



General Certificate of Secondary Education

Information and Communication Technology 3521/3527

Specification A

Report on the Examination

2006 examination - June series

- 3521 Full Course
- 3527 Short Course

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Full Course

Foundation Tier (3521/F)

General Comments

This year for the first time, all four papers (**Full Course** - Foundation and Higher Papers and **Short Course** - Foundation and Higher Papers) were marked on-line. This was part of a general AQA strategy to increase the use of e-marking.

E-marking involves the following processes:

1. Scripts are sent to a specialist centre to be scanned.
2. Scripts are scanned and electronically cut into clips (clips are usually part of a question e.g. 1(c))
3. These clips are down loaded and marked by an examiner (one part of a question at a time – i.e. all 1(c)'s will be downloaded until the examiner asks for another question).

As questions are marked on-line, it is easy to collect a range of statistics on each part of each question as well as those relating to the whole paper.

General Comments

The standard of performance from the candidates in the written paper continues to improve slightly each year. However, it must be remembered that in this specification, there are elements of the theory that are difficult to teach through the practical coursework alone. These may be best taught by separate theory lessons or as starters or plenaries in practical lessons.

As in previous years, the statistics indicate most of the paper appeared accessible to the majority of candidates. The highest grade that can be awarded on the Foundation Tier is grade C but quite a few candidates scored very high marks on this paper. Unless these candidates scored badly in both parts of the coursework, entry at the higher tier should have been considered.

Question 1 (Multiple Choice Question)

As software packages continue to develop, the features that are associated with each continue to 'blur' a little at the edges. This was taken into account when this question was marked and candidates were given credit for appropriate answers.

Part (a) of this question was quite well answered and although the majority of candidates scored one or two marks, very few scored both marks. Many candidates missed the use of tabulation as an important feature that any word processing package should allow.

In parts (b) and (c) candidates also showed a clear understanding of the features of both a charts package and a graphics package. Nearly all scored one or two marks in both parts of this question.

In part (d) at least some of the features of a spreadsheet were understood by all most all of the candidates and very few failed to gain at least one mark for this part of the question. A common incorrect answer was 'Tables to be linked together'.

Question 2

Part (a) of the question was well answered by most candidates and the vast majority of them had at least a good knowledge of a range of input, output and storage devices. Many candidates gained seven or more marks on this part of the question.

The most common errors were:

- 'Hard disk' drive being given as an input device
- 'Graphics digitiser' being given as an input or storage device.

Sadly in part (b), few candidates seemed to be familiar with the term volatile and good explanations were rare.

Question 3

The application of spreadsheets seems familiar to the vast majority of candidates. As a result parts (a), (b) (c) and (d) of this question were well answered by many candidates from most centres.

However, part (e) was, again, less well answered with just more than a half of the candidates able to give a sensible advantage of using a spreadsheet in this situation. Amongst the sensible answers that gained marks for part (e) were:

- Less chance of ‘human error’
- Easier/faster to change/edit
- Replication of formulae can save time and improve accuracy.

Question 4

This was quite well attempted by many of the candidates, as this is now a familiar type of question. However, as was the case last year, full marks were surprisingly rare. Candidates who did not score well on this question usually did one or more of the following: -

- They gave too few boxes (or similar) to fill in each part of the form.
- They did not give enough fields to score well on this question (most of a page was left for the answer and the question was out of eight marks)
- Candidates failed to indicate when the pet rather than the owner was being considered. For example, Name rather than Pet Name often appeared half way down the form.
- As in previous years they gave some fields that were wrong/irrelevant e.g. National Insurance Number, Name of Doctor. Whilst this did not directly lose any marks it did not gain marks.

Question 5 (Multiple Choice Question)

Although the multiple choice questions on software were well answered by most candidates, they found the questions on the Data Protection Act much more difficult.

- (a) In this part of the question, very few candidates could identify both of the rights given to data subjects.
- (b) The idea of data users seemed more familiar to candidates with most candidates giving at least one but very few giving all three.

Question 6

Part (a) of this question was very well answered and many candidates were able to score two or three marks. Despite similar questions on advantages/disadvantages of using the Internet being asked on previous papers, many candidates still try to give vague answers such as faster, cheaper and easier with little if any qualification. As a result far less candidates scored both marks for part (b) or part (c) of this question. Some candidates did not read the question carefully enough and gave **advantages** or mixed up customer and company.

Question 7

The answers to many sections of part (a) were quite disappointing. Despite candidates completing an AQA-set assignment and a final project, many candidates were unable to identify which section many of the items described would belong in. Very few gained eight, nine or ten marks. Clearly candidates had some knowledge of the system life cycle as many were able to score four or more marks but many struggled on the following sections:

- (i) Carrying out a feasibility study

- (v) Identifying the problems that need to be solved
- (vii) Preparing a test plan
- (ix) Setting up performance criteria

In part (b), the concept of data validation being a process that takes place **on input, by software** to check that data is **sensible**, is not well understood by the vast majority of candidates. Very few candidates gained full marks for this part of the question.

More disappointing still, is the fact that in part (c) very few candidates could name one or two data validation checks.

Question 8

Overall, this database related question was quite well answered and this could relate to the increasing number of candidates who attempt a system project in their coursework that is centred around a database solution to the problem.

It was a little surprising that in part (a) which around half the candidates could not identify and explain why 9999 was an obvious mistake. Even without a clear understanding of data validation, it was felt most candidates would be able to identify this figure as being well outside any normal/typical figure for this specification of computer (relative to the others).

Parts (b) and (c) were well answered and around three quarters of candidates could identify the number of records/fields in the database given.

In part (d)(i), encouragingly, most candidates could identify the key field as Product ID. However, in part (d)(ii), less than a quarter could explain the reason why this would be suitable to use as a key field.

In part (e), three quarters of candidates gave the correct result for the required search.

In part (f), candidate's knowledge of the purpose of coding was mixed and quite a number still see this as 'hacker' related. In part (f) (ii), only a third of candidates could give a sensible disadvantage of coding. On the other hand, some centres, clearly taught the benefits of coding data and candidates may even have used this in their projects.

Question 9

Candidates were able to tackle part (a) of this question on User Interfaces quite well, with many gaining at least one mark. However, very few were able to describe one advantage of a graphical user interface.

Higher Tier (3521/H)

General Comments

The standard of performance from the candidates in the written paper was similar to that of last year. The mean for this year's paper was quite a bit lower than last year, indicating many candidates found this year's paper more demanding. It must be remembered that in this specification, there are elements of the theory that are difficult to teach through the practical coursework and these may be best taught in separate theory lessons. Again, most of the paper was accessible to the majority of candidates and it was very rare to see parts of the paper left not attempted. The vast majority of the candidates were entered for the correct tier and as in previous years low marks were rare.

Question 1

Parts (a), (b) and (c) of this question were very well answered by the vast majority of the candidates and full marks were quite common. Candidates at this level had a clear idea of a range of input, output and storage devices.

Part (d) was less well answered. Although many scored at least one mark, only just over half gained full marks. It was evident candidates were familiar with e-mail but many found it difficult to define without just using the term e-mail or just expanding it to electronic mail.

Question 2

The answers to many sections of part (a) were quite well answered. Candidates clearly benefited from completing an AQA-set assignment and a final project. About half of candidates were able to gain eight, nine or ten marks. Clearly candidates had knowledge of the system life cycle, as the vast majority were able to score four or more marks.

Part (b) was less well answered and many candidates only showed a superficial understanding of the **testing** stage. Outline answers that gained marks for this section included:

- Using **test data** ...
- From a **test plan** ...
- Using a range of data including **typical/extreme/erroneous** (at least one of these)
- Using the **predicted/expected results** ... (from the test plan)
- **Compare** these with the actual **results** ...
- **Modifications** made if needed to ...

Question 3

The application of spreadsheets at this level seems very familiar to the vast majority of candidates. As a result parts (a), (b) (c) and (d) of this question were very well answered by the vast majority candidates (over 95% gaining full marks in parts (a), (b) and (d)).

However, part (e) was again, less well answered with just a fifth of the candidates able to give two sensible advantage of using a spreadsheet in this situation. Amongst the sensible answers that gained marks for part (e) were:

- Less chance of 'human error'
- Easier/faster to change/edit
- A range of validation advantages
- Replication of formulae can save time and improve accuracy.

Part (f) of this question was very poorly answered by almost all candidates and the concept of modelling did not seem to be well understood. This is highlighted by the fact that very few of candidates scored two or three marks.

