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**Research Project completed as part of the Level 5  
Certificate of Higher Education for Numeracy Specialists  
at Sheffield Hallam University.**

# **Does the level 2 numeracy test validly assess a student's ability to operate at that level?**

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## **Credits**

Many thanks to my tutor, Martyn Edwards, for his support in doing this project, to my wife Carol for putting up with me while I did it, to the many contributors from the [ADULT-NUMERACY@JISCMAIL.AC.UK](mailto:ADULT-NUMERACY@JISCMAIL.AC.UK) who responded magnificently to my survey, and to my colleagues and students at Castle College, Sheffield.

## Executive summary

Level 2 numeracy students were tested in exam conditions, with questions referenced to the Core Curriculum. Students achieving the 50% pass mark were included in analysis. Answer papers were collated showing which questions students got right and incorrect responses. The reading age of each question was calculated using three methods. Scatter diagrams were used to compare readability with student success. Questions that students found difficult were investigated. A questionnaire, including an open question for respondents to make comments about the Level 2 test, was distributed to colleagues. Fifty-eight responses were received.

Analysis showed that it is possible to pass this Level 2 test with a very weak understanding of the core curriculum. A hypothetical student unable to answer number questions above Level 1, but correctly responding to measure, shape and data handling questions could score 63%. **This shows that a student can pass the Level 2 test without understanding much of the Core Curriculum.**

One major concern raised by respondents was readability of test questions. The correlation between readability of questions and student success at a particular question is not significant. Care is taken in test design to ensure readability scores are low. However for ESOL students recognising words such as “turbines” or “emissions” may be difficult. **Illustrations would be helpful to give visual clues.**

**Analysis shows that students did have enough time to complete the test.**

**Some questions were ambiguous from a mathematical point of view.**

The questionnaire shows a very high level of dissatisfaction with the test. Increasing the readability of questions was the most popular improvement, followed by replacing multi choice questions with single answer questions.

Thirty-nine people made negative comments about the test. There were 6 main themes to these comments.

Issue	Number of comments
Low pass mark/Passing does not guarantee competence	16
Readability	11
Multiple choice format	5
Big gap between L1 and L2	4
Teaching to the test	3
Tests have recently got harder	3

Comments show the Level 2 test is losing credibility amongst employers. It is vital that the decision makers currently working on the Functional Skills standards and qualifications get it right. **There should be an enquiry into why the pass mark has dropped from 75% to 50%.** A qualification will not be valued unless it indicates that the person holding the certificate has attained certain skills. The Level 2 test does not do this.

Readability is a massive issue with this test. It would be a shame to lose the real life context of questions, so one way forward would be, **for questions to be illustrated with photographs that would help ESOL students to interpret the more unusual words.**

It is the ease, convenience and lack of expense that attracts examiners to multi choice question papers. However, with modern technology it is now not difficult to design tests that require the examinee to enter their own answer. **I recommend that the exam boards investigate the possibility of transferring from multi choice for at least half the test.**

Respondents are concerned about the gap between Level 1 and 2. Problems arise when students who lack competence at Level 1 pass a test. They struggle with Level 2 because they haven't grasped the concepts they should be building on. **Increasing the pass mark at Level 1 would solve this.**

Teaching to the test is problematic. When tutors know that topics such as probability are never on the test, it is tempting not to cover these. **I recommend that the Level 2 Test should cover the full breadth of the core curriculum.**

There is evidence that tests have recently got harder. **Rather than making the test more difficult with a low pass mark, I recommend that the test should revert to previous levels of difficulty, but with a higher pass mark.** Employers would then be assured that students with the certificate are competent at this level of numeracy.

## Main report

### **Section 1 Aims and Purpose of the study**

This report aims to discover what numerical skills successful Level 2 students in numeracy can be expected to have. I will do this by analysing the skills required to answer the questions in a particular Level 2 paper, and compare these with the answers of a sample of students who passed the mock test. My hypothesis is that it is possible to pass L2 numeracy without understanding some essential level 2 skills. If I am correct in my hypothesis I hope my research will influence decision makers who design the tests and set the pass marks. I will triangulate my research by discovering the opinions of colleagues in the Skills for Life numeracy sector and make recommendations to those designing the new Functional Skills standards.

### **Section 2 : Overview of literature**

#### What is the Level 2 test?

According to the national strategy for improving adult literacy and numeracy skills. "Don't get by, get on" (DFES, 2003) the Level 2 test will

- show what you have achieved in your learning programme
- help you get onto other courses such as NVQs
- provide evidence of your skills to go on your CV
- show employers what you can do.

There is a test ...that you can take on paper or on a computer. You can take the test in your own learning centre or in a local test centre... Each test contains 40 multiple-choice questions –similar in style to the ones in the driving theory test. Most questions are based on real examples, such as a letter or table of information. You have to read the information and then choose the correct answer from a choice of four possible answers. You make your choice by marking an answer page or mouse-clicking the onscreen answer box. You do not have to write or do any calculations on the answer page but you can do your working out on paper.

You have 1 hour and 15 minutes to do a numeracy test.

The numeracy questions test your understanding and interpretation of numerical information and your calculating and measuring skills. All these skills are described in the Numeracy Core Curricula.

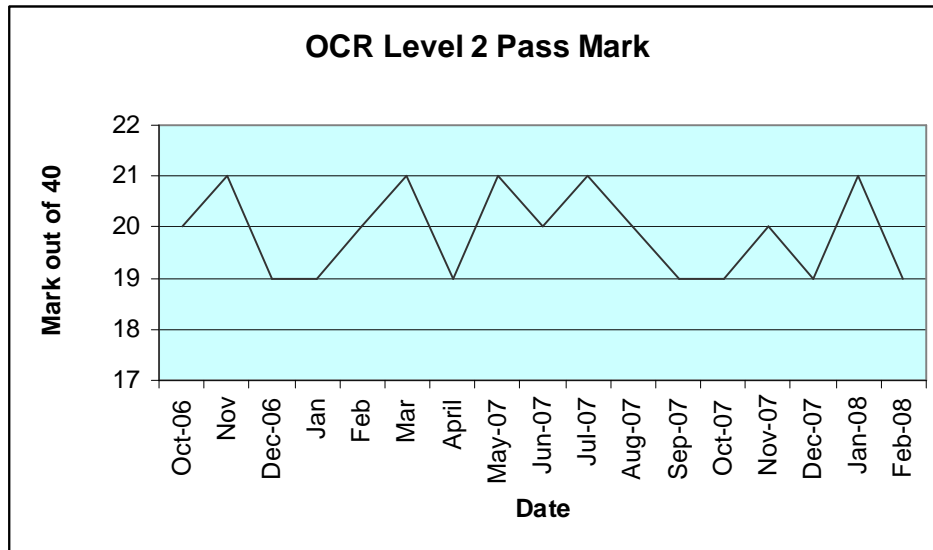
Level 2 is the same level as Key Skills or NVQ Level 2, GNVQ Intermediate or GCSE grade A\*-C.

These tests are suitable for you if English is not your first language as long as your reading skills are at least at Level 1."

#### What is the pass mark?

According to the DFES (2008) "The intended pass mark is around 75%. The pass mark may vary slightly to ensure consistent standards from test to test.

This is normal test procedure.” However, according to the OCR website, the test mark currently varies between 21 and 19.



#### What do academics think about the test?

Caroline Hudson (2007) has reservations. She explains “the National Tests at Levels 1 and 2 do not test numeracy skills in specific workplace contexts, in a sustained way. Given the importance of context in workplace mathematics, workplace mathematics courses leading to the National Test may therefore enable employees to achieve a nationally recognized qualification, but may not equip employees with the skills to carry out mathematics related workplace roles.”

Diana Coben (2003) points to Cumming and Gal’s research which draws out a number of implications for assessment practice in adult numeracy from their international review of ‘Assessment in adult numeracy education: Issues and principles for good practice’ (Cumming & Gal, 2000). These include:

1. Both instruction and assessment of adult numeracy skills should be informed by broad definitions of numeracy to encompass the work and life mathematical experiences and strategies adults already have.
2. Ideally, assessment should address reasoning processes and (mathematical) problem solving, conceptual knowledge and computation, and the ability to interpret and critically react to quantitative and statistical information embedded in print or media messages, as well as examine transfer of mathematical problem solving across life and work contexts.
3. Assessment should be directed by the instructional focus and goals of the program, not vice versa.

**4. One type of assessment alone (e.g., use of standardized tests) will not be sufficient to inform all assessment or evaluation requirements of learners or a program.**

**5. Convenient and apparently simple assessments such as standardized tests may not be appropriate and informative and may do a disservice to students, teachers, and a program.**

6. Adult numeracy assessment should encompass the range of assessment forms being used in other educational settings and may include oral reports, group activities, portfolios, and so forth.

7. Adult numeracy assessment should recognise that adult learners may perform at quite different levels in oral mathematical discussions than on written tasks.

8. Assessment indicators for workplace programs are most appropriately drawn from a task analysis of work.

9. Assessment should inform students in a systematic way of their progress in, and achievement from, a program.

10. Only appropriate interpretation and use should be made of assessment information;

adult numeracy practitioners need to be aware of cultural difficulties in planning and interpreting assessment. (Cumming & Gal, 2000:328-9)”

If these recommendations had been taken notice of, the current emphasis on one multi choice test would never have come about.

Dave Tout (2005) claims, “there are major consequences (of Core Curriculum and SFL strategy) in terms of assessing through a national testing scheme; teaching to the test can dominate the curriculum.” This can be seen from an OCR (2008) document “Advice for Level 1 and 2 candidates”, which tells students to “Get as much practice as you can doing past papers.” The document also says “Attempt ALL questions. Marks aren’t deducted for any questions you get wrong so it you still don’t know the answer to a question when you come back to it - guess! You’ve got a 1 in 4 chance that you’ll be right.”

Roseanne Benn (1997) claims “The effect of political forces on the mathematics curriculum is considerable and has resulted in recent years in an utilitarian, assessment driven curriculum based on objectives and competences. The predominant voice in education is that of the New Right which has encouraged the development ...of competency based qualifications.”

#### What of the future?

There are now moves to update adult numeracy as part of “Functional Skills”. The Institute of Educational Assessors (2008) state on their website

“These qualifications will enable learners to develop basic 'functional' levels of skills in English, Maths & ICT, in preparation for working life.

\* They will improve and develop personal, employability, learning and thinking skills.

\* They will ensure young people and adults have sufficient communication, numeracy and ICT skills to engage in life and work.

\* They may be developed as stand alone qualifications as well as being incorporated into GCSE English, maths and ICT.

What impact could they have on assessment generally and assessors in particular?

\* It is proposed that no one can achieve a 'C' or better without mastering the functional elements.

\* There could be up to two million such tests per year, thereby increasing dramatically the number of tests nationally.

\* A move to On-demand assessment? After all, it's a competency test.

\* How this will be implemented still has to be worked out.

