7%	1.9%
	4.0	Count	27	24	51
		% within Y8ALLOG	52.9%	47.1%	100.0%
		% within Sex of student	2.7%	2.4%	2.6%
	4.5	Count	6	10	16
		% within Y8ALLOG	37.5%	62.5%	100.0%
		% within Sex of student	.6%	1.0%	.8%
	5.0	Count	19	15	34
		% within Y8ALLOG	55.9%	44.1%	100.0%
		% within Sex of student	1.9%	1.5%	1.7%
	5.5	Count	27	23	50
		% within Y8ALLOG	54.0%	46.0%	100.0%
		% within Sex of student	2.7%	2.3%	2.5%
	6.0	Count	45	55	100
		% within Y8ALLOG	45.0%	55.0%	100.0%
		% within Sex of student	4.5%	5.6%	5.0%
	6.5	Count	30	26	56
		% within Y8ALLOG	53.6%	46.4%	100.0%
		% within Sex of student	3.0%	2.7%	2.8%
	7.0	Count	58	40	98
		% within Y8ALLOG	59.2%	40.8%	100.0%
		% within Sex of student	5.8%	4.1%	4.9%
	7.5	Count	14	24	38
		% within Y8ALLOG	36.8%	63.2%	100.0%
		% within Sex of student	1.4%	2.4%	1.9%
	8.0	Count	43	38	81
		% within Y8ALLOG	53.1%	46.9%	100.0%
		% within Sex of student	4.3%	3.9%	4.1%
	8.5	Count	36	41	77
		% within Y8ALLOG	46.8%	53.2%	100.0%
		% within Sex of student	3.6%	4.2%	3.9%
	9.0	Count	56	59	115
		% within Y8ALLOG	48.7%	51.3%	100.0%
		% within Sex of student	5.6%	6.0%	5.8%
	9.5	Count	44	35	79
		% within Y8ALLOG	55.7%	44.3%	100.0%
		% within Sex of student	4.4%	3.6%	4.0%
	10.0	Count	52	44	96
		% within Y8ALLOG	54.2%	45.8%	100.0%
		% within Sex of student	5.2%	4.5%	4.8%
Y8ALLOG	10.5	Count	27	22	49
		% within Y8ALLOG	55.1%	44.9%	100.0%
		% within Sex of student	2.7%	2.2%	2.5%
	11.0	Count	54	40	94
		% within Y8ALLOG	57.4%	42.6%	100.0%
		% within Sex of student	5.4%	4.1%	4.7%
	11.5	Count	40	30	70
		% within Y8ALLOG	57.1%	42.9%	100.0%
		% within Sex of student	4.0%	3.1%	3.5%
	12.0	Count	58	69	127
		% within Y8ALLOG	45.7%	54.3%	100.0%
		% within Sex of student	5.8%	7.0%	6.4%
	12.5	Count	30	35	65
		% within Y8ALLOG	46.2%	53.8%	100.0%
		% within Sex of student	3.0%	3.6%	3.3%
	13.0	Count	41	21	62
		% within Y8ALLOG	66.1%	33.9%	100.0%
		% within Sex of student	4.1%	2.1%	3.1%
	13.5	Count	36	33	69
		% within Y8ALLOG	52.2%	47.8%	100.0%
		% within Sex of student	3.6%	3.4%	3.5%
	14.0	Count	30	30	60
		% within Y8ALLOG	50.0%	50.0%	100.0%
		% within Sex of student	3.0%	3.1%	3.0%
	14.5	Count	28	22	50
		% within Y8ALLOG	56.0%	44.0%	100.0%
		% within Sex of student	2.8%	2.2%	2.5%
	15.0	Count	34	36	70
		% within Y8ALLOG	48.6%	51.4%	100.0%
		% within Sex of student	3.4%	3.7%	3.5%
	15.5	Count	10	23	33
		% within Y8ALLOG	30.3%	69.7%	100.0%
		% within Sex of student	1.0%	2.3%	1.7%
	16.0	Count	18	19	37
		% within Y8ALLOG	48.6%	51.4%	100.0%
		% within Sex of student	1.8%	1.9%	1.9%
	16.5	Count	14	10	24
		% within Y8ALLOG	58.3%	41.7%	100.0%
		% within Sex of student	1.4%	1.0%	1.2%
	17.0	Count	14	19	33
		% within Y8ALLOG	42.4%	57.6%	100.0%
		% within Sex of student	1.4%	1.9%	1.7%
	17.5	Count	9	12	21
		% within Y8ALLOG	42.9%	57.1%	100.0%
		% within Sex of student	.9%	1.2%	1.1%
	18.0	Count	9	16	25
		% within Y8ALLOG	36.0%	64.0%	100.0%
		% within Sex of student	.9%	1.6%	1.3%
	18.5	Count	6	6	12
		% within Y8ALLOG	50.0%	50.0%	100.0%
		% within Sex of student	.6%	.6%	.6%
	19.0	Count	9	5	14
		% within Y8ALLOG	64.3%	35.7%	100.0%
		% within Sex of student	.9%	.5%	.7%
	19.5	Count	2	4	6
		% within Y8ALLOG	33.3%	66.7%	100.0%
		% within Sex of student	.2%	.4%	.3%
	20.0	Count	8	7	15
		% within Y8ALLOG	53.3%	46.7%	100.0%
		% within Sex of student	.8%	.7%	.8%
	20.5	Count		2	2
		% within Y8ALLOG		100.0%	100.0%
		% within Sex of student		.2%	.1%
	21.0	Count	1	1	2
		% within Y8ALLOG	50.0%	50.0%	100.0%
		% within Sex of student	.1%	.1%	.1%
	21.5	Count	1	3	4
		% within Y8ALLOG	25.0%	75.0%	100.0%
		% within Sex of student	.1%	.3%	.2%
	22.0	Count	2	3	5
		% within Y8ALLOG	40.0%	60.0%	100.0%
		% within Sex of student	.2%	.3%	.3%
Total		Count	1001	981	1982
		% within Y8ALLOG	50.5%	49.5%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Total Algebra score for Y8 by gender