Question 4

The answers given to all parts of this question on data logging were mixed, with some good and some poor answers. In part (a) approximately half of candidates could name a suitable sensor such as a heat sensor. More disappointingly, in part (b) only around half of candidates gave the correct answer of data logging.

In part (c), just over half of candidates could explain why using more than one sensor may be an advantage. The most common correct answers to this part of the question were,

- If one sensor was broken, reading could still be taken.
- The idea of an ‘average’ reading from more than one sensor.

Part (d) was quite well answered with many of candidates gaining one or two marks.

The idea of calibration was not well understood by the vast majority of candidates with very few gaining both mark for this part of the question.

Question 5

Operating Systems is one of those sections that may well need to be taught by centres as part of a theory lesson. There is evidence that more centres are spending more time dealing with this part of the specification. This year many candidates were able to give at least one task carried out by an operating system, although few were able to gain full marks by describing at least four tasks.

Question 6

Many parts of this database related question were well answered and this could relate to the increased number of candidates who attempt a system project in their coursework that is centred around a database solution to the problem.

It was a little surprising that in part (a) (i) that around third of the candidates could not identify and explain why 9999 was an obvious mistake.

In part (a) (ii), many candidates were able to gain a mark for describing a method of validation such as a range check. However, few candidates gained full marks by going on to explain one of the following highlighted points that data validation is a process that takes place **on input, by software** to check that data is **sensible**.

In part (b), candidates’ knowledge of the purpose of coding was mixed and quite a number still see this as ‘hacker’ related. In parts b (i) and (ii), only around half of the candidates gained full marks for giving sensible advantages and disadvantage of coding data.

In part (c) (i), encouragingly, many candidates could identify the key field as Product ID. Then, in (c) (ii), around two thirds of candidates were able to go on and explain the reason why this would be suitable to use as a key field.

The correct results of the searches in parts (d) (i) and (d) (ii) were common but candidates sometimes failed to give both fields in part (ii).

Answers to part (e), where candidates had to give the instruction to produce quite a complex list were disappointing, with few candidates gaining full marks. Most candidates lost marks for one or more of the following errors:

- Failing to use the correct field title given in the database e.g. Price or Price of each instead of **Price of each (£)**.
- Putting the instruction in the wrong place in the sequence e.g. List Product ID **For** Price of each (£).
- Lack of clarity about which field was being used in the search
- Lack of clarity about which operator was being used in the search

Question 7

Candidates were able to tackle part (a) of this question on User Interfaces quite well, with most gaining at least one mark. However, few were able to describe one or two advantages of a graphical user interface in part (b). Around half the candidates were able to name at least one other type of user interface in part (c).

Question 8

This year's essay-style question was well answered by many candidates who clearly had experience of online shopping. In part (a) many candidates were able to describe several sensible advantages to both the companies and their customers, with an outline of the most common correct ones being: -

Advantages to the company

- Cheaper because... (**not just cheaper**)
 - Less staff to pay
 - No fancy shop to pay for etc.
 - To advertise from the web page
- Faster to ... (not just faster)
 - E-mail customers rather than mail them about....
- World wide market rather than a local one.
- Create an e-business
- Shorter hours become possible for staff
- Sales at any time of the day (24/7 sales)
- Can deal with more people at the same time
- Reduce/eliminate/less shop lifting

Advantages to the customer

- Cheaper because company overheads reduced (any named one)
- Can order 24/7
- Can order without leaving the house (without leaving the comfort of their own home was a common phrase)
- Wider range of products (i.e. US or Japanese versions)
- No petrol/transport costs
- Quicker to search for the items they want
- Common items/lists can be saved and reused

Unfortunately, some candidates identified one advantage and then rephrased, restated or continued to expand the same advantage repeatedly. Eventually they ran out of time or paper and scored few marks. Although almost all candidates scored some marks in this question full marks were quite rare.

Overall candidates found it easier to give disadvantages to shopping on-line (maybe because they only had to give four). They were also more 'standard' disadvantages involving hackers/viruses/computer and Internet problems. An outline of the most common correct answers are given below.

b) Disadvantages to company

- Local people might not know you are there
- Staff can waste time just surfing the net
- Access/ISP can cost money
- Virus issues
- Hacking issues/fraud
- May cause unemployment – **leading to redundancy payments**
- Fear of buying due to credit card security would cut sales
- Not everyone has access to Internet/computers
- Cost implications of running an on-line shop such as training staff/consultancy

- Internet problems/system failure – prevents shop operating

Disadvantages to the customer

- Slower to get goods, rather than getting it from a local shop
- Game may not work when it arrives and it is slower to get replacement.
- Danger of fraud/hacking credit card details given on-line/identity theft
- Restricted access if computer broken/no computer or internet access
- Harder to check the reliability of the company, rather than a local store
- No ‘feel’ of a personal service
- Need to have a credit/debit card or similar (e.g. Pay pal account)
- Cannot try out/see goods before buying
- Possible danger of viruses

Almost a quarter of candidates gained full marks for this part of the question.

Short Course

Foundation Tier (3527/F)

General Comments

The standard of performance from the candidates in the written paper continues to improve slightly each year. As was stated last year, it must be remembered that in this specification, there are elements of the theory that are difficult to teach through the practical coursework and these may be best taught in separate theory lessons.

As in previous years, most of the paper appeared accessible to the majority of candidates. Considering the highest grade that can be awarded on the Foundation Tier is grade C, quite a few candidates scored very high marks on this paper. Unless these candidates scored badly in the AQA-set Assignment, entry at the higher tier should be considered.

Question 1 (Multiple Choice Question)

In part (a) the idea of input devices was understood by the majority of candidates from the majority of centres and many scored two or three marks on this part of the question.

As with part (a), part (b) of the question was also well answered. The idea of output devices was understood by the vast majority of candidates from the majority of centres and almost all scored two or three marks on this part of the question.

As with the other two parts of this question, part (c) was very well answered. Clearly the idea of storage media was understood by the vast majority of candidates from the majority of centres and many of them scored two or three marks on this part of the question.

Question 2 (Multiple Choice Question)

As software packages continue to develop, the features that are associated with each continue to ‘blur’ a little. This was taken into account when this question was marked and candidates were given credit for appropriate answers.

Part (a), was less well answered and although most candidates scored one or two marks, few scored both marks. Many candidates missed the use of tabulation as an important feature that any word processing package should allow.

In parts (b) and (c) candidates also showed a clear understanding of the features of both a charts package and a graphics package. Many of them scored one or two marks in both parts of this question.

In part (d), at least some of the features of a spreadsheet were understood by nearly all the candidates and approaching nearly all candidates gained at least one mark for this part of the question.

Question 3 (Multiple Choice Question)

Although the multiple choice questions on input, output, storage and software were well answered by most candidates, they found the questions on the Data Protection Act much more difficult.

In part (a) of the question, few candidates could identify both of the rights given to data subjects.

The idea of data users seemed more familiar to candidates and although few of them could give all three rights, many could give at least one right.

Similarly, the idea of exemptions was not clearly understood by many candidates and less than half of them gained any marks for this part of the question.

Question 4

Similar questions on word processing or DTP packages have appeared on past papers, so although most candidates gained at least one mark on part (a), it is surprising that few gained full marks.

Many candidates were able to give one reason why the student may still use handwriting for at least part of their coursework but very few gained both marks. The most common correct answers included,

- Can work from anywhere when handwriting
- Computer may breakdown/viruses/don't like computers/cannot use computers well
- Neater/easier for them to produce/label diagrams

Question 5

This was quite well attempted by many of the candidates, as this is now a familiar type of question. However, as was the case last year, full marks were surprisingly rare. Candidates who did not score well on this question usually did one or more of the following: -

- They gave too few boxes (or similar) to fill in each part of the form.
- They did not give enough fields to score well on this question (most of a page was left for the answer and the question was out of eight marks)
- Candidates failed to indicate when the pet rather than the owner was being considered. For example, Name rather than Pet Name often appeared half way down the form.
- As in previous years they gave some fields that were wrong/irrelevant e.g. National Insurance Number, Name of doctor. Whilst this did not directly lose any marks it did not gain marks.

Question 6

This question was well answered and just over two thirds of the candidates gained full marks for this question. A number of candidates ended up with the correct shape but it was either rotated or reflected (in some cases both). As most of the instructions were followed correctly, these often ended up with only a penalty of one mark.

Question 7

The application of spreadsheets seems familiar to the vast majority of candidates. As a result parts (a), (b) (c) and (d) of this question were well or quite answered by many candidates from most centres.

However, part (e) was again less well answered with just under half of the candidates able to give a sensible advantage of using a spreadsheet in this situation. Amongst the sensible answers that gained marks for part (e) were -

- Less chance of 'human error'
- Easier/faster to change/edit
- Replication of formulae can save time and improve accuracy.