\*Functional Skills could be taken in all age phases from KS3 upwards.”

With two million tests expected a year, it is extremely important that these reforms get it right.

### **Section 3 Methodology**

Two different data sets were collected.

Level 2 numeracy students at Castle College were given a past Level 2 test paper to complete in exam conditions. The questions were analysed and referenced to the Core Curriculum. Only students that achieved the pass mark of 50% were included in the analysis. The answer papers were collated on spreadsheet to show which questions the students got right and their incorrect response if they got it wrong. The reading age of each question was calculated using the Flesch Reading Ease and Flesch–Kincaid Grade Level scores available in Microsoft Word and the SMOG test. Charts and diagrams of these results were then made, including scatter diagrams to show the relationship between readability of questions and success at answering that question.

A questionnaire (see Appendix 5) was constructed to distribute to colleagues at Castle College and on the e-mail list [ADULT-NUMERACY@JISCMAIL.AC.UK](mailto:ADULT-NUMERACY@JISCMAIL.AC.UK). This was trialled on one colleague first, who suggested an important improvement to one of the questions. The questionnaire included one open question for respondents to make any comments about the Level 2 test.

I limited the sample of students to those that passed the test because I wanted to be able to evaluate what they were capable of. My sample for the questionnaire was self-selecting, so may be biased towards those with strong feelings about the test. However I ensured the questionnaire was short and easy to complete, and this meant a large number of people replied. Using this method I got far more data than I would have done had I conducted interviews, and was able to

seek the views of tutors all over the country. It also saved time, which is an important factor when conducting a short research project.

#### **Section 4 :Data collection**

The results of the test analysis can be found in Appendix 2.

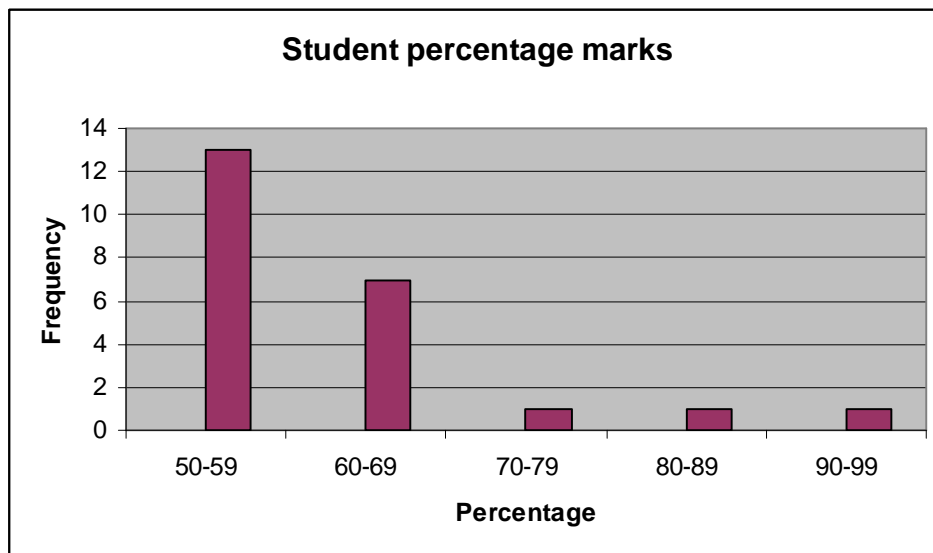
The results of the Questionnaire analysis can be found in Appendix 3

The full list of comments from the Questionnaire can be found in Appendix 4.

These are colour coded, blue for comments negative to the test, red for comments positive to the test and green for comments about how to improve the test. A quick glance shows that most respondents were negative to the test.

#### **Section 5: Conclusions and recommendations.**

The average mark obtained by the students that passed the test was 60%. The median mark was 58 and the mode was 50.



The graph shows the marks are considerably skewed to the lower percentages. Many students are narrowly passing the test. If the pass mark had been 75%, as the DFES recommended, only 2 of these students would have passed. This sample of students was taken from Skills for Life classes at Castle College. It has to be stressed that their tutors did not necessarily think they were ready to be entered for the actual test, so their performance would improve considerably by the time they were entered. However, many institutions are encouraging students to take the test without attending courses. They do a practice test, and if they pass are entered for an actual test. Some are even encouraged to take a test by the offer of a voucher or gift token. So employers need to be wary when employing someone who has passed such a test



The spreadsheet in Appendix 2 shows the make up of the test questions. The nature of Level 2 questions is that they often have two or more “layers”, so they are testing several Core Curriculum references. I have attempted to show the primary and secondary skills needed to successfully answer each question although for some questions it is debatable which is more important. There are 15 questions that primarily assess number skills, 11 that assess shape and measures and 14 that assess data handling. If a hypothetical student was capable of answering questions on Number, Shape and Measure, but did not understand any data handling above Level 1, they could score 22 marks. Assuming the other questions were guessed and  $\frac{1}{4}$  were right, this would make the overall score 26 (65%), easily a pass.

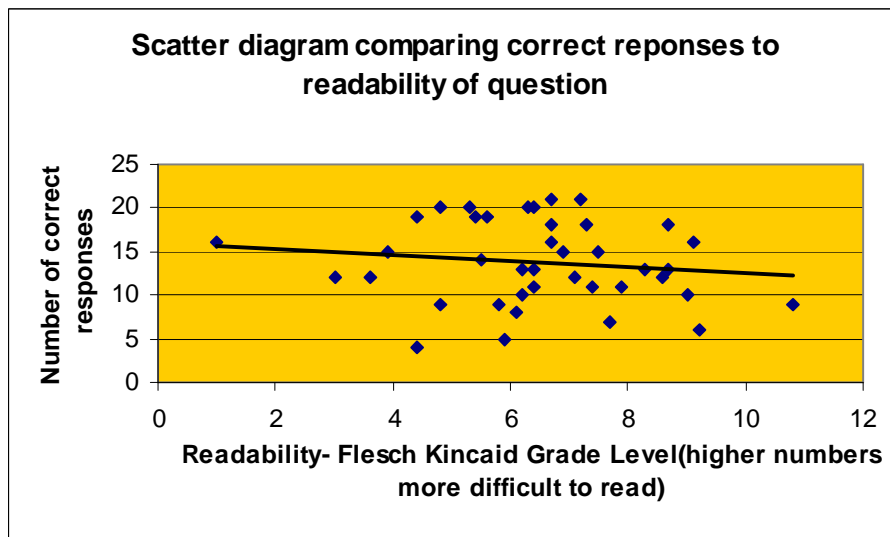
Suppose another student couldn't do any shape or measures work harder than Level 1. They would score 26, and guess 3 correctly, scoring 29 (73%).

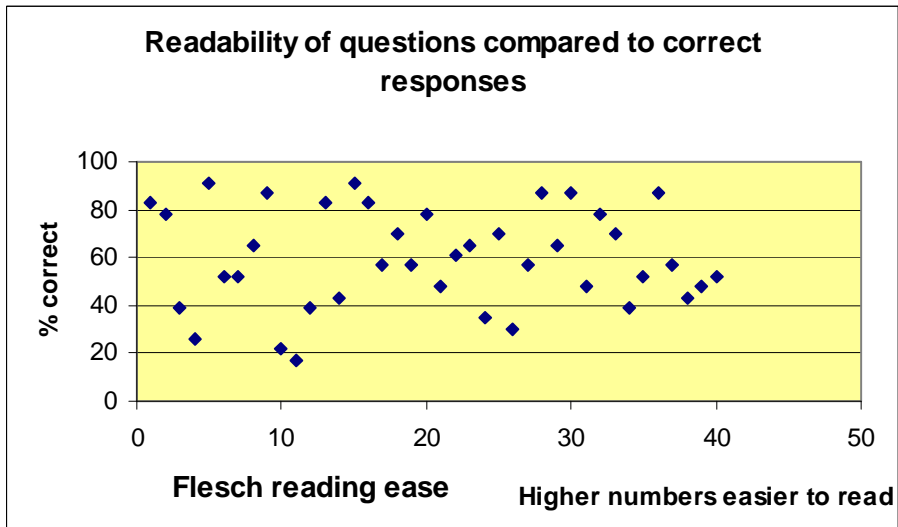
More worryingly, suppose a third student couldn't do number work above Level 1. They would score 21 correct answers and guess a further 4 giving a mark of 25 (63%).

**I think these results are very worrying and show that a student can pass the Level 2 test without understanding much of the Core Curriculum.**

### Readability

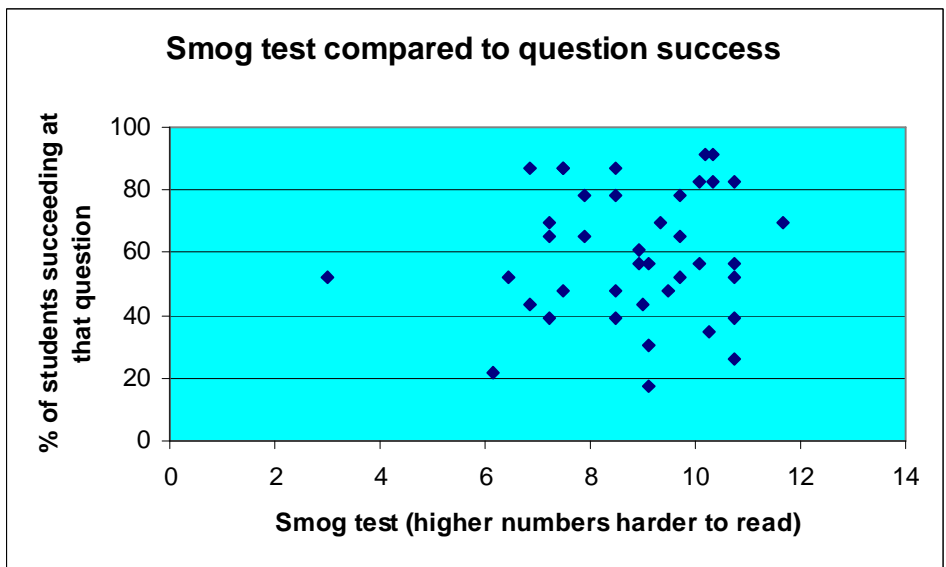
One of the major concerns raised in response to the questionnaire was the readability of test questions.





These graphs show the relationship between the readability of the test questions and the success the students had with answering it. The first uses the Flesch Kincaid Grade Level where higher numbers mean text is more difficult to read. There is a very slight negative correlation. The second uses the Flesch Reading Ease, where higher numbers mean the text is easier to read. Here there is no correlation.

The Basic Skills Agency use the SMOG (2008) test for readability. I calculated SMOG for the 40 questions to see if this gave a different result, but it was very similar.