Y8TOTALG * Sex of student Crosstabulation

			Sex of student		
			Female	Male	Total
Y8TOTALG	.0	Count	12	8	20
		% within Y8TOTALG	60.0%	40.0%	100.0%
		% within Sex of student	1.2%	.8%	1.0%
	1.0	Count	10	9	19
		% within Y8TOTALG	52.6%	47.4%	100.0%
		% within Sex of student	1.0%	.9%	1.0%
	2.0	Count	21	17	38
		% within Y8TOTALG	55.3%	44.7%	100.0%
		% within Sex of student	2.1%	1.7%	1.9%
	2.5	Count	4	5	9
		% within Y8TOTALG	44.4%	55.6%	100.0%
		% within Sex of student	.4%	.5%	.5%
	3.0	Count	40	45	85
		% within Y8TOTALG	47.1%	52.9%	100.0%
		% within Sex of student	4.0%	4.6%	4.3%
	3.5	Count	4	6	10
		% within Y8TOTALG	40.0%	60.0%	100.0%
		% within Sex of student	.4%	.6%	.5%
	4.0	Count	49	53	102
		% within Y8TOTALG	48.0%	52.0%	100.0%
		% within Sex of student	4.9%	5.4%	5.1%
	4.5	Count	6	12	18
		% within Y8TOTALG	33.3%	66.7%	100.0%
		% within Sex of student	.6%	1.2%	.9%
	5.0	Count	53	53	106
		% within Y8TOTALG	50.0%	50.0%	100.0%
		% within Sex of student	5.3%	5.4%	5.3%
	5.5	Count	19	18	37
		% within Y8TOTALG	51.4%	48.6%	100.0%
		% within Sex of student	1.9%	1.8%	1.9%
	6.0	Count	70	48	118
		% within Y8TOTALG	59.3%	40.7%	100.0%
		% within Sex of student	7.0%	4.9%	5.9%
	6.5	Count	27	33	60
		% within Y8TOTALG	45.0%	55.0%	100.0%
		% within Sex of student	2.7%	3.4%	3.0%
	7.0	Count	63	64	127
		% within Y8TOTALG	49.6%	50.4%	100.0%
		% within Sex of student	6.3%	6.5%	6.4%
	7.5	Count	37	49	86
		% within Y8TOTALG	43.0%	57.0%	100.0%
		% within Sex of student	3.7%	5.0%	4.3%
	8.0	Count	60	48	108
		% within Y8TOTALG	55.6%	44.4%	100.0%
		% within Sex of student	6.0%	4.9%	5.4%
	8.5	Count	49	40	89
		% within Y8TOTALG	55.1%	44.9%	100.0%
		% within Sex of student	4.9%	4.1%	4.5%
	9.0	Count	62	51	113
		% within Y8TOTALG	54.9%	45.1%	100.0%
		% within Sex of student	6.2%	5.2%	5.7%
	9.5	Count	50	55	105
		% within Y8TOTALG	47.6%	52.4%	100.0%
		% within Sex of student	5.0%	5.6%	5.3%
	10.0	Count	52	48	100
		% within Y8TOTALG	52.0%	48.0%	100.0%
		% within Sex of student	5.2%	4.9%	5.0%
	10.5	Count	47	56	103
		% within Y8TOTALG	45.6%	54.4%	100.0%
		% within Sex of student	4.7%	5.7%	5.2%
	11.0	Count	34	43	77
		% within Y8TOTALG	44.2%	55.8%	100.0%
		% within Sex of student	3.4%	4.4%	3.9%
	11.5	Count	54	48	102
		% within Y8TOTALG	52.9%	47.1%	100.0%
		% within Sex of student	5.4%	4.9%	5.1%
	12.0	Count	36	33	69
		% within Y8TOTALG	52.2%	47.8%	100.0%
		% within Sex of student	3.6%	3.4%	3.5%
	12.5	Count	28	32	60
		% within Y8TOTALG	46.7%	53.3%	100.0%
		% within Sex of student	2.8%	3.3%	3.0%
	13.0	Count	25	17	42
		% within Y8TOTALG	59.5%	40.5%	100.0%
		% within Sex of student	2.5%	1.7%	2.1%
	13.5	Count	16	28	44
		% within Y8TOTALG	36.4%	63.6%	100.0%
		% within Sex of student	1.6%	2.9%	2.2%
	14.0	Count	32	26	58
		% within Y8TOTALG	55.2%	44.8%	100.0%
		% within Sex of student	3.2%	2.7%	2.9%
	14.5	Count	36	26	62
		% within Y8TOTALG	58.1%	41.9%	100.0%
		% within Sex of student	3.6%	2.7%	3.1%
	15.0	Count	7	10	17
		% within Y8TOTALG	41.2%	58.8%	100.0%
		% within Sex of student	.7%	1.0%	.9%
Total		Count	1003	981	1984
		% within Y8TOTALG	50.6%	49.4%	100.0%
		% within Sex of student	100.0%	100.0%	100.0%