Question 8

Part (a) of this question was very well answered and nearly all candidates were able to score two or three marks. Despite similar questions on advantages/disadvantages of using the Internet being asked on previous papers, many candidates still try to give vague answers such as faster, cheaper and easier with little if any qualification. As a result far less candidates scored both marks for part (b) or part (c) of this question. Some candidates did not read the question carefully enough and gave **advantages** or mixed up customer and company.

Question 9

The answers given to all parts of this question on data logging were mixed, with some good and some poor answers. In part (a) around one in five of candidates could name a suitable sensor such as a heat sensor. More pleasing, was the fact that most candidates could choose the correct answer of data logging from the list given.

Both part (c) (i) and (c) (ii) were not well answered and very few candidates could explain what was meant by period of logging.

Candidates however, had a much clearer idea of possible advantages of collecting data automatically and more than two thirds of them gained at least one mark for part (d).

Question 10

Overall, this database related question was quite well answered and this could relate to the candidates, familiarity with the use of a database as part of the coursework in the AQA-set Assignment.

It was a little surprising that in part (a) that less than half the candidates could not identify and explain why 9999 was an obvious mistake. Even without a clear understanding of data validation, it was felt most candidates would be able to identify this figure as being well outside any normal/typical figure for this specification of computer (relative to the others).

Parts (b) and (c) were well answered and many candidates could identify the number of records/fields in the database given.

In part (d) (i), around half of candidates could identify the key field as Product ID. However, in part (d) (ii), few could explain the reason why this would be suitable to use as a key field.

There were many good answers to part (e), where candidates had to give the results of a specific search and many gained at least one mark.

Question 11

In part (a) candidates clearly knew the term password and many could give at least one sensible piece of advice when choosing a password. However, very few candidates could give a reason why passwords should be changed regularly.

Higher Tier (3527/H)

General Comments

The standard of performance from the candidates in the written paper continues to improve slightly each year. As was stated last year, it must be remembered that in this specification, there are elements of the theory that are difficult to teach through the practical coursework and these may be best taught in separate theory lessons. Again, most of the paper was accessible to the majority of candidates and it was very rare to see parts of the paper left not attempted. The vast majority of the candidates were entered for the correct tier and low scores were rare.

Question 1 (Multiple Choice Question)

In part (a) the idea of input devices was very well understood by the majority of candidates from the majority of centres and the vast majority scored two or three marks on this part of the question.

As with part (a), part (b) of the question was also well answered. The idea of output devices was understood by the vast majority of candidates from the majority of centres and the vast majority scored two or three marks on this part of the question.

As with the other two parts of this question, part (c) was very well answered. Clearly the idea of storage media was understood by the vast majority of candidates from the majority of centres and many scored two or three marks on this part of the question.

Question 2 (Multiple Choice Question)

As software packages continue to develop, the features that are associated with each continue to ‘blur’ a little. This was taken into account when this question was marked and candidates were given credit for appropriate answers.

Part (a) of this question was less well answered and although many candidates scored one or two marks, less than half scored both marks. Many candidates missed the use of tabulation as an important feature that any word processing package should allow.

In parts (b) and (c) candidates also showed a clear understanding of the features of both a charts package and a graphics package. Nearly all scored one or two marks in both parts of this question.

In part (d) least some of the features of a spreadsheet were understood by all most all of the candidates and nearly all gained at least one mark for this part of the question.

Question 3 (Multiple Choice Question)

Although the multiple choice questions on input, output, storage and software were well answered by most candidates, they found the questions on the Data Protection Act much more difficult.

In part (a) of the question, less than one in ten of the candidates could identify both of the rights given to data subjects.

In part (b) the idea of data users seemed more familiar to candidates and although only around a quarter of candidates could give all three rights, most could give at least one right.

In the final part of this question the idea of exemptions was not clearly understood by many candidates and under half of them gained both marks for this part of the question.

Question 4

This was well attempted by many of the candidates, as this is now a familiar type of question. However, as was the case last year, full marks were surprisingly rare. Candidates who did not score well on this question usually did one or more of the following: -

- They gave too few boxes (or similar) to fill in each part of the form.

- They did not give enough fields to score well on this question (most of a page was left for the answer and the question was out of eight marks)
- Candidates failed to indicate when the pet rather than the owner was being considered. For example, Name rather than Pet Name often appeared half way down the form.
- As in previous years they gave some fields that were wrong/irrelevant e.g. National Insurance Number, Name of doctor. Whilst this did not directly lose any marks it did not gain marks.

Question 5

The application of spreadsheets seems familiar to the vast majority of candidates. As a result parts (a), (b) (c) and (d) of this question were well answered by many candidates from most centres.

However, part (e) was again, less well answered with few candidates able to give two sensible advantages of using a spreadsheet in this situation. Amongst the sensible answers that gained marks for part (e) were:

- Less chance of ‘human error’
- Easier/faster to change/edit
- A range of validation advantages
- Replication of formulae can save time and improve accuracy.

Question 6

The answers given to all parts of this question on data logging were mixed, with some good and some poor answers. In part (a) under half of candidates could name a suitable sensor such as a heat sensor. More disappointingly, in part (b) less than a half of candidates gave the correct answer of data logging.

In part (c), just over half of candidates could explain why using more than one sensor may be an advantage. The most common correct answers to this part of the question were,

- If one sensor was broken, reading could still be taken.
- The idea of an ‘average’ reading from more than one sensor.

Part (d) was quite well answered with many candidates gaining one or two marks.

The idea of calibration was not well understood by the vast majority of candidates and very few gained both marks for this part of the question.

Question 7

The answers to many sections of question were quite well answered. Candidates clearly benefited from completing an AQA-set assignment. About three quarters of candidates were able to gain three, four or five marks.

Question 8

Overall, this database related question was quite well answered and this could relate to the candidates’ familiarity with the use of a database as part of the coursework in the AQA-set Assignment.

It was a little surprising that in part (a) that almost half the candidates could not identify and explain why 9999 was an obvious mistake. Even without a clear understanding of data validation, it was felt most candidates would be able to identify this figure as being well outside any normal/typical figure for this specification of computer (relative to the others).

In part (b) (i), many candidates could identify the key field as Product ID. However, in part (b) (ii), only just over half could explain the reason why this would be suitable to use as a key field.

The correct results of the searches in parts (c) (i) and (c) (ii) were common but candidates sometimes failed to give both fields in part (ii).

Answers to part (d), where candidates had to give the instruction to produce quite a complex list were disappointing, with very few candidates gaining full marks. Most candidates lost marks for one or more of the following errors:

- Failing to use the correct field title given in the database e.g. Price or Price of each instead of **Price of each (£)**.
- Putting the instruction in the wrong place in the sequence e.g. List Product ID **For** Price of each (£).
- Lack of clarity about which field was being used in the search
- Lack of clarity about which operator was being used in the search

Question 9

This year's essay-style question was well answered by many candidates who clearly had experience of online shopping. In part (a) many candidates were able to describe several advantages to both the companies and their customers, with an outline of the most common correct ones being: -

Advantages to the company/shop

- Cheaper because... (**not just cheaper**)
 - Less staff to pay
 - No fancy shop to pay for etc.
 - To advertise from the Web page
- Faster to ... (not just faster)
 - E-mail customers rather than mail them about...
- World wide market rather than a local one.
- Create an e-business
- Shorter hours become possible for staff
- Sales at any time of the day (24/7 sales)
- Can deal with more people at the same time
- Reduce/eliminate/less shop lifting

Advantages to the customer

- Cheaper because company overheads reduced (any named one)
- Can order 24/7
- Can order without leaving the house (without leaving the comfort of their own home was a common phrase)
- Wider range of products (i.e. US or Japanese versions)
- No petrol/transport costs
- Quicker to search for the items they want
- Common items/lists can be saved and reused

Unfortunately, some candidates came up with one advantage and then rephrased, restated or continued to expand the same advantage repeatedly. Eventually they ran out of time or paper and scored few marks. Although almost all candidates scored some marks in this question full marks were rare.