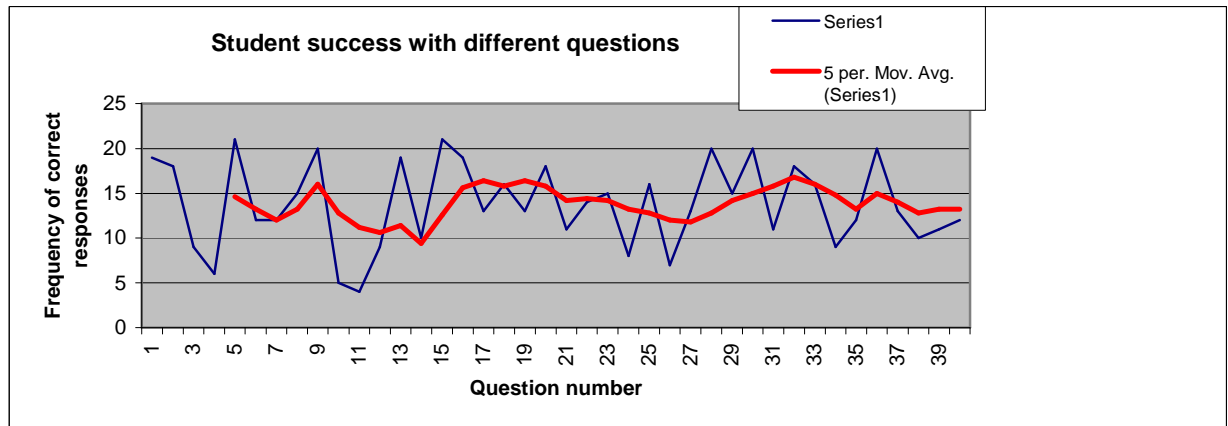


Again there was little correlation.

So the correlation between readability and student success at a particular question is not significant. This does not mean that readability is not a problem. It would be interesting to repeat this analysis with a sample of ESOL students to see if the correlation is stronger. It is clear that care is taken in test design to

ensure the readability scores are low, as most questions have short sentences and few words with several syllables. However for ESOL students recognising words such as “turbines” or “emissions” may be difficult, so this is where the test becomes one of literacy rather than numeracy. **It would help if illustrations were used in the test to give visual clues to such students.**

### Length of Test



If students did not have enough time to complete the test, one would expect a dip in the number of correct responses towards the end. This graph shows how successful students were with each question (the blue line), and a 5-point moving average (red line) has been added to show the trend. Although there is a slight dip for the last few questions this does not appear to be very significant. It seems the students in the sample did have enough time to complete the test. However these students all passed the test- those that did not do so well would give a different result.

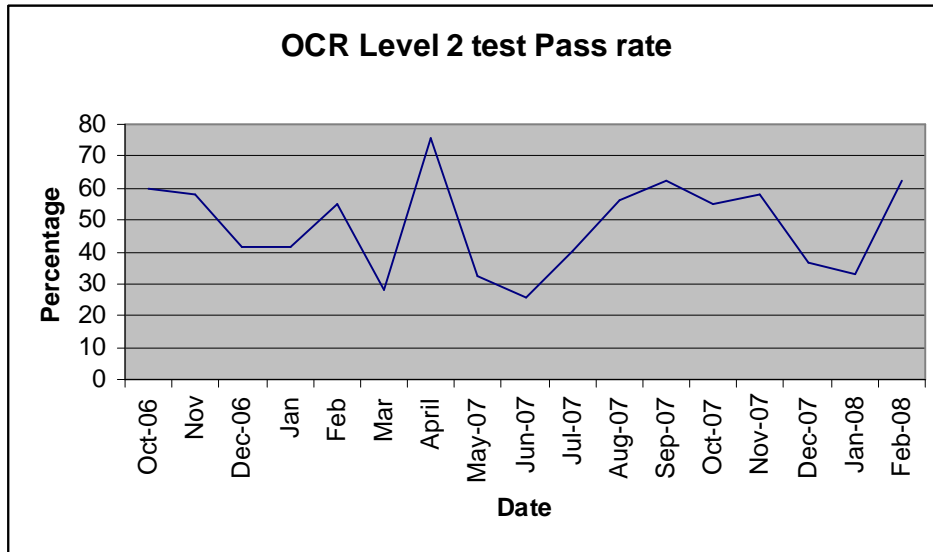
### Test Questions

Appendix 1 contains a full list of the 40 questions, the percentage of students that successfully answered that question and their readability scores. There is also a commentary on some of the questions. The questions students found most difficult are red, and the questions that were easy are green. I am concerned at the mathematical quality of some questions, such as q3 and q 38. It is possible in these questions to round numbers to a different degree of accuracy and arrive at an incorrect answer. So despite doing various calculations correctly, no marks are given.

### Pass Rate

I found data on the recent pass rates of OCR Level 2 tests on the OCR (2008) website.

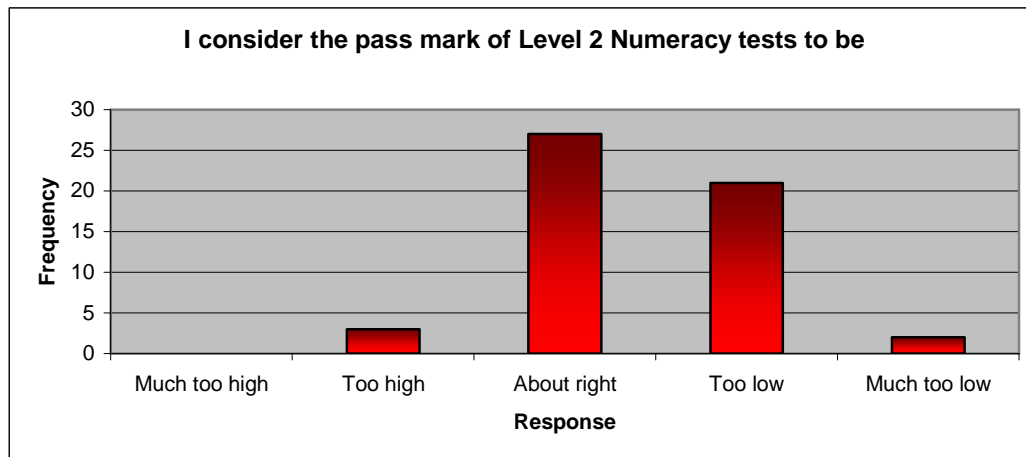
This shows a massive range of 50%. Such an enormous range in pass marks suggests some underlying problems in test design.



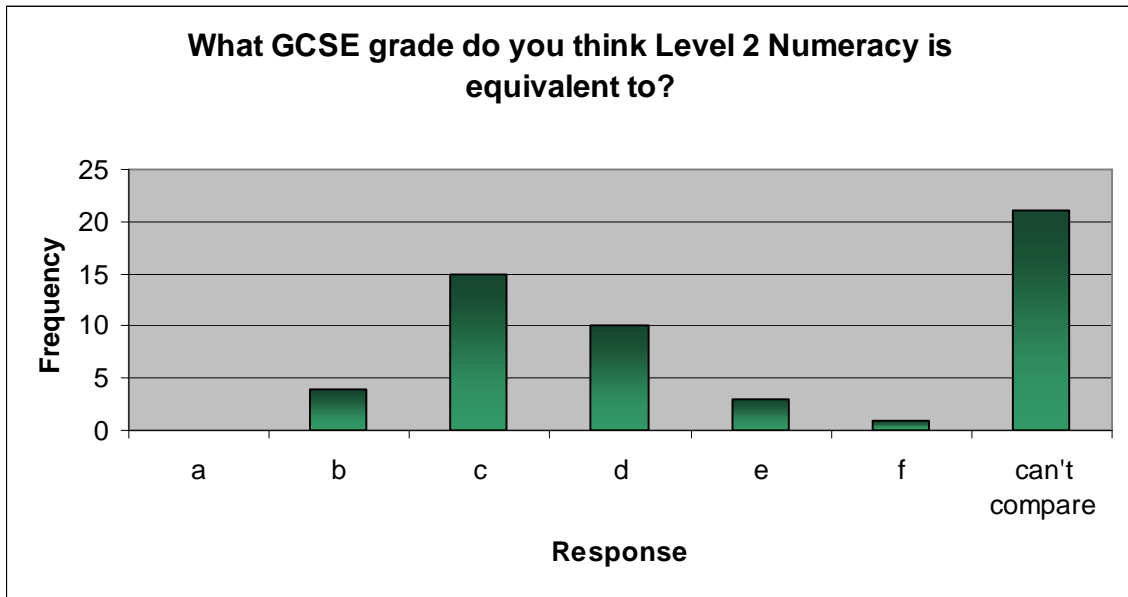
### Questionnaire Results

The first question asked about the pass mark of the Level 2 test. Some replied to say they didn't know what the pass mark was. As my centre use the off-line version of the tests I know the pass mark, which now seems to have settled at 50%.

Although the majority of respondents thought the pass mark was about right a significant minority thought it too low.

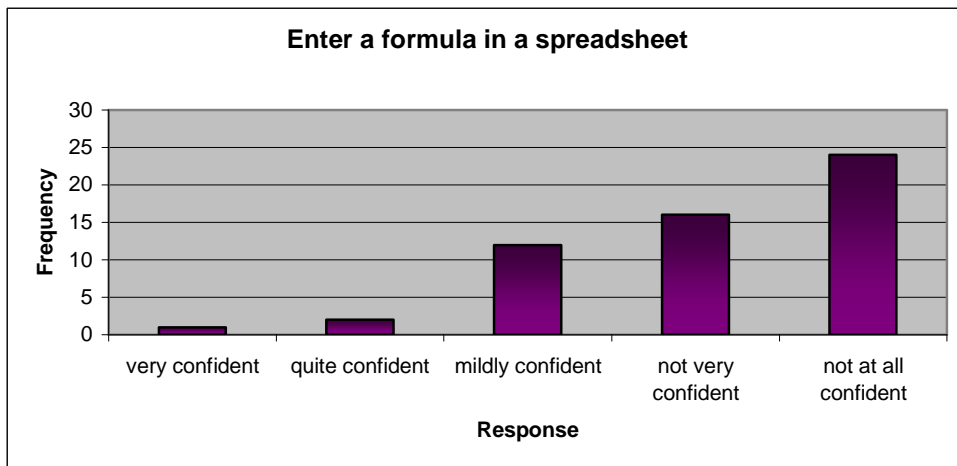


The second question asked, "What GCSE grade do you think the current Level 2 test should be considered equivalent to?"