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y8ALLOG	Female	1001	990.71	991696.03
	Male	981	992.31	973457.01
	Total	1982		
Y8TOTALG	Female	1003	993.39	996369.02
	Male	981	991.59	972751.01
	Total	1984		

Test Statistics[a]

	Y8ALLOG	Y8TOTALG
Mann-Whitney U	490195.0	491080.00
Wilcoxon W	991696.0	972751.00
Z	-.062	-.070
Asymp. Sig. (2-tailed)	.950	.944

a. Grouping Variable: Sex of student

The tables above show that the total geometry score does not significantly vary by gender. Also, the total algebra score does not significantly vary by gender.

Total Geometry score for Y9 by gender (1)

This table is unavailable.

Total Geometry score for Y9 by gender (2)

This table is unavailable.

Total Algebra score for Y9 by gender (1)

This table is unavailable.

Total Algebra score for Y9 by gender (2)

This table is unavailable.

Total Algebra score for Y9 by gender (3)

This table is unavailable.

Ranks

	Sex of student	N	Mean Rank	Sum of Ranks
Y9ALG	Female	1003	1020.49	1023556.48
	Male	981	963.88	945563.47
	Total	1984		
Y9GEO	Female	1003	1014.74	1017788.99
	Male	981	969.76	951330.98
	Total	1984		

Test Statistics[a]

	Y9ALG	Y9GEO
Mann-Whitney U	463892.5	469660.0
Wilcoxon W	945563.5	951331.0
Z	-2.202	-1.749
Asymp. Sig. (2-tailed)	.028	.080

a. Grouping Variable: Sex of student

The tables above show that the total score for algebra significantly varies by gender (P=0.03). Females had a higher mean score (1020) than males (964). However, the total score for Y9 geometry did not significantly vary by gender.

7 TEACHER SURVEY

The number of students who took the Year 9 Proof Survey *and* the Year 8 survey was 1984. These 1984 students came from 96 classes in a total of 59 schools. In the vast majority of schools, the students came from just one class (31 schools) or two classes (25 schools). However, in two schools the students came from 3 classes (schools 44 and 53, with a total of 62 and 23 students respectively) and in one school they came from 9 classes (school 54 with 38 students altogether).