Overall candidates found it easier to give disadvantages to shopping on-line (maybe because they only had to give four). They were also more 'standard' disadvantages involving hackers/viruses/computer and internet problems. An outline of the most common correct answers is given below -

b) Disadvantages to shop

- Local people might not know you are there
- Staff can waste time just surfing the net
- Access/ISP can cost money
- Virus issues
- Hacking issues/fraud
- May cause unemployment – **leading to redundancy payments**
- Fear of buying due to credit card security would cut sales
- Not everyone has access to Internet/computers

- Cost implications of running an on-line shop such as training staff/consultancy
- Internet problems/system failure – prevents shop operating

Disadvantages to the customer

- Slower to get goods, rather than getting it from a local shop
- Goods may not work when it arrives and it is slower to get replacement.
- Danger of fraud/hacking credit card details given on-line/identity theft
- Restricted access if computer broken/no computer or internet access
- Harder to check the reliability of the company, rather than a local store
- No 'feel' of a personal service
- Need to have a credit/debit card or similar (e.g. Pay pal account)
- Can't try out/see goods before buying
- Possible danger of viruses

AQA-set Assignment

The AQA-set Assignment was completed for the fourth time on this specification, and in general the work was of the required standard. There was much more evidence to show that more candidates understood the requirements of the tasks, both in terms of the task itself but also the evidence needed to produce a documented solution to the task involved.

Analysis

Candidates were required to analyse the material sent by AQA. This was an assignment based on the Lancre Lunch Box, a sandwich shop based in the fictional town of Lancre. The requirement was that the analysis was first completed and then presented for marking, before candidate(s) moved on to design and then implement solutions. The vast majority centres did this, but a very small number did not then present this analysis as a single, combined set of pages, but chose to place the analysis for each task with the task itself. It is not acceptable for the centre to ignore the clear instruction to mark the analysis before proceeding with the rest of the work.

Analysis is defined as being about identification and categorisation; what is required is a list and no explanation of the items is expected. The list should identify the problem, state the form of the output, identify the information to be output, the data needed to produce the output and the desired outcomes and performance criteria. The candidate can identify the latter by making an explicit page and probably a line reference or by copying out or describing the data; no distinction in the marking grid is made between desired outcomes (subjective) and performance criteria (measurable). Identifying and listing them is enough.

It is essential that candidates are encouraged to use the structure and headings provided in the candidate booklet and the majority did this, giving them every opportunity to address the full range of marks in this section. On the marking criteria for 2006, the ‘all’ requirement would need all the criteria to be identified including the work being presented under the correct headings. At times there were repeats under these required headings; candidates do have to ‘state the obvious’, and many clearly had copied and pasted the requirements where needed. By defining ‘some’ as more than half altogether, a large number of candidates had the opportunity to achieve a minimum of the 7-8 mark band of the criteria, and evidence showed that many had taken full advantage of this. In general, most of the work presented on this section was appropriately marked, although the ‘all’ criteria must be borne in mind when awarding a mark of 10. Centres should note that from 2007, there will be a slight modification to the criteria definitions for this component, details for which having already been issued by AQA.

Having completed the analysis, candidates should, if required, be assisted in identifying the four tasks and their requirements. This prevented those candidates who had not done so from being disadvantaged for the next stages. It also allowed centres to manage the work of their weaker candidates. Some tasks are inherently more difficult than others and not all candidates are expected to complete all tasks, though centres should note that each task is worth the same mark. While much of the differentiation is by outcome, weaker candidates would be better advised to spend more time on the more straightforward tasks. Teachers should annotate the candidates’ work to indicate which tasks the candidates have managed to identify for themselves and if they have been helped at this stage. Centres can reveal the whole of the analysis to the candidates at this stage if they wish. They must bear in mind, however, that there is some evidence suggests that candidates who have completed their own analysis, however flawed, tend to be disadvantaged by receiving the ‘correct’ answer and then having to adjust their thinking to that presented by the analysis in the Confidential Instructions. It may be advisable to consider carefully the feedback that is to be given, particularly to the weaker candidates, who may be better directed in to completing those tasks that are more appropriate to their needs. What centres must **not** do is photocopy the confidential material and present this directly to candidates. It was pleasing to note that a number of

centres were using the Analysis mark grid issued at the Teacher Standardisation Meetings, giving clear evidence to support their awards.

Most centres did get their candidates to reorganise their analyses into the separate tasks. Most then ensured that the candidates then numbered and titled the tasks according to those given in the Confidential Instructions. This made the moderating process straightforward. While many centres used the marking grid appropriately, there were some cases where it was not completed correctly or fully for all of the candidates and a resulted in a few cases of moderators disagreeing with the way centres arrived at the final mark.

Design

The design section should include two main components together with the test plan:

- 1. Evidence of how the problem is to be solved, explaining the choices made, and**
- 2. The software that will be used and the features of the solution that make the software suitable.**
- 3. Test plan (to be credited in the testing section)**

Designs are about identifying how the work might proceed. Initial ideas as to how to solve the problem are required. These should be subsequently improved and amended as the problem, and the possible ways of solving it, become clearer. A developed design is one where an initial idea is improved, showing initial outlines and first thoughts and then progressing to an improved design, justifying any choices made.

Designs should include, where appropriate, sketches, descriptions, layout plans, suggestions for formulas and cell types and widths, field details, search criteria, reports and mail merge requirements plus validation checks, all identifying the way the output will look.

A planned design will contain enough detail to explain to a third party the requirements for the implementation, thus enabling anyone familiar with the package being used to carry out that implementation. A useful rule of thumb will be ‘... *Is there enough detail for someone else to carry out the Implementation?*’

There is no requirement in this section that candidates have to produce more than one design plan; a candidate who produces a single page plan of the requirements of a task and includes on this development and reasons for choice can score full marks for this part of the component. Similarly, other candidates who produced more than one plan of such as leaflet, and then went on to justify reasons for the selection of the final version can be given much credit even though they would still need to progress further and show development of that solution. In several of the tasks producing more than one design may lead to additional work for which no further additional credit could be awarded.

At the lower end of the design mark, candidates will choose software and describe some features of the software. As we move up the mark range these descriptions will relate more closely to the needs of the solution. The descriptions will focus on how the software solves the problem and not simply on all the things the software can do. For example, ‘I will use because it has formula’ gains limited credit (maximum 11 – 15 marks) as it does not relate to the task to be carried out. Candidates do not need to compare software for the required task, although some candidates successfully used this approach to further develop their reasoning for the choices being made.

It should also be remembered that one of the components of the higher mark boxes in the scheme requires candidates to explain their Design choices in terms of the needs of the user. For example, ‘Karen wants to be able to add new fillings so I have decided to put the bread, butter and container information at the top of the list so it will not get in the way’.

The Design section was attempted reasonably well, though some centres gave very high marks to limited design plans, and the reasoning for the selection of software was sometimes rather little weak or very generic. Candidates who only just produce an outline plan or just limited software features cannot progress beyond the 1-5 mark criteria. Candidates have to explain the suitability of this software for the particular task they are planning to undertake. This explanation needs to be as closely related to the problem as possible and whilst generic justifications can score some marks, candidates should be encouraged to relate the software choice specifically to the requirements outlined in the Analysis section. The ability to do this is enhanced if the candidate does really understand the nature of the task. Good designs were produced by candidates who gave descriptions of what they were doing as well as paper based sketches, where appropriate. These, sometimes very simple, drawn designs can be credited highly, as they can show clearly the thought processes of the candidate. Candidates should be encouraged to show how they have arrived at their final design; some candidates did not use the Design section to explain their ideas. Candidates need to do more than state their design. They must also give reasons and explanations for the particular choices they are making. It is very important that candidates use the Design section to explore and explain how they could attempt to solve the problems presented by the tasks. More expansive designs are required. Candidates need to produce detailed statements of what they plan to do to solve the problem.

The point made at centre training meetings ‘*could the plans be followed by someone else*’, needs to be emphasised again. Sketches for DTP tasks were usually satisfactory, with many candidates beginning to further develop their plan including reasons for the choices made. More candidates included designs for searches and mail merge requirements than previously, although there were still a number of candidates who failed to meet this requirement and for whom very high marks were awarded. For spreadsheet models, often there was a plan showing where data and formulae were to be used but the types of data to be used in the cells and recommended cell widths were lacking. Many candidates did provide a printout of the formulae for the spreadsheet and screen dumps of the query requirements in the Implementation section, with some candidates including the same in their Design section. It should be remembered that design work should not encroach on the Implementation section, and whilst allowance can be made for the cyclic design process, designs should not be done either retrospectively or include work that actually is evidence of the implementation.

Some candidates produced designs that described every step in the process that would be followed to complete the implementation. **This is unlikely to actually be design and is not what is required.** A design describes ways of solving a problem and does not detail each fine step.