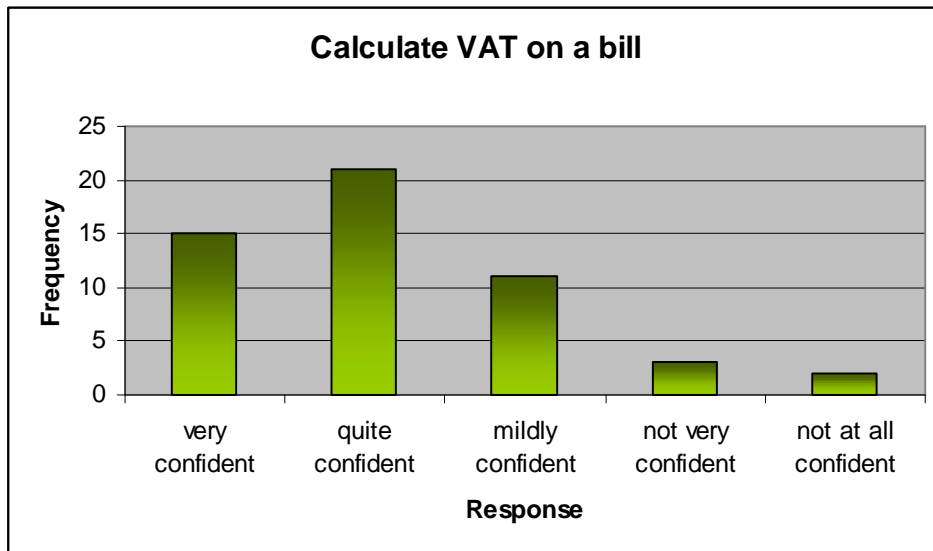
Most respondents thought they couldn't be compared, but of those that did compare, slightly more thought Grade C than Grade D. The chart shows that a considerable proportion of numeracy tutors do not value the Level 2 test as highly as a GCSE grade C.

The next set of questions posed the situation "If an employer gives a student who has just passed a level 2 numeracy test a job, how confident should s/he be that the student will be able to successfully complete the following tasks?" The first was "Enter a formula in a spreadsheet", a skill that is not tested at level 2. It was no surprise that most tutors were not at all confident. Employers expect a numerate student to be able to do this.

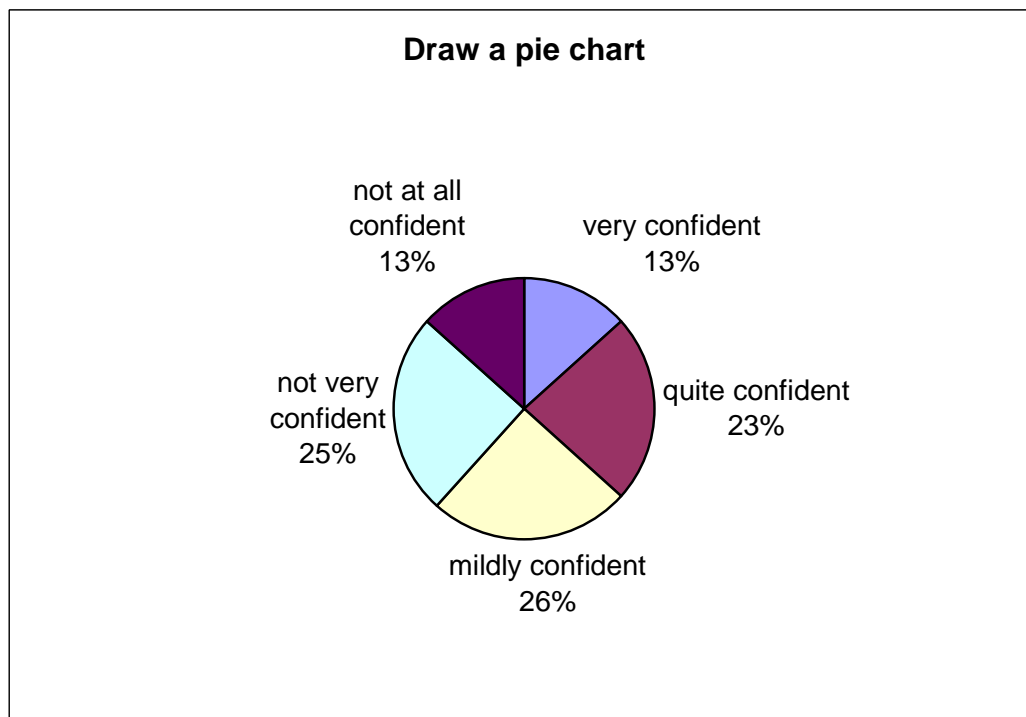


The second asked if a student would be able to calculate VAT on a bill. This is an important part of the Level 2 curriculum, but I have shown above that it would be

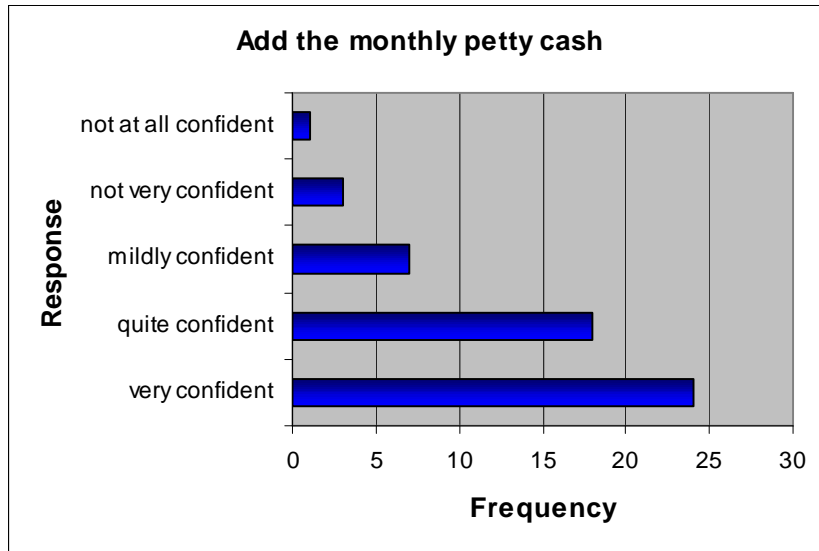
possible to pass a level 2 test without this skill. However most colleagues were quite or very confident.



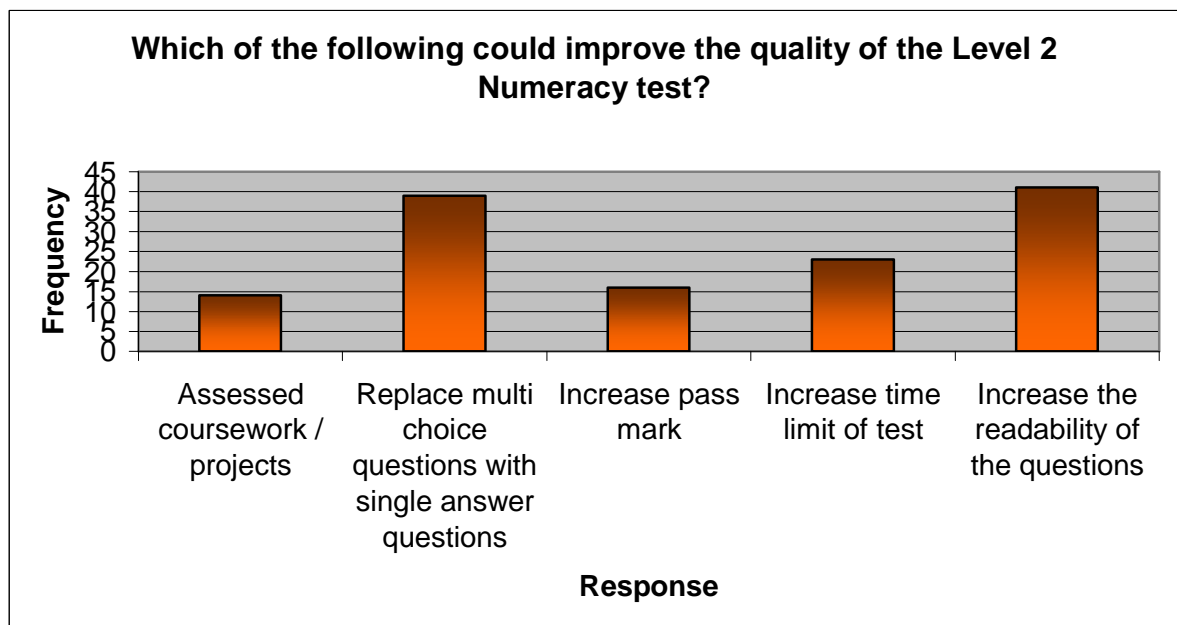
The "draw a pie chart" question got a very mixed response. As this can't be assessed on a multi choice paper I was surprised so many people were quite confident or very confident. This would indicate that many tutors don't teach to the test, but teach the full breadth of the core curriculum, including drawing graphs and charts. However this does not mean that those taking the test without doing a course would have this skill.



The final skill I asked about was adding up the petty cash. A good level 1 student should be able to do this, so one would expect someone who has passed Level 2 to be able to do it. Respondents to the questionnaire agreed, with most very confident. However some tutors were still not at all confident that a student who has passed Level 2 would be able to add up.



The most revealing question was “Which of the following could improve the quality of the Level 2 numeracy test? (Tick as many as you agree with).”



Only 4 respondents out of 58 didn't tick any of these boxes, most ticked 2 or more. **This shows a very high level of dissatisfaction with the Level 2 test. Increasing the readability of the questions was the most popular improvement, followed by replacing the multi choice questions with single answer questions.** Increasing the time limit of the test was also popular. 15 people opted for assessed coursework or projects even though this often involves the tutor with more work. Tutors are clearly willing to work hard to contribute to a fairer assessment system.

Thirteen people made a comment that was favourable to the current test. For instance "I think it is a good test, as it requires the ability to think and apply, not just churn out knowledge like the GCSE. It is harder to achieve than the GCSE." and "I would not want to lose the multiple choice nature of the exam as it enables the questions to focus on the method/process in a way which GCSE questions often don't (hence the different students who succeed on one rather than the other)". Most positive comments were short and to the point.

Thirty-nine people made negative comments about the current test and many of these were long with several points. There were 6 main themes to these comments, which were, in order of popularity

Issue	Number of comments
Low pass mark/Passing does not guarantee competence.	16
Readability	11
Multiple choice format.	5
Big gap between L1 and L2.	4
Teaching to the test.	3
Tests have recently got harder.	3

Examples of comments about the low pass mark are

*"I have worked with a large number of employers over the past few years and they have quite specific needs in terms of our teaching of maths. They all agree to put learners through the National Test to help my funding/targets but in reality they don't value the tests. The reason for this is simple – they have experienced new employees who have been 'taught to the test' on a short course but are not proficient in the skills needed in the workplace at this level and I work very closely with these employers to ensure we teach what they need. After several years now of National Tests, employers know they cannot employ a person on*



*the basis that they have passed the level 2 test – they know it does not guarantee competence at this level.*

*The test fails both learners and employers and I have yet to meet a numeracy tutor who likes them.”*

*“The pass mark is very low, so you can’t guarantee that a student who has passed is able to operate successfully at Level 2.”*

*“Level 2 Numeracy is used as an entry qualification for nursing. A 50% pass mark cannot guarantee knowledge of any topic of the curriculum. Nurses need to be 100 % accurate in calculations on the ward”*

*“As people are passing it at the low level the quality will always be poor. If only half the skills are needed to pass the test then that person cannot be deemed competent at level 2 unless they pass with a mark of at least 35.”*

*“I do not think that we can state with confidence that someone can do something unless the exam result was 80% or more ensuring they had answered questions in all fields”*

These comments are extremely damning. If the Level 2 test is already losing credibility amongst tutors and employers it is vital that the decision makers currently working on the new Functional Skills standards and qualifications get it right this time. In the mean time **there should be an enquiry into why the pass mark has dropped from 75% to 50%** (and if one respondent is correct as low as 45% in one case). A qualification will not be valued unless it indicates that the person holding the certificate has attained certain skills. The Level 2 test does not do this.