For 8 of the 96 classes, the mathematics teacher did not return the Y9 Teacher Questionnaire. Altogether, these 8 teachers were involved with a relatively small number of our students (2 + 3 + 3 + 7 + 7 + 19 + 30 + 30 = 101 students). One other teacher only gave information about their sex, age and school responsibility which means this teacher only provided information for Tables 7.1 and 7.3, below. Also, another 3 teachers each taught 2 of the classes, which means that most of the following tables are based on information from a total of 84 teachers (96 – 8 – 1 – 3). Most of these 84 teachers completed all or most of the questionnaire and where appropriate (eg not for questions A3 and G3) we have assumed that where they have left a blank this is a deliberate 'no' response rather than a refusal or inability to supply an answer (eg if they have not given any information about a Masters degree, we have assumed that they have no Masters degree). The questionnaire is shown in Appendix B.

Table 7.1 shows the number of years of teaching of the teachers in our sample. As with last year, the sample would seem to be highly experienced with well over half the teachers having taught for more than 10 years. On the other hand, there is again a sizeable minority (over a quarter) who have taught for 5 years or less, although Table 7.2 suggests that many of these did not go directly into teaching. Indeed, our sample seems to be quite old.

Number of Teachers	Years of Teaching							
	0-5	6-10	11-15	16-20	21-25	26-30	Over 30	Grand Total
Women	9	7	4	8	7	1	1	37
Men	15	7	2	6	4	5	7	46
Grand Total	24	14	6	14	11	6	8	83

Table 7.1 Years of Teaching Experience (1 teacher gave no information)

Age of Teachers	Number of Teachers		
	Women	Men	Grand Total
Under 25	1	1	2
25-29	6	3	9
30-39	10	12	22
40-49	11	16	27
50-59	8	12	20
60 or more	0	3	3
Grand Total	36	47	83

Table 7.2 Age of Teachers (2 teachers gave no information)

Table 7.3 suggests there is quite an even split between women and men for the various categories of school responsibility. However, it also shows that there are substantially fewer women than men (37 to 48, or just over 3 to 4), whereas last year the sample was evenly split (52 to 52).

School Responsibility	Number of Teachers		
	Women	Men	Grand Total
Head of Maths	8	10	18
Other	23	31	54
None (or blank)	6	7	13
Grand Total	37	48	85

Table 7.3 School Responsibility

('Other' includes: 2ic Maths Department, Head of KS4, Head of KS3, Head of Year, Numeracy Coordinator, ICT Coordinator, Work Experience Coordinator, Liaison with Feeder Schools, School Statistics, Examinations Officer, Timetabling)

Tables 7.4 and 7.5 show that 72 teachers (86 percent of the sample) have a BEd or other first degree, with 53 (63 percent) majoring in mathematics. The same proportion had a degree in the Year 8 sample (86 percent) but fewer (51 percent) majored in maths.

Teaching Qualification	Number of Teachers		
	Women	Men	Grand Total
Maths degree	20	21	41
Other degree	7	10	17
None	10	16	26
Grand Total	37	47	84

Table 7.4 Teaching Qualification - Degree other than BEd

BEd	Number of Teachers		
	Women	Men	Grand Total
Maths	4	8	12
Other	2	0	2
No BEd	31	39	70
Grand Total	37	47	84

Table 7.5 Teaching Qualification - BEd

Tables 7.6 and 7.7 show that nearly half the sample have a PGCE (in most cases in mathematics) and about one fifth have a Cert Ed (again usually in mathematics). One person in the sample had a PGCE *and* a Cert Ed. The proportion of PGCEs is higher in Year 9 than in Year 8 (48 percent against 40 percent) whilst the proportion of Cert Eds is lower (21 percent against 31 percent).

PGCE	Number of Teachers		
	Women	Men	Grand Total
Maths	13	16	29
Other	5	6	11
None	19	25	44
Grand Total	37	47	84

Table 7.6 Teaching Qualification - PGCE

Cert Ed	Number of Teachers		
	Women	Men	Grand Total
Maths	5	6	11
Other	2	5	7
No Cert Ed	30	36	66
Grand Total	37	47	84

Table 7.7 Teaching Qualification - Cert Ed

Six teachers had a Masters degree and one had a PhD (Tables 7.8 and 7.9). None was in maths.