Test plans, if required should be included in this section BUT (repeated and) credited in Testing. The design of testing plans showed some improvement on the previous year, with many candidates identifying what needs to be tested together with the production of test plans against which candidates could compare with the results of testing and come to a reasoned conclusion. Testing needs to be designed and planned, with the data, and sometimes some of the processes, given within the assignment booklet but candidates must be very clear about what they are doing and how their work is going to be tested. Candidates need to give in their plan details of the actual specific expected results as well as the data they will use to test. The plan may consist of a copy of a relevant page from the candidate booklet with an appropriate heading and the expected results highlighted or could be in the form of a list or table of expected results. Whichever way is used, the plan must contain sufficient detail to identify the results required. For example, on task 2, the cost of a cheese and tomato sandwich should show the breakdown of all the component figures and just the final total to be arrived at; each component can then be compared with those on the results of testing and a conclusion made. Candidates need to note what the input test data is and where it comes from. The criteria below further clarifies the marking criteria for this component:

1-5 May contain just an outline plan **or** just limited software feature(s).

- 11-15 Developed a ‘hand drawn’ plan which shows how the problem is to be solved; list some relevant software features and explained some design choices (which may be present in a plan and/or features).
- 21-25 Developed a good ‘hand drawn’ plan appropriate to the user’s needs; a clear justification of the relevant software features to be used and detailed explanation of the design choices and how they meet the user’s needs.

Spreadsheet design – must show some formulas/ functions to be used at the planning stage to achieve 11+	Database design – must show some of the data needed on reports/labels/mail merge documents to achieve 11+
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Implementation

For each problem, the solution design should be implemented. Implementation is about creating and using the solution. Candidates should:

- **provide evidence that the task has been implemented**
- **include earlier versions of the work to show the development of the solution and any improvements, corrections or changes from the design**
- **annotate printouts/provide written evidence to make it clear what has been done**
- **carry out changes if any tests show they are needed**

To gain high marks candidates should choose, and clearly justify, the choice of appropriate tools and techniques to solve the problem. They should develop good, planned and creative designs. They should produce clear testing plans. A test of a good design is whether or not another candidate, with a minimum of interpretation, could successfully follow the design to its conclusion.

The Implementation section was, within the ability of the candidates, done quite well, although some centres are still awarding marks in the 37-45 mark band where the implementation provided only a ‘reasonably’ complete solution, with no annotation or earlier versions shown or where an incorrect solution is produced. The Design mark plus the Implementation mark is worth 70% of the total marks for the assignment, and where there were significant alterations to the centre’s mark, it was usually because of over-marking in these areas. These reductions were usually because of the lack of detail in the candidate’s report. Examples of earlier work, showing the development of the final solution, are very valuable and are a requirement of the specification and marking criteria. Candidates should annotate this work to explain its relevance. A few examples are sufficient and candidates need to realise that showing development **is not the same as revealing errors that they imagine may be penalised**, but is a positive process and one that can only be beneficial to them. Those candidates who continually printed page after page showing the processes gone through will obtain credit often in terms of development and some evidence of annotation, but would be better advised to prepare and plan the significant stages they will produce rather than such a repetitive process.

Centres should note that candidates must fully annotate all their work, to explain how they achieved their objectives and how the solution was produced; this is also included as part of the marking criteria. Printouts should be annotated matching to the design, providing reasons for any changes and showing efficient use of software (skill being used). Where this annotation was present, it was often possible to agree readily with a centre’s mark. Without annotation from the candidate, this was more difficult and was often a reason for the adjustment of marks. Many candidates produced many pages of printout for their implementation, without any notes to indicate what the printouts were. The best candidates were able to show the development of their solutions by several annotated printouts. This annotation needs to show the candidate’s thinking as well as the processes they followed. A few notes on each page is usually sufficient.

Candidates who printed out early versions of their work and then explained how they were going to improve were credited with more marks than those candidates who simply presented final versions. These early versions provided some of the evidence to indicate that a candidate understood the work and the techniques used. With such material clearly annotated it was possible to see how the resources the candidate chose to use were appropriate and that they had been used efficiently. This will not be evidenced by the final solution alone.

Marks in the upper range are available to candidates who use appropriate resources and techniques, with a good level of skill, understanding and efficiency. They should produce the evidence in a form that is clearly the solution to the problem and carry out any modifications indicated by the testing.

There was much work in evidence on the implementation that met the criteria for the middle mark bands upwards, although there are centres who consider a reasonably complete solution, which is not annotated and where there are no earlier stages, to be worth 37 – 45; additionally some are not annotating to show how their solution was arrived at to show their efficiency. For others, even though some candidates had annotated their work, the final solution was incomplete or incorrect, but judged by the centre to be complete and correct. On a literal interpretation of the marking criteria, candidates who produce an implementation with no development or annotation shown could not score above the 1-9 marking criteria; however, evidence of the final production is more inherent in certain areas, and therefore the points below were additionally highlighted at the teacher meetings to add further clarification to the marking criteria:

- Where the design does not match the implementation, or there is no design plan, the maximum mark available for the implementation section would be 36, unless there was clear annotation to explain why the design(s) were changed. This would not penalise candidates using an appropriate cyclic design process.
- Similarly, if the software used in the Implementation is significantly different to the software explanations in the Design, then the maximum available for Implementation is 36, unless there is clear annotation somewhere to explain why the design(s) were changed
- No annotation but development showing evidence of methods of solution; maximum award 27 for all tasks.
- No annotation plus no earlier version:

DTP/WP/Website	Limit	18 (max)
Spreadsheet etc. (no formulae)	Limit	9 (max)
Data handling etc.	Limit	9 (max)

Testing

This could probably be called **checking** for the assignment. The candidate must identify and state whether testing is required or not for each problem. A test plan would identify the data needed (all in the candidate booklet) and what the actual expected results will be (again given in the candidate booklet). They should also show how the data will be used to set up the tests. Some candidates at the lower end of the mark range might describe the above but then not be able to follow their plan, or their plan might contain the correct information but be so disorganised and unsystematic that it is difficult to credit them highly. They must produce a record of the results of their tests and describe the changes they will then implement. They may describe these in their implementation section but they will need to be credited in the testing section.

Essentially testing is about entering known data and comparing the output with a pre-stated result. In a spreadsheet for example one test is by entering sample integer values, which allows a hand calculation and check to be done. One checks the rules (formulas) that are used.

In a database one predicts the outcome of a search before the search is made. This expected outcome is then compared with the output when the search is executed. The test is not of the ability of the database programme to search but tests the correctness of the data input.

Testing is an area that candidates in the past have found difficult, although for this award evidence presented in this section showed further improvement on work produced previously. If candidates understand the problem and how the solution is to be used, they seem to be better able to decide how to test their solution. They can then identify the likely errors that could arise and are able to subject their solutions to suitable tests according to a test plan.

There was evidence to show that some centres were teaching candidates how to test database solutions and spreadsheets, in preparation for these elements of the work. Testing plans should identify expected outcomes and compare those to the actual outputs. The data required for testing will be given in the assignment booklet and it is not necessary for candidates to do more than the testing required by the assignment. Many candidates limited the mark they could obtain by not providing designs for testing plans for tasks that required such plans. Some candidates described testing but provided little evidence that it had been carried out. It was not uncommon to read that the solution worked; therefore it was OK and had been tested.

Those candidates who went further than the test(s) required of them in the booklet, did so often in preparation for the more difficult testing requirements on the project; it should however be remembered that candidates do not gain any extra credit for this with full marks attainable by using the appropriate data from the Candidate Booklet. Additionally, some candidates carried out ‘tests’ but not the required ones.

For high marks, candidates have to do more than just enter their test data. They have to follow a comprehensive test plan and produce a record of the results. They then have to evaluate the results against their expected results. They should then identify any modifications required, if needed.

It should be remembered in most cases the acceptance of ephemeral evidence would not be accepted; the exception to this is the actual evidence that the hyperlinks work when carrying testing for the web page task. Candidates should indicate what is to be tested, have included a plan in the design, indicating the links between various pages, and then produced clearly labelled evidence of testing with a conclusion reached. **Teacher confirmation that the hyperlink tests work is needed.**

The criteria below further clarifies the marking criteria for this component:

- 1-2 May be awarded where candidates have printed the test results with no explanation or identification.
- 3-4 Some evidence that the testing has been attempted.
- 5-6 Must include a limited test plan (identifies limited test data and expected outcomes) and an attempt to test some results against the plan.
- 7-8 Must include a reasonable test plan (what is being tested and how, with some test data and some expected outcomes) and a test printout compared against expectations, describing any changes needed.