Comments about readability included

*“One of the biggest difficulties my learners have is deciphering the language of the questions. Most of them are more than capable of ‘doing’ the maths but find they spend a lot of time trying to work out what is required.”*

*“Readability is a big issue on this test and makes it very difficult for some students whose literacy is not high. It is also very difficult for ESOL students – some of whom have very high numeracy levels in their own language. This raises the question of the validity of the test – is it testing more than numeracy? “*

*“The questions are too wordy, making the numeracy test a test of literacy too.”*

*“National test is a test of students’ reading ability and not primarily mathematical ability. This causes difficulty for ESOL students whose maths is good but the language of the questions is convoluted.”*

“not dyslexic friendly”

It is clear that readability is a massive issue with this test. It would be a shame to lose the real life context of questions in the numeracy test, so one way forward would be, as suggested by response 55, **for questions to be illustrated with suitable photographs or pictures that would help ESOL students and those with low literacy skills, to interpret the more unusual words.** So in the test I have been examining a picture of a wind turbine would illustrate questions 33-36 and question 5 could be illustrated with a smoking exhaust pipe.

Comments about the multiple-choice format included

*“I think multiple choice questions do not help to assess the Functional Maths skills of learners.”*

*“should be more varied and not just multiple choice.”*

*“The two main problems are the excessive wordiness of the questions and the fact that students get no credit for working or follow-through.”*

*“failing to answer correctly does not necessarily mean that the candidate cannot deal with a similar problem using their own method.”*

*“Multi choice format is very limiting. Cannot give method marks.”*

It is the ease, convenience and lack of expense that attracts examiners to multi choice question papers. However, with modern technology it is now not difficult to design tests on the computer that require the examinee to enter their own answer. Even tutors without any knowledge of programming can design such tests using “Hot Potatoes” software (Half Baked Software, 2008), and BKSB (Basic and Key Skill Builder, 2008) require students to enter answers in their Initial and Diagnostic Assessments. It should not be difficult for National on line tests to have such features. What would be more expensive is the marking of the written papers, but I suspect the number of people taking the written version must now be falling. **I recommend that the exam boards investigate the possibility of transferring from multi choice for at least half the test.**

There was concern about the gap between Level 1 and 2. Comments included

*“There is a problem with the large leap from Level 1 to Level 2 which is not recognised in the way government funding is allocated. Could lead to a very mechanistic teaching of maths.”*

*“In my experience there is a huge gap between L1 and L2. Many students who are confident at L1 can hardly achieve L2 within a year.”*

My experience is that problems arise when students who are not competent at Level 1 pass a test and then struggle with Level 2 because they haven't grasped the basic concepts they should be building on. **Increasing the pass mark at Level 1 would solve this.**

Teaching to the test is also a problem.

*"The best method for many, especially if they want/need qualifications quickly, is to do as many (harder) practice tests as possible."*

*"-all this means you either need a lot more time to get learners from Level 1 to Level 2 if they are to attain a good level of understanding OR you "teach to the tests" and get them used to the type of question they will get (not ideal and not what the SFL strategy intended, I suggest)."*

There is a temptation for teachers to "teach to the test" in any exam course, but it seems particularly strong in the National Tests. When teachers know that topics that are on the curriculum, such as probability, never come up on the test, it is extremely tempting not to cover these- and what's more students will not want to do a topic if they know it is not going to be on the test. **I recommend that the Level 2 Test should cover the full breadth of the core curriculum.** This would mean introducing questions that involve for instance, "collect, organize and represent discrete and continuous data in tables, charts, diagrams and line graphs HD1/L2/2" and "identify the range of possible outcomes of combined events and record the information using diagrams or tables"HD2/L2/1

There is considerable evidence that tests have recently got harder.

*"the tests seem to have got more difficult in the last 12-18 months, yet most of the materials available for practice have not (the exception being the harder L, M and N tests recently put on Move On(2008)). Standard teaching materials (BKSB, Adult Basic Skills text books, Skillsworkshop material) do not generally go up to the level of the current test questions. "*

*"Currently there seems to be a discrepancy between the practice tests I give my students and the tests that they end up doing."*

*"Because the tests have become available 'on demand' with questions drawn from a bank of materials, no 'Past Papers' can be kept. I invigilated a recent exam and noticed that some of the questions had changed in style and content from the older papers and sample papers which are all we have to work with to prepare students for this test."*

**Rather than making the test more difficult with a low pass mark, I recommend that the test should revert to previous levels of difficulty, but with a higher pass mark.** Employers would then be assured that students with the certificate are competent at this level of numeracy.

Comments that included suggestions for improvements included

*“There might be mileage in looking at easier questions but with negative marking (the current system means some students pass because of lucky guesses). Currently 2 answers are usually “easy” to exclude – I think they should attract negative marks, the other possible answer be neutral and then the correct answer perhaps +2. The rationale for this is that eg a student who picks a value for a mean/median etc that is outside the range or at the extremes of the data clearly has either guessed or does not understand the topic!”*

I see what this contributor is getting at, but have reservations about this idea. It makes the test much more complicated to mark and check, and with the large numbers of problems already being experienced I don't think it would be a good idea to make it more complicated. The following contribution (that was echoed by 5 similar thoughts) is more in line with my opinion

*I feel that an increase in the time allowed to complete the test and an increase in the pass mark would give more value to the Level 2 qualification. A change from multiple choice questions to GCSE style questions would also allow the learner to be credited for correct choice of calculation and they could also be credited for accuracy in their implementation of the calculation.*

Most of the other ideas for improvement suggested raising the pass mark.

### Conclusion

**In conclusion this study has examined the Level 2 Numeracy test and found it wanting in several aspects. It does not validly assess a student's ability to operate at Level 2**

My recommendations are

1. to improve the readability of questions by ensuring the language is simple and pictures are used to help ESOL students interpret more unusual words.
2. to improve the mathematical quality of the questions to avoid problems whereby a student can make sensible rounding decisions and arrive at an answer that is not correct.
3. replace the multi choice format for at least half the questions to allow the full breadth of the Core curriculum to be tested.
4. ensure the pass mark is high enough for employers to be confident that students who have passed the test are competent at the skills in the Level 2 Core Curriculum

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## Appendix 1 Test Questions

Unfortunately I can't publish the test questions for copyright reasons. If you can get hold of the OCR 2005 Level 2 paper, you will be able to make sense of the following comments about the questions. Otherwise please skip to Appendix 2.

Red question numbers are those that students were least successful with. (less than 40% correct)

Green question numbers are those that they were most successful with. (over 80% correct)

Purple is my commentary on the questions

The question number is followed by the percentage of students who answered correctly.

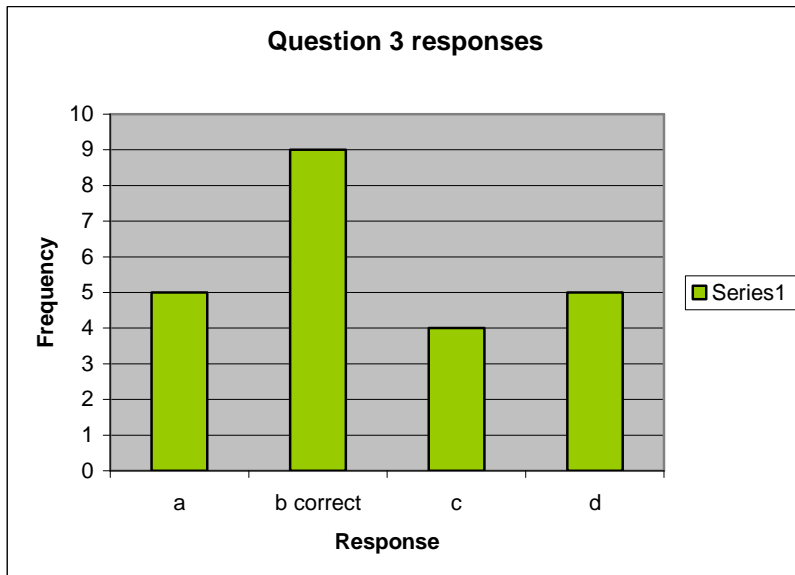
The blue number is the Flesch Kincaid Grade Level (higher numbers more difficult to read)

The brown number is the SMOG test result (higher numbers more difficult to read)

1. 83% 5.4 10.07

2. 78% 8.7 9.71

3. 39% 5.8 8.48



This is an incredibly difficult question for Level 2. There are so many different possibilities for the student to try, which don't necessarily lead to the correct answer.

The table shows some of the things students might do.

Round to nearest	Total cost	Total income	Profit	Profit/cost	Profit/cost cancelled down
1000	7000	8000	1000	1000/7000	1/7 wrong answer!
500	7000	8500	1500	1500/7000	3/14 students may then convert this to a decimal
100	7000	8400	1400	1400/7000	1/5 the method the examiner expects students to choose
10	7000	8440	1440	1440/8440	36/211

Changing them to decimals without rounding results in profit =1451, profit/cost = 1451/6987= 0.208 to 3 dp

1/7 =0.143 to 3dp

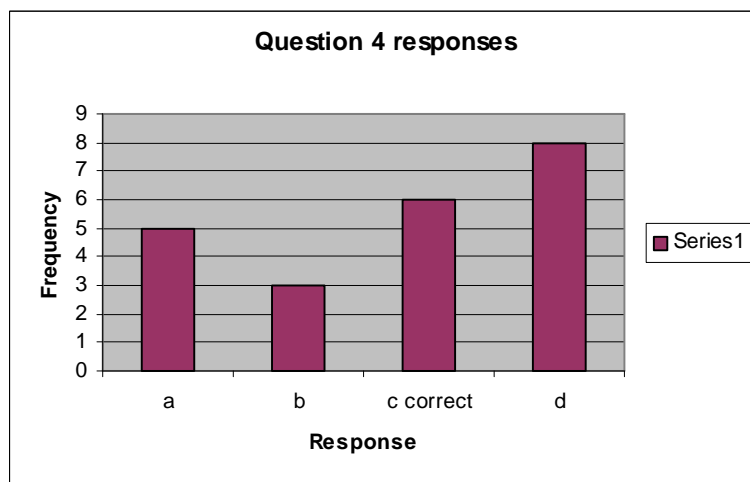
1/5=0.2

so 1/5 is only 0.008 away from the accurate answer, and 1/7 is 0.065 away from the accurate answer.