Masters	Number of Teachers		
	Women	Men	Grand Total
Maths	0	0	0
Other	2	4	6
No Masters Degree	35	43	78
Grand Total	37	47	84

Table 7.8 Higher Education - Masters (No PhD)

PhD	Number of Teachers		
	Women	Men	Grand Total
Maths	0	0	0
Other	0	1	1
No PhD	37	46	83
Grand Total	37	47	84

Table 7.9 Higher Education - PhD

Table 7.10 shows that two thirds of the teachers were involved in some CDP or INSET during the previous school year, though this usually consisted of no more than 5 sessions (Table 7.11). In contrast to the Y8 questionnaire, teachers were not asked where the CDP or INSET was based.

Attendance at CDP or INSET in Mathematics Education	Number of Teachers		
	Women	Men	Grand Total
Yes	27	29	56
No (or Blank)	10	18	28
Grand Total	37	47	84

Table 7.10 Attendance at CDP or INSET in Mathematics Education during any one year since Sept 1995

Attendance at CPD or INSET in Mathematics Education during 1999 - 2000	Number of Teachers		
	Women	Men	Grand Total
0 Sessions	10	18	28
1-5 Sessions	19	16	35
6-10 Sessions	7	12	19
Over 10 Sessions	1	1	2
Grand Total	37	47	84

Table 7.11 Attendance at CPD or INSET in Mathematics Education during the previous school year

Table 7.12 shows that about 30 percent of the teachers belong to one (or more) professional association, which is much the same as for Year 8 (31 percent). Specifically, teachers were asked whether they belonged to the ATM, MA or IMA. This information is shown in Table 7.13, where it can be seen that the ATM has 14 members amongst our sample of teachers, the MA has 8 and the IMA none (note that these numbers include 3 teacher who belong to the ATM and MA). The proportions of ATM and MA members are slightly up on Year 8 (17 percent and 10 percent for Year 9 compared to 15 percent and 6 percent for Year 8).

Current Membership of any Professional Association	Number of Teachers		
	Women	Men	Grand Total
Yes	13	12	25
No	24	35	59
Grand Total	37	47	84

Table 7.12 Current Membership of any Professional Association

Current Membership of a Professional Association	Number of Teachers		
	Women	Men	Grand Total
ATM	7	4	11
MA	2	3	5
IMA	0	0	0
ATM and MA	2	1	3
Other	2	4	6
None	24	35	59
Grand Total	37	47	84

Table 7.13 Current Membership of Specific Professional Associations

Teachers were asked whether or not they were involved in extra-curricular mathematics activities during 2000 - 2001 (though we did not ask about particular activities as we had in Year 8). The results are shown in Table 7.14. Sixty percent of the teachers are involved in extra-curricular mathematics activities of some kind, which is slightly down on Year 8 (66 percent).

Extra-curricular Mathematics Activities?	Number of Teachers		
	Women	Men	Grand Total
Yes	18	32	50
No	19	15	34
Grand Total	37	47	84

Table 7.14 Involvement in Extra-curricular Mathematics Activities during 2000 - 2001

Table 7.15 shows that nearly three quarters of teachers used at least one software package with students during 2000 - 2001. This is up on Year 8 (74 percent compared to 64 percent), though this could be due to the fact that the question was broadened in Year 9 to include the graphics calculator, SMILE software and the internet, in addition to the use of LOGO, dynamic geometry, spreadsheets, databases and the integrated learning system, about which teachers were asked in Year 8.

Software Used With Students	Number of Teachers		
	Women	Men	Grand Total
2 or more packages	9	8	17
1 package	18	27	45
None	10	12	22
Grand Total	37	47	84

Table 7.15 Number of Software Packages Used With Students in Current School Year

Spreadsheets were by far the most popular kind of software and were used by about half the teachers, as in Year 8. This was followed by the graphics calculator, the internet, databases and

LOGO (Table 7.16). Interestingly, just 4 teachers said they used a dynamic geometry package (compared to 5 in Year 8).