Website testing 1 – a complete test plan and teacher confirmation to achieve 9-10; without teacher confirmation 7-8 marks are appropriate as there is no evidence to confirm it works.	Website testing 2 – teacher confirmation alone indicates an attempt at testing by the candidate (award 1-2 marks)
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Evaluation

Evaluation still continues to be recognised as being difficult by some candidates although much improvement has been in evidence in this component. The process of being self-critical using pre-stated criteria is not easy. In this work, the identification of clear performance criteria in the analysis is fundamental to the later production of a high quality evaluation. Evaluation is more than a statement of ‘what I did’. However, for some criteria it will not be necessary to do more than indicate that these criteria have been met.

At its simplest level, evaluation is a process of reviewing what was done and what is achieved. What went wrong, and how it was dealt with, is also a feature at this level.

The performance criteria and desired outcomes are vital to success in this section. It is useful to get the candidate to cut and paste them from their analysis or a teacher provided list if that is more appropriate. (If the latter is done then the centre **must** state this on the Assignment Cover Sheet).

If a candidate has produced a poorly defined or even incorrect, performance criteria then they could be operating at a level where they were describing what they had achieved and had made some comparison with the intended outcomes. These candidates will tend to do little more than record the performance criteria or restate them. At a slightly higher level, the candidate would be trying to show how the work meets the performance criteria more directly.

To meet the requirement to be describing the effectiveness (how well they have done it) of the solution, one needs to refer to the solution as both an outcome; a total of a spreadsheet, and as a process, how correct data gets into the spreadsheet. There also needs to be a greater recognition of the overall problem being solved; a recognition that the tasks contribute to an overall solution and are not simply separate, stand alone pieces of work.

At the top end, the candidate is truly critical of the process followed and final output produced and is clearly able to evaluate the work, giving a discussion of the solution which shows some of the insights gained through developing a deeper understanding of the original problem. ‘Discussion’ has to be an ‘argument’ / comparison and take in to account other possibilities such as things the candidate could have done or alternative way(s).

On the whole the Evaluation sections were appropriately marked, with many candidates producing the desired outcomes and performance criteria as the initial part of the section and using these to produce the required reference to these outcomes, thus giving them an opportunity to address at minimum the middle area bands of the marking criteria. Some desired outcomes and performance criteria may only require simple comments and not require description or discussion and hence the points below were additionally highlighted at the teacher meetings to add further clarification to the marking criteria:

1-2 What candidates have done, unrelated to performance criteria.

Assuming candidates have listed the performance criteria for the task:

3-4 Candidate says that they have done (or not) the performance criteria (Yes, I did it).

Checking the desired outcomes and performance criteria AND

5-6 Candidate says how they did it or states the effectiveness of more than one PC.

7-8 Describes the effectiveness of more than two PCs.

Checking ALL the desired outcomes and performance criteria AND

9-10 Discusses the effectiveness of more than two desired outcomes or performance criteria.

The tasks as they appear in the Confidential Instructions did provide some degree of differentiation. It should be remembered that incorrect solutions cannot be awarded top marks

Task 1 (Sandwich Leaflet) was done well with many candidates producing effective implementations in colour. Many more candidates included the necessary requirement for this, or any other DTP type solution, in that it is not just the final output that is required but additionally the development work required plus the necessary annotation to show the level of skill being used. The lack of these components would reduce possible top box mark criteria work as indicated on the implementation section earlier, although it was very encouraging to see more and more candidates developing and annotating their work.

Task 2 (Sandwich Cost Calculator) resulted in many candidates being able to produce a printout of results, although not always in the output format required in the Candidate Booklet. It should be noted here that it would be perfectly acceptable for teachers to provide support to candidates to assist them in overcoming any barriers; anything regarded as the normal teaching process would not incur a penalty. If help is provided, candidates should only be given credit for the work they have achieved themselves, and annotation should be provided by the teacher to indicate this. The vast majority of candidates are now producing the evidence of formulae used, which is one of the major requirements of the annotation to support the level of skill in a task of this nature.

Task 3 (Web Site) produced a range of solutions, many using DTP or word processing and some using HTML. Ephemeral evidence would not normally be accepted as part of the coursework requirements, although this was allowed on the testing component where it was felt that certain methods of solution may be difficult to produce the necessary documented evidence of testing being carried out; it is important that some form of evidence is provided by the teacher to indicate a working solution was produced. Often this was given by the member of staff signing the stages of the testing carried out or including a note at the foot of the testing to indicate evidence of the requirements being produced. It should be remembered that if HTML is used, evidence is required of the stages showing the annotated pages.

Task 4 (Sandwich Labels) was generally done well, with many candidates managing to produce some evidence of the output required, although often with little annotation or development. Designs often once again produced these layouts but ignored the design of mail merge requirements plus search criteria. It is perfectly acceptable for candidates to be issued with templates for this purpose. On the testing component, candidates should not only indicate the number of records to be found, but additionally identify the details of those records.

Administration matters

It must be stressed that the Confidential Instructions are a ‘framework’ and do not allow for issues of quality. These instructions must remain confidential and that the current assignment must not be used to demonstrate methods of solution. The use of previous assignments (or components from those assignments) would be perfectly acceptable and can prove a useful teaching aid.

The majority of centres are to be congratulated on the way that they provided the material requested in a timely manner. However, more than a few centres were late with their work. Work was generally well presented though some attention needs to be given to appropriate labelling of the sections of the work, so that the tasks are clearly and easily identifiable. Additionally, all necessary paperwork needs to be

included and correctly completed. This includes the Candidate Record Form, Assignment Cover Sheet and the Centre Declaration Sheet; in a number of cases the necessary forms did not contain the candidate number or were not signed by the candidate.

There were an increased number of centre arithmetical errors in 2006 on the Candidate Record Forms and additionally on the transfer between these forms and the Centre Mark Sheet; centres are also requested to ensure that when completing their three part CMS that their marks are clear on all three parts, that any alterations made clearly show the final mark awarded and BOTH the second and third copies go to the moderator.

It should be remembered that bulky A4 files and other ring binders are vulnerable and should not be sent; work should be securely fastened together with no more than two back to back pages per plastic wallet. It was encouraging to see more and more candidates' work that had been bound or securely fastened using treasury tags.

The tasks do need to be numbered and identified to match those in the Confidential Instructions.

The analysis must be marked before the candidates go on to complete the rest of the work. This analysis mark then stands for the rest of the course. The marking grid should be used as indicated in the instructions with a cross to indicate the mark range appropriate for each task. The marks then need to be compared to the mark ranges given in the instructions and a mark given, for each part of the assignment that matches the candidates' work in each section. If a candidate fails to present any evidence in a section for any given task, then the effect of this zero mark should be taken into account when deciding the final mark. A very small minority of centres still does not appear to have recognised this.

Centres must record any discussions that they have had with the candidate in the section on the back page of the Candidate Internal Assessment Form. It is difficult to believe that some centres have not had any discussions about work with their candidates. The content of these notes can be very useful to the moderator, who can then make some judgements about the degree of help given to a candidate and hence the degree of skill shown by that candidate.

Teacher annotation of candidates' work is lacking from some centres, though this is specifically required in the specification. Some candidates may well have failed to gain marks for sections where there was no teacher annotation as, without this annotation from the teacher, it can be difficult to see why a candidate has been awarded marks. It is evident that centres that did annotate candidates' work were more likely to have their marking accepted and not have marks moderated downwards, which was more likely with centres that did not annotate the work appropriately. The amount of annotation required is not onerous. For a centre to indicate where in the candidates' work particular criteria have been met is sufficient.

Centres MUST standardise their marking across different teachers. Where this is not done a candidate, whose work may well be marked correctly by the centre, could risk losing marks if a more highly placed candidate's work is found to be over-marked by the centre.

There was a significant increase in the number of candidates who, on this component alone, would have received awards at A*, A or middle to high B grades and yet were entered for the Foundation tier overall; it may well be that there was some rationale behind many of these decisions but it is strongly recommended that centres familiarise themselves with the grade boundaries provided at the rear of this document prior to finalising their entries.

Finally, it must be emphasised that each centre will be allocated a coursework adviser by AQA; any difficulties with the requirements of both components of the coursework should be directed to that adviser at any stage in the course.

Project

The AQA Set Assignment provides candidates with a set structure, requiring a range of skills applying to a number of differentiated set tasks; by providing such a structure, candidates new to this type of work can gradually develop skills from Analysis through to Evaluation on a range of tasks, giving every opportunity for success at individual levels. Although there is no stipulation in the specification as to which practical component should be completed initially, the above structure offers a framework for that component and hence the Assignment is completed first by virtually all centres. The project requirement should offer an opportunity to further develop many of these initial skills, using a much more holistic approach, and taking what were relatively straight forward component requirements in to a further dimension, gradually beginning to close the gap towards higher levels of study. The continued reduction in the task requirements on the Assignment gives a further opportunity for candidates to use more time to prepare for this component.