Changing to decimals having rounded to the nearest 500 results in 3/14 =0.214 so would result in the answer 1/5

*I believe many students wasted far too much time on this question right at the beginning of the test, leaving insufficient time to complete the rest of the paper. It certainly would be better in a non-multi choice format, where the student makes his own decision rather than trying to read the examiners mind!*

4. 26% 9.2 10.75



This is one of the most incorrectly answered questions presumably because students had difficulty changing 0.79million to 790,000.

5. 91% 6.7 10.35

*Most students got this right despite the difficulty of the language and the complicated nature of the question.*

6. 52% 8.6 9.71

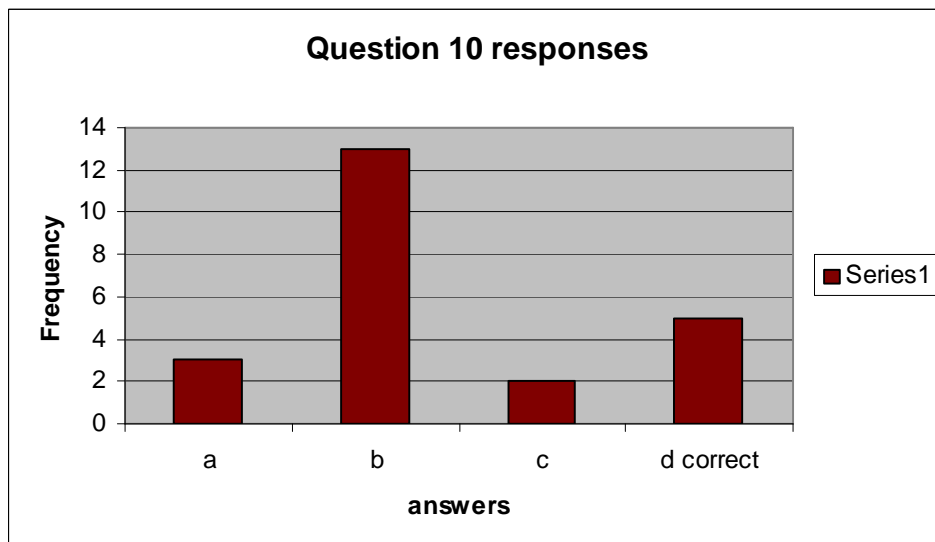
7. 52% 3.6 3.0

8. 65% 7.5 7.9

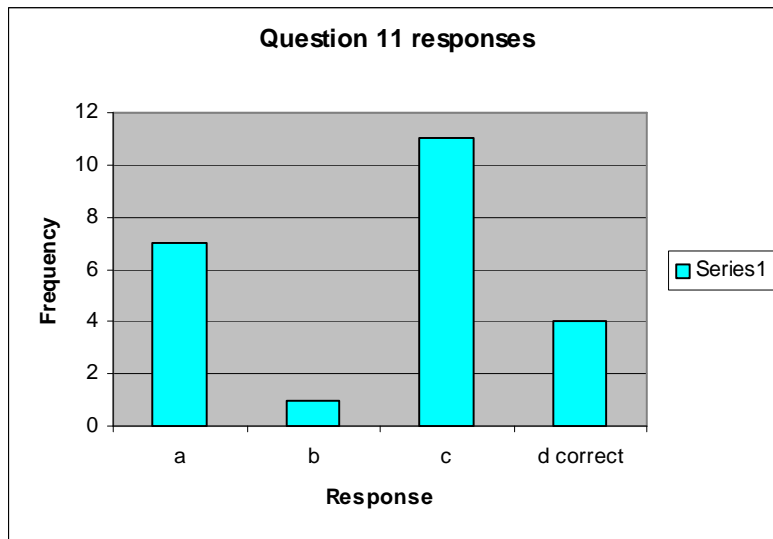
9. 91% 4.8 7.47

10. 22% 5.9 6.16

Lots of students answered b which has a mode of 7 but the correct answer is d with a mode of 8. This could be as a result of not spotting the two 8s in the bottom right of the table. Getting this question wrong does not mean a student can't work out the modal mark. Some students I suspect were not familiar with the term "modal".



11. 17% 4.4 9.12



*This question involves first recognizing there are 1000g in a kg, so the weights are 974g and 1102 g. The student then has to round both numbers to the nearest 10, obtaining 970 and 1100. Finally they need to subtract.  $1100 - 970 = 130$ . The readability of this question is actually quite low, but there are three distinct steps to take to obtain the right answer. Lots of students incorrectly answered c, 128g, which would be the correct answer if it wasn't for the last 5 words of the question. So students who are rushing and only skim reading the question make this mistake.*

12. 39% 4.8 7.24

*For students to be successful at this question they need to understand the word "varies" which would be difficult for lots of second language speakers. Varies is a short word, so doesn't adversely effect the readability scores. Lots of students answered b.*

13. 83% 5.6 10.35

*This question is very readable according to the Kincaid Grade level, but the SMOG test finds it more difficult. It involves several steps of calculation and careful interpreting of the table, but most students were successful at arriving at the correct answer.*

14. 43% 6.2 6.87

15. 91% 7.2 10.17

A very well answered question.

16. 83% 4.4 10.75

17. 57% 8.7 9.12

18. 70% 1 7.24

This question is notable for its very easy readability- as all the words only have one syllable it scores one on the the Flesch Kincaid Grade Level

19. 57% 6.2 10.07

20. 78% 6.7 7.9

21. 48% 6.4 8.48

The topic of this question will unfortunately not be within the experience of most Basic Skills students. This will have contributed to the poor response.

22. 61% 5.5 8.92

23. 65% 3.9 7.24

24. 35% 6.1 10.25

A difficult question involving interpreting and using a formula, subtraction, multiplication of decimals and division. Lots of students arrived at answer b.

25. 70% 6.7 9.32

26. 30% 7.7 9.12

Lots of students incorrectly answered a.

27. 57% 8.3 10.75

28. 87% 6.4 7.47

*This question involves finding a percentage increase, adding and rounding, as well as interpreting the language. Most students could do this.*

29. 65% 6.9 9.71

30. 87% 6.3 6.87

31. 48% 7.4 9.48

32. 78% 7.3 8.48

33. 70% 9.1 11.66

*This question has a high Flesch Kincaid Grade Level and SMOG test but was answered well. However the difficult readability will have slowed down many ESOL students at this point in the test.*

34. 39% 10.8 10.75

*This is the most difficult question to read according to the Flesch Kincaid Grade Level. And only 2 in 5 students got it right. Students should know the word "approximately" but I suspect many struggled with "kilowatts" and "turbines". The test could be improved by adding simple illustrations or photographs (in this case a wind turbine) to help second language students interpret the difficult words.*

35. 52% 3 6.46

36. 87% 5.3 8.48

I don't understand why this question is on a level 2 paper- it is clearly a Level 1 question. Very worrying that 3 students got this wrong, but they may have been guessing by this point.

37. **57%**    **6.4**    **8.92**

38. **43%**    **9**    **9.0**

*Another very difficult rounding question, similar to question 3. If students round to the nearest 100 they get  $800/200 \times 100 = 400\%$  so they choose A which is wrong. Lots of students made this mistake, so even though they rounded correctly to the nearest 100 and calculated the percentage correctly, they don't get a mark.*

*If students round to the nearest 50 they get  $800/150 \times 100 = 533\%$  so they choose B, which is correct.*

*If they work out without rounding they get  $796/157 \times 100 = 507\%$  so they choose B- but this would take a lot of time without a calculator.*

*A question about estimating certainly shouldn't involve having to do such difficult calculations.*

39. **48%**    **7.9**    **7.47**

40. **52%**    **7.1**    **10.75**

## Appendix 2 Test Analysis

Key Blue= Number, Yellow =Measure and Shape, Green= Handling Data,  
blank only one skill assessed.

Question	Primary skill	Ref	Secondary skill	Ref
1	multiplication/addition of money	N2/L2/6	reading table	HD1/L2/1
2	calculate %	N2/L2/8	reading table	HD1/L2/1
3	evaluate one number as a fraction of another	N2/L2/3	approx by rounding	N1/L1/8
4	calc involving decimal millions	N1/L2/2	subtract	N1/L1/3
5	extract info from table	HD1/L1/1	order decimals	N2/L1/4
6	evaluate expressions	N1/L2/4	division	N1/L1/3
7	calculate with time	MSS1/L2/2	fraction calc	N2/L2/4
8	choose correct calculation	N1/L2/4?	round decimals	N2/L1/7
9	find range	HD1/L2/4	reading table	HD1/L2/1
10	Find mode	HD1/L2/3	reading table	HD1/L2/1
11	compare weights	MSS1/L2/3	rounding decimals	N2/L1/7
12	use range	HD1/L2/4	mean/median/mode (incorrect answers)	HD1/L2/3
13	use info from table	HD1/L2/1	money addition	MSS1/L1/1
14	calculate with time	MSS1/L2/2	add/subtract	N1/L1/3
15	diagram needs a key	HD1/L1/1		
16	convert between currencies	MSS1/L2/1	decimal multiplication	N2/L1/5
17	volume of a cuboid	MSS1/L2/9	decimal multiplication	N2/L1/5
18	area of rectangles	MSS1/L2/8	decimal multiplication	N2/L1/5
19	calculate ratio	N1/L2/2	multiply/divide	N1/L1/4
20	dimensions/scale drawings	MSS1/L2.10	calculate with units of same system	MSS1/L2/5
21	extract data from chart	HD1/L2/1	find parts of a whole number	N2/L1/2
22	choose correct calculation to check	N1/L2.4?		
23	find median	HD1/L2/3	reading table	HD1/L2/1
24	evaluate expression/substitution	N1/L2.4	brackets first	N1/L2.4
25	multiply decimals	N2/L2/6	convert units of area	MSS1/L2/6
26	calculate mean	HD1/L2.3	use fractions to add and subtract amounts	N2/L2/4
27	calculate using time	MSS1/L1/4	reading table	HD1/L2/1
28	finding percentage	N2/L2/8	rounding to nearest £10	N1/L1/8
29	find increase in mean	HD1/L2/3	reading table	HD1/L2/1
30	find the range	HD1/L1/4	reading table	HD1/L2/1
31	calculate using cm	MSS1/L2/5	division/multiplication	N1/L1/3
32	calculate money	MSS1/L2/5	reading table	HD1/L2/1
33	extract data from table	HD1/L2/1	order large numbers	N1/L1/1
34	multiplication/division	N1/L2/2		
35	calculate ratio	N1/L2/3	calc measures in same system (metric length)	MSS1/L2.5
36	read scales between marked divisions	MSS1/L2/3		
37	extract data from charts	HD1/L2.1	subtract	N1/L1/3
38	percentage increase	N2/L2/7	division	N1/L1/3
39	convert fraction to decimal	N2/L2/2	division	N1/L1/3
40	best chart to show ratio	HD1/L2.2		