Specific Software Used With Students	Number of Teachers		
	Women	Men	Grand Total
LOGO	4	11	15
Dynamic Geometry	1	3	4
Spreadsheet	18	24	42
Database	4	12	16
Graphics Calculator	8	12	20
Integ' Learning System	1	1	2
SMILE	4	2	6
The Internet	8	11	19
Other	4	7	11
None	10	12	22

Table 7.16 Specific Software Packages Used With Students in Current School Year
(note that some teachers used more than one package)

Teachers were asked to evaluate, in various ways, the choices presented to students in the multiple-choice questions A3 and G3 from the Proof Survey. Table 7.17 shows the responses to the question, 'Whose answer would your students say would get the best mark from you?'. As can be seen, the vast majority (76 percent) predicted that students would choose answer C (correct structure, algebraic), which was also overwhelmingly (80 percent) the answer that teachers selected as being closest to what they would have done (Table 7.18), although sizeable minorities chose B (correct structure, narrative) for best mark (10 %) and for own approach (17 %).

Question A3: Best Mark	Number of Teachers		
	Women	Men	Grand Total
Answer A	0	0	0
Answer B	2	6	8
Answer C	27	37	64
Answer D	0	0	0
Answer E	2	2	4
Answer B and C	2	0	2
Blank	4	2	6
Grand Total	37	47	84

Table 7.17 Best Mark for Answers to A3

Question A3: Closest Answer to Teacher's	Number of Teachers		
	Women	Men	Grand Total
Answer A	0	0	0
Answer B	4	10	14
Answer C	30	37	67
Answer D	0	0	0
Answer E	1	0	1
Answer C and D	1	0	1
Blank	1	0	1
Grand Total	37	47	84

Table 7.18 A3 Answer Closest to Teacher's own approach

Teachers were asked to give each answer a mark out of 10. The resulting rankings for all five answers are shown in Table 7.19 (there were subtle but no major differences between the choices

for women and men, so these are not shown separately). [Note that some of the upper rows sum to more than 84 and some of the lower rows to considerably less, because choices that are given the same mark by a teacher receive the same rank.] As might be expected from the above two tables, choice C was most commonly ranked top and B most commonly ranked second. However, a sizeable minority of teachers went for B or E as their top choice. E is a superficially attractive answer, but turns out to be nonsense. Along with D, it was most commonly the answer that was ranked last. Interestingly, proportionately more men than women ranked it last (45 percent of men compared to 32 percent of women), but more men than women also ranked it top (23 percent compared to 16 percent).

Question A3: Ranking of Answers A, B, C, D, E	Number of Teachers (Women and Men)				
	A	B	C	D	E
First	3	19	77	0	17
Second	7	41	6	0	13
Third	44	21	0	8	9
Fourth	25	2	0	42	10
Fifth	4	0	0	33	33
Blank	1	1	1	1	2
Grand Total	84	84	84	84	84

Table 7.19 A3 - Ranking of Answers A, B, C, D, E

Table 7.20 shows the responses for Question G3 to the question, 'Whose answer would your students say would get the best mark from you?'. As can be seen, the majority (61 %) predicted that students would choose Answer E, though the majority is not as clear cut as for question A3. A sizeable minority (30 percent) predicted that their students would choose B. When asked about their own approach, almost equal numbers of teachers chose E and B, as can be seen from Table 7.21. Interestingly, women tended to favour B and men tended to favour E.

Question G3: Best Mark	Number of Teachers		
	Women	Men	Grand Total
Answer A	0	0	0
Answer B	13	12	25
Answer C	1	0	1
Answer D	0	0	0
Answer E	21	30	51
Other*	1	3	4
Blank	1	2	3
Grand Total	37	47	84

Table 7.20 Best Mark for Answers to G3 (*Other consisted of 3 BE and 1 BDE)

Question G3: Closest Answer to Teacher's	Number of Teachers		
	Women	Men	Grand Total
Answer A	0	1	1
Answer B	18	13	31
Answer C	2	0	2
Answer D	3	0	3
Answer E	8	25	33
Other*	3	7	10
Blank	3	1	4
Grand Total	37	47	84

Table 7.21 G3 Answer Closest to Teacher's own approach (*Other consisted of 3 BD, 6BE and 1 other)

The teachers' rankings for all five answers are shown in Table 7.22 (again, there were no substantial differences between the choices for women and men, so these are not shown separately). Answer B

receives the top rank most often, closely followed by E. As with Answer E in question A3, Answer D is a superficially attractive but nonsensical answer, though many teachers gave D quite a high ranking. Instead, it is Answer C that quite clearly receives the bottom rank more often than any other answer. Thus it seems that the teachers found it less easy to spot the nonsense answer in G3 than in A3.