For the project component candidates are required to submit a report on an investigation into a problem and the implementation of its solution; ideally the solution should comprise a re-usable system. By outlining a scenario at the beginning, candidate(s) will have every opportunity to reach the higher bands, particularly in the analysis, outlining the actual problem rather than any task driven assignment such as the AQA Set Assignment. It should be remembered that unlike the AQA Assignment in which candidates have only to list the required tasks, in the project the sub problems should arise from the initial exploration of what the actual problem is. Hence the scenario at the beginning must, especially for the higher mark bands on the Analysis, give sufficient detail to generate the problem and its sub problems. If this detail is not included then the ‘problem’ effectively becomes just listing tasks, thus restricting the mark award.

The range of topics selected by candidates was in most cases appropriate but centres must take note that the AQA Set Assignment is not the model to follow blindly to produce a good project; some centres are not realising that this is the main reason they are finding their marks are adjusted downwards. To achieve higher marks for the project, candidates need to understand the holistic nature of the problem centred around a detailed initial scenario; those providing a task driven approach displaying only a passing knowledge and understanding of the requirements of a sketchily drawn out scenario could not access the higher mark bands. To do this, they need to understand and clearly communicate through their report an understanding of what the scenario needs. It would be a good idea to focus them on jobs that need to be done and then to produce a solution that fulfils the requirement. This should include a well understood rationale for what is to be done.

Centres should dissuade candidates from entering into task identification too soon. Tasks should not simply appear but should come from this comprehensive description of the problem. The scenario itself will lead to the tasks and, very importantly, the performance criteria.

The assignment is designed to lead candidates into analysis and design work. Since these processes may be relatively new to many candidates, the AQA Set Assignment contains much of the analysis and many of the design ideas. The AQA Set Assignment is deliberately task-oriented with the aim of ensuring that candidates are tested over a range of skills and given the opportunity to show how well they can do over a range of tasks. Though the tasks all fit into the same general theme, they are not as integrated as would be expected from a project. There is a greater wholeness to be found in good project solutions and this cannot be achieved using the format of the AQA Set Assignment. The stages may look similar, as they are, but they are not the same.

Initial discussions between the teacher and candidate will play an important role in the choice of project to be undertaken and the eventual method of solution to be used.

Whilst the project is looking at a holistic system approach, it may well be that candidates of a certain ability may be better ‘guided’ into a limited mark task driven approach; evidence in the work presented suggests that whatever method is used, candidates of all abilities tend to produce a better quality project when they have a genuine interest in the topic to be undertaken, and where genuine research can be carried out.

At the higher levels, it is important that candidates tackle a problem that is enough to provide them with necessary breadth and depth to achieve the higher marks but do not take on the solution to a problem that will be unachievable in the time available. A feature of some projects, which were subsequently moderated downwards, was that of simplistic (though often well executed) problems and solutions that lacked breadth and/or depth. Lots of tasks at a middle level do not equate to one holistic problem at a higher grade. Projects whose solutions were limited to simple database work or programming only, were usually not able to achieve high marks. It is unlikely that candidates can produce programming solutions that are truly better than generic software is able to produce. Some limited macro programming is acceptable where the macro adds functionally that would be difficult to achieve from within the software being used. Similarly, very little evidence has been provided of true systems that are centred round a web based theme; those candidates who produce a set of pages and link them cannot achieve high marks, and additionally those including web pages as part of the solution to a broader theme should consider the actual worth of that component. Is it part of the system or just an ‘add on’ to try show more breadth? Projects that truly tried to solve problems and used the appropriate software were more successful. Some excellent work was seen from some centres.

If candidates are considering a problem centred around a website, for middle to high marks this should not simply be a piece of DTP activity. If it is to be a valuable part of a system it should be shown to have an information/data input aspect and then the information should be shown to be processed subsequently leading to particular dimensions of output. A better example was seen where the candidate identified a scenario making use of data collection forms on the website which collect customer/member information by emailing a CSV string of data to an e-mail address. This was then to be imported into a database whose structure determines the structure of the form fields. Information could then be processed by searching the database for particular customer information, which could lead to a targeted mailing from the organisation. It could also lead to more robust links to a database by possibly using the web as a sort of front end to the database. This gave the opportunity to address a full mark range and develop the problem further than seen so far, plus fit in nicely with scope for links and system processing.

Candidates at the higher levels in particular may decide eventually to use a single, powerful package (e.g. Access allowing for complex usage at the higher levels e.g. queries, reports, mail merge etc.) to produce their solution or use linked packages; whatever method is used the re-usability MUST be identified together with detailed identification of the desired outcomes and performance criteria. On the work submitted, more candidates were tending to use a single package approach than had previously been seen, resulting in more compact documentation and providing an extension of earlier skills and efficiency plus a link to higher levels of ICT study, although many centres still are using a range of packages and allowing for the links using integrated software. As indicated in the specification, either of these methods is appropriate if suitably documented.

Links between the sub problems should be in evidence and with this in mind candidates may be well advised to use a holistic approach to all sections to ensure these links are explained throughout the coursework.

Two significant features in this specification relating to projects are reusability (now included in various parts of the marking criteria) and testing plans. Both these need attention from centres that are hoping to gain high marks for their candidates. The main evidence for the reusability features of a project solution will be found in the Analysis and Design sections, with supporting evidence in the User Guide. Candidates should consider the use of the solution they outline at a later date. What happens next week?

Next year? How is new data added to the system? Not all aspects of the project need to exhibit this reusability, but there must be evidence of this where appropriate. Projects must be selected that do allow such reusability, and candidates appear to have difficulty in this area, where the concept of over time and doing day to day work for the scenario is not well tackled and documented.

Reuse is mentioned by many candidates but not followed through or really understood. Several centres had annotated student's work with things like 'reusability implied' even though nothing was stated by the candidate.

Analysis

Analysis was sometimes disappointing and candidates did not always take enough time to consider significant aspects of the problem. Many, although showing clear signs of ability, tended to adopt a task-oriented approach rather than the essential problem solving work that is required by this specification. The problems need to come out of the analysis and some centres were able to encourage candidates to do exactly this. Each problem needs to be broken down into sub-problems. The better work shows that the candidate has an appreciation of the audience and the uses of the solution they are developing and these candidates do explore the problem and only eventually come to a conclusion as to the precise nature of the issues involved. Less good work reaches conclusions about the problems much sooner. It was not uncommon to find the whole analysis taking no more than a couple of sides of A4 paper. This volume of work is not sufficient for a full analysis and consequently would not be highly marked. It would be very valuable for the centre to state this in their own annotation of the candidates' work.

An increasing number of candidates adopted the approach set out in the pupil booklets for the AQA set assignment and were including transcripts of 'interviews' carried out with the 'end user'. Questionnaires, unless specific to the requirements of a real system and user, are of little value in this section. What is the purpose of the interview? How does it inform the analysis? Candidates seem to have a chat with someone [fictitious?] who goes about giving them a set of tasks that need to be completed rather than analysing the information handling and processing requirements of the scenario.

There are still too many candidates are failing to set the scene with a realistic scenario at the analysis stage although candidates who are engaging with dimension are making better attempts at it. The team has been struck this year by the number of candidates who have labelled their work 'Database Project'. This suggests that they have identified a solution without having a problem or the advice from their teacher has been flawed. Inevitably this leads to a database with no real purpose. This is further reflected in the following stages of the work when searches appear to be largely irrelevant. Similarly, there is nothing to test and the User Guide becomes a guide to using Access rather than an end-user guide for the particular system.

Design

Design sections were often weak where candidates did not offer much in the way of design. They chose the way they would solve the sub-problems, with little regard to the information requirements. Candidates need to fully explore the possible systems that could provide solutions, and justify the choices they made. They need to identify the techniques that they feel are most appropriate and use the software tools appropriately. Candidates need to keep in mind their analysis and constantly refer to the problem being solved. If they have identified effective performance criteria they are more likely to produce evidence that can be seen as a good solution to the problem. They will attempt to link the various parts of the problem where this is appropriate and address which parts can be re-used and how. If the system is analysed from the point of reuse then the design should reflect that. How is the solution designed to handle the transactions that the scenario requires?

If only one package is to be used the design must reflect complex usage e.g. queries, reports, mail merge, etc. depending upon the package being used

An additional requirement of the marking criteria in this section is the test plan. Candidates should indicate what is being tested and why, with the test plan being designed to show how well the system responds to the information handling/processing required by the scenario. For higher mark awards, candidates need to create comprehensive test plans (a range of tests over the breadth of the project) to allow for erroneous and extreme data sets together with relevant validation testing. For many candidates these seem too much of an afterthought.