### Appendix 3 Questionnaire Analysis

1. I consider the pass mark of Level 2 Numeracy tests to be	total	%
Much too high	0	0
Too high	3	5
About right	27	48
Too low	21	38
Much too low	2	4
What GCSE grade do you think the current Level 2 test should be considered equivalent to?		
A	0	0
B	4	7
C	15	27
D	10	18
E	3	5
F	1	2
Can't compare	21	38
If an employer gives a student who has just passed a level 2 numeracy test a job, how confident should s/he be that the student will be able to successfully complete the following tasks?		
Enter a formula in a spreadsheet	0	0
very confident	1	2
quite confident	2	4
mildly confident	12	21
not very confident	16	29
not at all confident	23	41
Calculate VAT on a bill		
very confident	15	27
quite confident	21	38
mildly confident	11	20
not very confident	3	5
not at all confident	2	4

Draw a pie chart		
very confident	7	13
quite confident	12	21
mildly confident	13	23
not very confident	13	23
not at all confident	7	13
Add the months petty cash total		
very confident	24	43
quite confident	18	32
mildly confident	7	13
not very confident	3	5
not at all confident	1	2
Calculate fuel consumption of the works van		
very confident	8	14
quite confident	20	36
mildly confident	21	38
not very confident	2	4
not at all confident	1	2
Which of the following could improve the quality of the Level 2 qualification? (tick as many as you agree with)		
Assessed coursework / projects	14	
Replace multi choice questions with single answer questions	39	
Increase pass mark	16	
Increase time limit of test	23	
Increase the readability of the questions	41	
Total	133	
.Please tick the qualifications you currently prepare your students for.		
GCSE Maths	21	
Level 2 Numeracy	49	
Level 1 Numeracy	52	
Entry Level Numeracy	40	
Key Skills Numeracy	14	

7. Please tick the sectors you currently work in (tick all that apply)		
Further Education	32	
Work Based Learning	11	
Adult and Community Learning	27	
Skills for Life	34	
Key Skills	8	
Teacher training	1	

## Appendix 4 Questionnaire comments

### Key

Red = Positive about current test

Blue = Negative about current test

Green = Suggestions for improvement

Other comments black

The respondents not listed did not make a comment.

Response number	Comment
1	In my experience there is a huge gap between L1 and L2. Many students who are confident at L1 can hardly achieve L2 within a year. I think that for L2 an average student would need much more in class, tutor guided learning time than 1 or 2 hours a week.
3	I think it is a good test as it requires the ability to think and apply, not just churn out knowledge like the GCSE. It is harder to achieve than the GCSE.
4	<p>Three areas I think are weak or missing from L2:</p> <p>Analysing/extracting data/information from tables charts lists instructions This is a skill valued by employers and at university and should be thoroughly tested.</p> <p>Tests of step by step logical thinking. If A then B then C ...and so on. This used to be tested at school with algebra/ geometry theorems and proofs. The theorms themselves may not have any immediate application but the thought processes they encouraged were not always reproduced elsewhere.</p> <p>More problem solving/finding alternative potential solutions and identifying what is needed to give solutions. All employers consider this to be valuable byproduct or thinking mathematically.</p>

5	<p>I think it is ok as a test of everyday maths          .If you can use a calculator in your job and you have this qualification you will be able to cope with most things (unless you are an accountant eek!).</p> <p>I know this because I have passed practice tests with a calculator at about 70 per pass mark..I guessed a few answers of course.</p> <p>In everyday life ( &amp; I am 47) I have never needed to be better at maths than this.          If I was going to do more complex stuff I would really need to be tested more and would be.</p> <p>The current mania for making everyone pass this qualification has created a lot of desperate people who have to get a qualification they will never really need. For that reason there is no point in making it any harder.It isn't comparable to the GCSE qual and it isn't really meant to be is it?</p>
6	<p>I'm very proud of all my learners who achieve qualifications, as many of my learners are considered to be 'disadvantaged' (social/ physical/mental health) and work very hard.</p> <p>However, I always advise (no matter at what level) that they treat all Skills for Life tests as they would the driving test ie passing the test is merely the beginning- because none of the tests are equivalent to the grades that they are matched too- <b>How can Level 1 or 2 be, when they are 40 multiple choice questions- and the pass mark can be as low as 20 (so I've been told)?</b> I say that it means that they can operate at the level they have gained and this is a good indication that they can learn more at that level to further consolidate learning.</p> <p>I would say that there is a big jump from E3 Numeracy to L1, as many learners who gain E3 easily do struggle with L1. The opposite is true, in my experience, with Literacy where L1 is easier than E3- mainly because at L1 learners do not have to 'put pen to paper' merely mark a lottery style exam paper (which seems ludicrous considering it is a Literacy paper)</p> <p>I'm not sure what the future holds because Functional Skills is meant, at the moment, to be a 3 hour paper (even with the concession of taking it in 3 hourly parts)- so goodness knows how we will cope with the transition.</p>

7	<p>Re Q4 – there is the keyskills level 2 which is actually what is currently equivalent to GCSE grade C and has the portfolio element! Most of our grade C students can pass the portfolio part of the key skills but many of them don't pass the exam. Some of our grade E students do however pass the exam.</p> <p>I would not want to lose the multiple choice nature of the exam as it enables the questions to focus on the method/process in a way which GCSE questions often don't (hence the different students who succeed on one rather than the other)</p> <p><i>I do find that our ESOL (and other non-native speakers) often have problems with the wording of the questions rather than the maths – though the multiple choice nature of the answers means that many can work out which answer is required in a way that they cannot in GCSE. The language problems do mean that they cannot complete as many questions in the time.</i></p> <p>I don't see much benefit in having a longer exam.</p> <p>There might be mileage in looking at easier questions but with negative marking (the current system means some students pass because of lucky guesses). Currently 2 answers are usually "easy" to exclude – I think they should attract negative marks, the other possible answer be neutral and then the correct answer perhaps +2. The rationale for this is that eg a student who picks a value for a mean/median etc that is outside the range or at the extremes of the data clearly has either guessed or does not understand the topic!</p>
8	<p>The main cause for concern for my level 2 numeracy learners is the pressure of time. They often find that they have to guess the answers to the last few questions. I feel that an increase in the time allowed to complete the test and an increase in the pass mark would give more value to the Level 2 qualification. A change from multiple choice questions to GCSE style questions would also allow the learner to be credited for correct choice of calculation and they could also be credited for accuracy in their implementation of the calculation.</p>
9	<p>I do not think they are equivalent to a GCSE a/b grade. It may just scrape through a c grade but even then some concepts need to be included in the level 2 such as Algebra and constructing angles.</p>

10	Unfortunately we do not have the test in Wales now although we still enter students for the Level 2 Adult Numeracy qualification. I would like to see it offered instead of GCSE Maths for those students struggling with maths (with the amendments of question 4) because I think it provides a far better focus for the student on improving numerical skills.
11	I feel that some questions should be included which allows the learners to show their understanding of a topic-hence show their working out on how they have actually attained the answer.
12	Although the pass mark is low, there is a big jump from level 1 to level 2. It boosts students' confidence when they pass at level 2, and Level 2 is a useful starting point if they like maths and want to go on to a GCSE
13	I think that it doesn't adequately prepare students for GCSE which many aspire to and also the multiple choice format does not encourage thoughtful working or understanding.  There is a problem with the large leap from Level 1 to Level 2 which is not recognised in the way government funding is allocated. Could lead to a very mechanistic teaching of maths.
14	<i>It is not comparable with the GCSE, which takes two years to complete, not 75 minutes. I feel that the questions are about Key Stage 3 level and was the sort of maths I was doing at the start of secondary school.</i>
15	Change the nature of the test by giving questions to show the working out instead of giving multiple choice questions. I think multiple choice questions do not help to assess the Functional Maths skills of learners.
16	Should have method marks as well as marks for the correct answer if not multiple choice.  <i>Questions are often unnecessarily complicated, each question should be testing 1 skill only.</i>



19	it should be more varied and not just multiple choice.
20	<p>I think that the level 2 works reasonably well but the pass rate is too low – you could pass it without being able to interpret data or work with averages, or possibly percentages.</p> <p>I use it as a precursor for many to doing the GCSE. We have encouraged learners to take the level 2 prior to doing the higher GCSE in many cases.</p> <p>Equivalence is difficult. Those with a D at GCSE fail to achieve level 2 unless given tuition often over a year, in fact many with a C gained 5 years ago fail.</p> <p>It does test if someone is numerate i.e. able to have an idea of guessing the order of magnitude or it can't be any of the others. It does also, I feel prevent people regurgitating formulae as the questions are mainly applied as they would be in everyday life.</p> <p>I like the online versions but think they are not dyslexic friendly. We use Edexcel and the back ground colour of the screen cannot be changed, we could only make it less bright. With beveled screens, filters do not work. Not everyone has special coloured glasses.</p> <p>The almost instant results from on-line are useful for adults with the new printout for areas to work on.</p> <p><i>I do not think that we can state with confidence that someone can do something unless the exam result was 80% or more ensuring they had answered questions in all fields.</i></p>
21	<p>Readability is a big issue on this test and makes it very difficult for some students whose literacy is not high. It is also very difficult for ESOL students – some of whom have very high numeracy levels in their own language. This raises the question of the validity of the test – is it testing more than numeracy? On the other hand, numeracy in real life is found in a context, so you could argue that the Level 2 test is simulating 'getting through the language/context to find the numeracy within' and therefore a valid test.</p>
24	<p>New students often worry about the wordiness of questions, although we tutors train them to recognize the question style. Does the style of question reflect the way problems manifest themselves in real life? Would a task-oriented approach be better?</p>

	<p>I don't find the comparison with GCSE very helpful, except in the sense that:</p> <ol style="list-style-type: none"> <li>The national test is a qualification for entry into work or training or education that adults can aim for more easily than GCSE, with a smaller more 'relevant' curriculum. (to be confirmed with future provider of course)</li> <li>It gives newcomers a rough idea of the level of course</li> <li>It encourages newcomers to think of it as a GCSE equivalent</li> </ol> <p>Beyond that, I try not to pursue conversations which compare the two types of qualification, or levels.</p>
25	<p>One of the biggest difficulties my learners have is deciphering the language of the questions. Most of them are more than capable of 'doing' the maths but find they spend a lot of time trying to work out what is required.</p>
26	<p>Some of the formula questions are, in my opinion, somewhat inaccurately written when BODMAS and bracket writing has been trained in thoroughly.</p> <p>Some of the topics are very specialised and not related to everyday life, this can be off-putting to nervous candidates. EG horse height in hands.</p> <p>Many of the questions relate to require a high reading level, some require logic to be worked out using English with only a small numeracy input. This has affected learners who have English as a second language ( but who do not qualify for assistance).</p> <p>Given the variability of the various GCSE schemes I consider Level 2 gives a fair judgment on the ability to use numbers within everyday activities and provides a solid basis for teaching additional tasks,. EG the use of brackets when writing formula using Excel</p>
29	<ul style="list-style-type: none"> <li>Not all tutors teaching level 2 tests have access to IT and spreadsheets. Therefore students may not be confident in their spreadsheet skills when they take the test.</li> <li>If the pass mark were raised, the people getting through the test would have sound skills to use in everyday situations.</li> <li>It is not helpful to compare the level 2 test and GCSE. The former aims to give adults practical skills that they can apply</li> </ul>