Question G3: Ranking of Answers A, B, C, D, E	Number of Teachers (Women and Men)				
	A	B	C	D	E
First	2	66	1	15	53
Second	2	15	0	20	18
Third	29	0	7	18	10
Fourth	36	1	34	13	1
Fifth	13	1	40	15	0
Blank (or error)	2	1	2	3	2
Grand Total	84	84	84	84	84

Table 7.22 G3 - Ranking of Answers A, B, C, D, E

8 SCHOOL SURVEY

The schools in the survey were within 10 LEAs in 9 geographical regions across England. When the schools were chosen in Year 8, care was taken to ensure that the LEAs were such as to include rural, semi-rural and urban schools. Within each LEA, schools were selected from randomly ordered lists of maintained secondary schools, stratified for age-range. To avoid choosing very small schools, most of whose students would be likely to have difficulty with the Proof Survey questions, we only considered schools with over 120 fifteen year olds (according to the DfES website). In all, 63 schools participated in the Year 8 survey but 4 schools dropped out in Year 9, leaving 59 schools who participated in the Year 9 survey. The tables below show data taken from the DfES website or from the Y9 School Questionnaire that was completed for us by a teacher in each school, usually the head of mathematics. The questionnaire is shown in Appendix C.

Table 8.1 show that most of our schools are community schools. Just under three fifths are 11 - 18 schools and just over two fifths 11 - 16 schools (with one 12 - 18 and one 12 - 16 school). According to the DfES website, 14 of the schools are specialist schools (Table 8.2), compared to 10 in Year 8.

Type of School	Number of schools		
	11 -16	11 -18	Grand Total
City Technology College		1	1
Community School	18	25	43
Foundation School	4	1	5
Voluntary Aided School	2	6	8
Voluntary Controlled School	1	1	2
Grand Total	25	34	59

Table 8.1 Type of school (Type A in DfES Classification)
(The sample contains one 12 - 16 school and one 12 - 18 school. The other 57 schools start at age 11)

Special Designation	Age Range of Students		
	11 -16	11 -18	Grand Total
Designated as a Language College under the Specialist School Programme		2	2
Designated as a Sports College under the Specialist School Programme		2	2
Designated as a Technology College under the Specialist School Programme	3	7	10
Blank	22	23	45
Grand Total	25	34	59

Table 8.2 Special Designation Schools showing Age Range of Students

According to the DfES, one of the 59 schools is classed as selective and all the others are comprehensive, although two of the comprehensive schools claim to have full academic selection (3 and 13), as is shown in Table 8.3 (in Year 8 one comprehensive claimed to have some academic selection).

Count of Y9 Selection	Number of Schools		
	11 - 16	11 - 18	Grand Total
No academic selection	22	30	52
Some academic selection			
Full academic selection	1	2	3
Grand Total	23	32	55

Table 8.3 Selection

Table 8.4 shows that 4 of the schools are girls' schools (including the selective school) and all the other 55 schools are mixed.

Count of Y9 Single-Sex/mixed	Number of Schools		
	11-16	11-18	Grand Total
Girls-only	2	2	4
Boys-only			
Mixed-sex	22	32	54
Grand Total	24	34	58

Table 8.4 Single-sex/mixed

Table 8.5 shows the numbers of schools for various percentage ranges of Year 11 students gaining at least five A* to C grades at GCSE in 2000. The National average is about 50 %, while the median for our sample of schools is 51 % and the mean 52 %.

		Number of Schools							
Count of Y9 Yr 2000 % A* - C		<10	10-<20	20-<30	30-<40	40-<50	50-<60	60-<70	Grand Total
School Age Range	11 –16	4	4	8	4		4	1	26
	11 -18	5	5	2	5	7	6	3	37
Total		9	9	10	9	7	10	4	63

Table 8.5 Percentage of Students who gained five or more GCSEs at Grades A* to C in 2000

In line with the previous project, schools were asked whether they regarded themselves as urban, rural or suburban. As can be seen from Table 8.6, the three types are fairly evenly represented, though with slightly more urban schools than in Year 8, which indicates that some schools have decided on a different category in Year 9.

Area	Number of Schools		
	11 -16	11 -18	Grand Total
Urban	7	13	20
Rural	9	10	19
Suburban	7	9	16
Grand Total	23	32	55

Table 8.6 Type of School by Area

Schools were asked for the approximate number of students in Year 9. As can be seen from Table 8.7, the most common range was 150 - 200 students, which also contains the median school.