The notions that the system has to do jobs for the scenario seems to pass some candidates by, and tables of testing are constructed often at the testing stage (not at the design stage as required). Test plans seen were often trivial and only show simple functions showing such as, on a database, adding and deleting records etc. It is often not focussed on what it needs to do and does not show that it does the information processing reliably.

The production of clear, detailed and full testing plans of the design was done in great detail by many of the higher marked candidates, providing the opportunity to follow those testing plans in a comprehensive manner. The vast majority of these examples centred around single package database use and often candidates were including many repetitive tests in this section, resulting in very large testing sections later on. For higher mark awards in the testing section a range of tests should be included on a range of fields, the plans for which being included in this section.

Implementation

Implementation continues to be reasonably well done by many centres, although there were many instances of high marks awarded where candidates had produced solutions to what were simple tasks. It is here where the report should really come into play, with the candidates clearly indicating the levels of skill, knowledge and understanding of the software tools that are being used to achieve the solution. It should additionally be remembered that efficient and complex use of one package systems is required, which currently are not always being displayed to sufficient depth. There are some issues affecting candidates who do not annotate and explain their work well. These candidates risk having their mark adjusted because there is not enough evidence for the award of the skill level. It must be noted that moderators may not be familiar with the particular software being used, so they need the candidate to annotate the work in order to be able to make a judgement. Production of evidence is not just printouts of the answer, nor is it just lots of screenshots. It is a mixture of the two. Candidates should be reminded that they are producing a report into their solution that shows evidence of levels of skill etc. They have to convince a third party that they really do know and understand what they are doing.

Whilst there has been a general improvement in the way candidates show development, candidates (and staff marking the work) should additionally be reminded that they should not misconstrue development as tinkering with the cosmetic aspects of the work; structural aspects need to be dealt with more evidence of worth rather than just cosmetic.

Modifications as a result of testing were still rare. This was probably because of the very limited testing that many candidates undertook. Candidates who scored high marks generally recognised the links between various parts of their solution. They moved data around where appropriate, and where possible, identified advantages to the user in not duplicating material. They produced not only good solutions but also efficient solutions where the power of the software and of the particular systems used was most effective.

Testing

The Testing section is still where many candidates are weak. Much more detail is required on this component and candidates need to be taught how to test and how to set up testing plans. The testing plan, which can be copied and pasted from the design stage, would identify how the developed solution would be used and would identify typical data. This test data would be entered into the system to check the functionality and correctness. Candidates would document this fully, giving screen shots with annotation where appropriate, to show that the testing had been carried out and to show typical outputs. Modifications would also be documented. Erroneous data would be entered and the outputs compared against stated expected results. Extreme data would also form part of the testing. The candidates would comment on the output from this testing and say how they would alter their system to deal with such input. For many candidates testing seems to be no more than a statement such as ‘I tried it and it worked’. It is very important that candidates understand validation of data on entry, for successful treatment of erroneous data. If the software being used does not allow validation rules, then the candidate can simply explain how they would incorporate validation and what would happen to data entered. The process should be more than just a check of the generic software validation routines; the testing should be specific relating to the problem being undertaken. As indicated at the teacher meetings, to reach the top two boxes on the marking criteria, candidates require to produce a comprehensive test plan with test data not only in the expected range but also include extreme and erroneous data.

Many candidates test the functions of the software rather than their system. They also test validation rules which detect data which does not match the data type. However, this is part of the software itself and candidates should be encouraged to move away from this. Where does the notion of showing that it reliably does a job (or jobs) within and for the scenario come into it? What about erroneous and extreme testing? Much testing is still of a very trivial nature.

Evaluation

Evaluations are very good where candidates have identified performance criteria in the analysis section for the whole system. If these are used to identify how well the solution solves the problem, then it is relatively easy to gain high marks. However some candidates are not using these performance criteria. Evaluations must relate directly to the holistic nature of the problem initially identified. If the problem is in fact a set of tasks, then candidates will find this process difficult, if not impossible. All they can report is that they succeeded in completing the task. Unfortunately they do not in these circumstances, evaluate the solution, and so gain little credit.

User Guide

User-guides are often full and detailed and they offer one of the main vehicles for describing the reusability of the solution. The user-guide needs to be divided into sections and better guides will include formatting techniques e.g. table of contents, index, footnotes etc. together with the use of screen dumps to provide evidence to support the user. Candidates must avoid the temptation to produce a software manual. This is not what is required. The assumption can be made that the end-user can use the software (as indicated in the implementation section), and therefore the user guide should inform the user how to use the built system to do the required jobs.

Administration matters

There is a need for centres to:

- Internally standardise. If this is not done then students risk have downward adjustments applied because of the inaccurate marking of one teacher on one set of students' work;
- Ensure that where a different moderator is allocated from the Assignment component, full paperwork for the required component is forwarded to each moderator;
- Ensure that paperwork has been completed as per the specification, as delays are inevitable if the correct documentation is not provided;
- Remove work from bulky folders before posting to the moderator;
- Ensure that, if plastic wallets are used, all the work is visible without the moderator having to remove it from the wallets;
- Inform AQA if the work is likely to be delayed (several centres were very late in despatching the work to the moderator);
- Annotate the work as required by the specification. Teachers must show why they have awarded the marks. They potentially disadvantage their candidates by not doing this.

Mark Range and Award of Grades

Full Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3521/F	80	140	79.4	16.8
3521/7/C	100	105	34.7	16.8
3521/P	100	105	29.1	16.4
Foundation tier overall 3521	--	350	143.2	38.3

		Max. mark	C	D	E	F	G
3521/F boundary mark	raw	80	47	43	40	37	34
	scaled	140	82	75	70	65	60
3521/7/C boundary mark	raw	100	41	31	22	13	4
	scaled	105	43	33	23	14	4
3521/P boundary mark	raw	100	45	35	25	16	7
	scaled	105	47	37	26	17	7
Foundation tier scaled boundary mark		350	161	139	117	95	73

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3521/H	80	140	84.5	17.0
3521/7/C	100	105	62.1	19.3
3521/P	100	105	55.8	21.5
Higher tier overall 3521	--	350	202.4	48.0

		Max. mark	A*	A	B	C	D	allowed E
3521/H boundary mark	raw	80	65	57	49	41	32	-
	scaled	140	114	100	86	72	56	-
3521/7/C boundary mark	raw	100	80	67	54	41	31	-
	scaled	105	84	70	57	43	33	-
3521/P boundary mark	raw	100	77	66	55	45	35	-
	scaled	105	81	69	58	47	37	-
Higher tier scaled boundary mark		350	270	231	196	162	125	106

Provisional statistics for the award

Foundation tier (8798 candidates)

	C	D	E	F	G
Cumulative %	31.2	51.1	69.9	84.2	93.0

Higher tier (14082 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	7.9	27.9	54.6	78.5	93.3	96.8

Overall (22880 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	4.9	17.2	33.6	60.3	77.1	86.4	91.9	95.3

Short Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3527/F	80	80	44.8	10.5
3521/7/C	100	120	33.1	19.1
Foundation tier overall 3527	--	200	77.9	24.4

		Max. mark	C	D	E	F	G
3527/F boundary mark	raw	80	50	45	41	37	33
	scaled	80	50	45	41	37	33
3521/7/C boundary mark	raw	100	41	31	22	13	4
	scaled	120	49	37	26	16	5
Foundation tier scaled boundary mark		200	93	79	66	53	40

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3527/H	80	80	52.0	9.1
3521/7/C	100	120	68.7	24.1
Higher tier overall 3527	--	200	120.7	29.9

		Max. mark	A*	A	B	C	D	allowed E
3527/H boundary mark	raw	80	73	65	57	49	30	-
	scaled	80	73	65	57	49	30	-
3521/7/C boundary mark	raw	100	80	67	54	41	31	-
	scaled	120	96	80	65	49	37	-
Higher tier scaled boundary mark		200	163	143	120	98	67	51

Provisional statistics for the award

Foundation tier (10469 candidates)

	C	D	E	F	G
Cumulative %	27.0	44.6	62.7	79.4	90.4

Higher tier (11517 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	7.0	24.9	53.0	77.4	94.5	97.9

Overall (21986 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	3.7	13.1	27.7	53.4	70.7	81.1	89.1	94.3

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade. Although component grade boundaries are provided, these are advisory. Candidates' final grades depend only on their total marks for the subject.

Mean Mark: is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

Standard Deviation: a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).