	<p>outside the classroom, the latter aims to prepare learners for higher level mathematics.</p> <ul style="list-style-type: none"> <li>It will be interesting to see what happens when functional skills are introduced across the board. At present there is a lot of 'teaching to the test' taking place. In future tutors will have to ensure that learners understand the underlying concepts.</li> </ul>
30	<p>I find it very strange that Application of Number Level 2 which involves passing the exam and completing a portfolio is equivalent to the Adult Numeracy Test. What is the point of anyone doing AoN apart from funding?</p> <p>In schools now they the students who are border line for % a-c's are taking the Adult literacy and Numeracy at level 2 and being told that if they pass both it counts as another GCSE at B grade!</p>
31	<p>As a tutor it goes against the grain to deliver the sessions solely to pass the test. As people are passing it at the low level the quality will always be poor. If only half the skills are needed to pass the test then that person cannot be deemed competent at level 2 unless they pass with a mark of at least 35.</p>
33	<p>There seems to be a disparity between the online tests and the paper based tests.</p> <p>It is possible to pass the online test without reading a question and randomly selecting the answer. I know that statistically this is highly unlikely but it is possible as is any multiple choice paper.</p>
34	<p>It is a grade c in numeracy but not in anything else such as algebra or geometry or handling data</p> <p>There should be a pass mark at about 28 and it should be stuck to</p>

37	<p>The two main problems are the excessive wordiness of the questions and the fact that students get no credit for working or follow-through.</p>
38	<p>For many adult (1<sup>st</sup> &amp; 2<sup>nd</sup> language students) there is too much text to rear, re-read and absorb for them to be able to work through this test in anything like the allocated time-scale. Passing such a test should not be equated with confident use of appropriate skills. Anything else, of course, becomes a more expensive option!</p> <p>Because the tests have become available 'on demand' with questions drawn from a bank of materials, no 'Past Papers' can be kept. I invigilated a recent exam and noticed that some of the questions had changed in style and content from the older papers and sample papers which are all we have to work with to prepare students for this test.</p>
39	<p>I think the Level 2 tests are quite ok.</p>
40	<p>The language used is very difficult for ESOL and Skills for Life learners to access in the time allocated.</p> <p>It actively discourages learners from calculating percentages in non standard methods through the specific way they look for checking calculations.</p> <p>It does not test a learners ability to draw accurately graphs, charts etc. and it currently does not assess knowledge of probability.</p>
42	<p>The text does not reflect the curriculum in some respects;</p> <ul style="list-style-type: none"> <li>-does not include questions on Shape (except "packing" which is not in the curriculum) or</li> </ul> <p>Probability.</p> <ul style="list-style-type: none"> <li>-questions are at a level which I think is above that currently set out in the National Standards</li> <li>-the gap between Level 1 and Level 2 tests is too wide for a lot of learners- most can get</li> </ul> <p>through level 1 easily, most struggle at Level 2.</p> <ul style="list-style-type: none"> <li>-many learners have said that even though they achieved a pass at Level 2, they would struggle to repeat it just a few months later- and</li> </ul>

	<p>still find some tasks (as those you've described above) difficult in "real life".</p> <p>-the tests seem to have got more difficult in the last 12-18 months, yet most of the materials available for practice have not (the exception being the harder L, M and N tests ecently put on Move On). Standard teching materials (BKSB, Adult Basic Skills text books, Skillsworkshop material) do not generally go up to the level of the current test questions.</p> <p>The best method for many, especially if they want/need qualifications quickly, is to do as many (harder) practice tests as possibe.</p> <p>-all this means you either need a lot more time to get learners from Level 1 to Level 2 if they are to attain a good level of understanding OR you "teach to the tests" and get them used to the type of question they will get (not ideal and not what the SFL strategy intended, I suggest).</p> <p>-having said all that, I think Level 2 should be this difficult if it is to be an <input type="checkbox"/> "equivalrnt GCSE" (given that it only covers about 50% of the GCSE syllabus.) It's Level 1 that needs to be made more difficult to "bridge the gap" more easily.</p>
43	<p>National test is a test of students' reading ability and not primarily mathematical ability. This causes difficulty for ESOL students whose maths is good but the language of the questions is convoluted.</p>
44	<p>An apparently significant difference between the Level 2 Adult Numeracy Core Curriculum and the KS4/GCSE curriculum is that the latter involves algebra.</p>
45	<p>The questions where the candidate has to select the 'correct' method of calculation as decided by the examiner are quite challenging. <b>If the candidate is able to answer them correctly it demonstartes a fairly level of understanding.</b> However failing to answer correctly does not necessarily mean that the candidate cannot deal with a similar problem using their own method.</p> <p>In Qn2 above I don't consider that L2 Numeracy is comparable to GCSE. However, where the two contents do overlap, I would</p>

	consider Level2 to be equivalent to borderline Grade C GCSE
47	<i>The on screen version disadvantages learners as they cannot highlight the script and many find it difficult to read from the screen for 1.25 hours without a break</i>
48	<p><i>Firstly, my level 2 learners are not daft and do query the low pass marks such as 18/40. Why ask people to sit a test in which they are expected to perhaps only be able to answer half the questions in order to show competence at this level? This can also be counterproductive after tutors have spent time and energy improving their learners' confidence. They need a test which they value and currently the majority of my learners don't. Many of them progress to a Maths GCSE as they see this as absolute proof of their ability.</i></p> <p>I aim not just to teach methods but also to teach learners how to make connections between different areas of maths, become proficient at problem solving and independent study. This prepares them to either study at a higher level in any subject or move forward in their employment. As their course progresses, they see the value in this and I get far more pleasure in seeing this success than them passing the National Test. There is always great excitement when a learner reports back to me that they have been able to use their maths skills, for example by helping their children with homework. It is a real shame we can't recognize this in some way.</p> <p><i>I have worked with a large number of employers over the past few years and they have quite specific needs in terms of our teaching of maths. They all agree to putting learners through the National Test to help my funding/targets but in reality they don't value the tests. The reason for this is simple – they have experienced new employees who have been 'taught to the test' on a short course but are not proficient in the skills needed in the workplace at this level and I work very closely with these employers to ensure we teach what they need. After several years now of National Tests, employers know they cannot employ a person on the basis that they have passed the level 2 test – they know it does not guarantee competence at this level.</i></p> <p><i>The test fails both learners and employers and I have yet to meet a numeracy tutor who likes them.</i></p>
49	<i>It has its weaknesses but it serves its purpose quite well, is objective, cheap, easy to administer, gives instant results; any alternative is likely to be more subjective, time-consuming etc.</i>
50	<i>Multi choice format is very limiting. Cannot give method marks.</i>
51	<i>A good benchmark but wording of questions is difficult.</i>
52.	<i>52 Level 2 Numeracy is used as an entry qualification for nursing. A 50%</i>

	pass mark cannot guarantee knowledge of any topic of the curriculum. Nurses need to be 100 % accurate in calculations on the ward. The questions are too wordy, making the numeracy test a test of literacy too.
53	The language used for the test is sometimes very weighty and difficult for ESOL students to cope with. These students may be very good at maths, but language is not so good.
54	I would like to see more extended questions requiring some problem solving skills rather than multiple choice answers.
55	Some test questions are very badly written mathematically, so that students could arrive at a wrong answer having made reasonable rounding decisions. ESOL students often struggle with the complexity of the question rather than the maths, so it is just as much a test of literacy as numeracy. ESOL learners could be helped with the use of good graphics to illustrate the questions and help them interpret the more unusual words. The pass mark is very low, so you can't guarantee that a student who has passed is able to operate successfully at Level 2.
56	<p>I think the level 2 test is easy to pass for the street wise experienced student with common sense, good practical skills with money, (whatever their mental algorithms are), good estimation skills and appreciation of practical value of units. A little subject knowledge is then all that is required. A good exam technique for multi-choice question papers is essential. I have had many students with insufficient knowledge for GCSE papers get by with inspired guesswork and common sense. Difficult qualities to teach! Reading ability is important or if allowed a reader, listening skills and intelligent use of the reader.</p> <p>I try to concentrate on place value, equivalence of fractions, percentages and decimals, estimation skills, and sheer knowledge of meaning of words area ,perimeter, volume, mean and range when preparing students for key skills exams. This would be pitifully little for a GCSE exam.</p> <p>On the other hand many a GCSE student with a C grade or perhaps even a B cannot pass the numeracy exam because of lack of the skills I have listed, even though their algorithms for calculations, and statistics, their angle work and their trig and pythagoras is all hunky dory! Just as well they don't have to pass the exam to get the key skill! They get a proxy with the GCSE result.</p>
57	<p>Forces students to read the info correctly-which is good.</p> <p>Too much emphasis on ratio type questions-bad</p> <p>Big gap between standard of L2 and L1</p>
58	Currently there seems to be a discrepancy between the practice tests I give my students and the tests that they end up doing

## Appendix 5 Questionnaire

Dear Colleague

Please can you take a few moments to answer the following questions for a research project I am completing as part of my Level 5 course at Hallam University.

The questionnaire is anonymous and the results will be included in my report and may be published on my website.

1. I consider the pass mark of Level 2 Numeracy tests to be

Much too high	Too high	About right	Too low	Much too low

2. What GCSE grade do **you** think the current Level 2 test should be considered equivalent to?

A	B	C	D	E	F	Can't compare them

3. If an employer gives a student who has just passed a level 2 numeracy test a job, how confident should s/he be that the student will be able to successfully complete the following tasks?

	Very confident	Quite confident	Mildly confident	Not very confident	Not at all confident
Enter a formula in a spreadsheet					
Calculate VAT on a bill					
Draw a pie chart					
Add the months petty cash total					
Calculate fuel consumption of the works van					

4. Which of the following could improve the quality of the Level 2 qualification? (tick as many as you agree with)

Assessed coursework / projects	
Replace multi choice questions with single answer questions	
Increase pass mark	
Increase time limit of test	
Increase the readability of the questions	



5. Would you like to make any comments about the Level 2 Numeracy test?

6. Please tick the qualifications you currently prepare your students for.

GCSE Maths	
Level 2 Numeracy	
Level 1 Numeracy	
Entry Level Numeracy	
Key Skills Numeracy	

7. Please tick the sectors you currently work in (tick all that apply)

Further Education	
Work Based Learning	
Adult and Community Learning	
Skills for Life	
Key Skills	

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