		Number of Schools					
Number of Y9 Students		>100-150	>150-200	>200 - 250	>250 - 300	>300 - 360	Grand Total
School Age Range	11 -16	5	10	4	2		21
	11 -18	7	14	6	3	1	31
Grand Total		12	24	10	5	1	52

Table 8.7 Distribution of total number of Y9 students across schools

The School Questionnaire asked whether the Y9 mathematics classes were set, banded, or organised in mixed ability groups. Of the 54 schools who responded to this question, only one seems to use any form of banding in Year 9 (compared to 10 in Year 8) and none of them use mixed ability grouping any longer. The results are shown in Table 8.8, below.

Organisation of Y9 Classes	School Age Range		
	11 -16	11 -18	Grand Total
Set	22	29	51
Banded			
Mixed Ability			
Set & Banded	1		1
Other		2	2
Grand Total	23	31	54

Table 8.8 Organisation of Current Y9 Classes

The School Questionnaire asked for an estimate of how many of the students taking the Proof Survey had taken the Level 6 - 8 Key Stage 3 tests the previous month (ie in May 2001). The numbers have been converted into percentages in Table 8.9, where it can be seen that there is quite a wide variation between schools, with a distribution that is far from even. The percentages entered for the KS3 extension paper is shown in Table 8.10.

		Number of Schools											
% participating in Y9 survey who were entered for the Level 6 – 8 KS 3 tests		0-<10	10-<20	20-<30	30-<40	40-<50	50-<60	60-<70	70-<80	80-<90	90-100	100	Grand Total
School Age Range	11 -16	9	3	4	1		1				1	3	22
	11 -18	7	7	5	4			1				6	30
Grand Total		16	10	9	5		1	1			1	9	52

Table 8.9 Percentage of participating Y9 Students that took the Level 6 - 8 KS3 Tests

		Number of Schools							
% participating in Y9 survey who were entered for the KS 3 extension paper		0-<10	10-<20	20-<30	30-<40	40-<50	50-<60	60-<70	Grand Total
School Age Range	11 -16	22						1	23
	11 -18	26	3	1					30
Grand Total		48	3	1				1	53

Table 8.10 Percentage of participating Y9 Students entered for the extension paper

Table 8.11 shows which GCSE examination syllabus the school is currently using. The use of OCR is relatively low, and slightly lower than last year, which suggests there is a continuing decline in the number of schools using SMP.

Y9 GCSE Examination Syllabus	Number of Schools		
	11 -16	11 -18	Grand Total
AQA	10	10	20
EdExcel	9	16	25
OCR	3	5	8
Grand Total	22	31	53

Table 8.11 GCSE Examination Syllabus currently used in the school

Table 8.12 shows the scheme or textbook used in the schools in Year 9. Of the schools that gave a non-blank response, 55 % state that they use Key Maths, compared to 49 % in Year 8.

Textbook Used in Year 8	Number of Schools		Grand Total
	11 –16	11 –18	
Key Maths	13	15	28
SMP	1	6	7
STP	1	2	3
Vickers	3		3
Other*	4	6	10
Grand Total	22	29	51

Table 8.12 Textbook used in Year 9

(*Other includes Bostock, In House, Maths In Action, Mixed Resources, Nelson Essential Skills, NMP, Oxford Link, Rayner Intermediate, Understanding Maths – most of which were listed once only)

Table 8.13 shows that the schools most commonly have 180 minutes of mathematics lessons per week, which is also the median time. However, the proportion of schools having 180 minutes has fallen slightly, from 54 % in Year 8 to 43 % in Year 9.

		Number of Schools											
Number of minutes of maths lessons per week		70	150	165	170	175	180	195	200	210	225	240	Grand Total
School Age Range	11 -18		3		1	4	10		4	1			23
	11 -18	1	4	1		3	13	3	4		1	1	31
Grand Total		1	7	1	1	7	23	3	8	1	1	1	54

Table 8.13 Total Duration (in minutes) of Y9 mathematics lessons per week

Table 8.14 suggests that in four fifths of the schools at least some Year 9 students were involved in extra-curricular mathematics activities, be this in school or elsewhere. For Year 8 the fraction was slightly lower, at about two thirds. Overwhelmingly these activities seemed to involve the UK Maths Challenge.

Are any Y9 students involved in extra-curricular activities?	Number of Schools		Grand Total
	11 -16	11 -18	
Yes	17	26	43
No	4	5	9
Grand Total	21	31	52

Table 8.14 Y9 Students engaged in extra-curricular activities