

## **MARK SCHEME for the May/June 2015 series**

### **9694 THINKING SKILLS**

**9694/43**

Paper 4 (Applied Reasoning), maximum raw mark 50

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

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**1 Make five criticisms of the data presented and/or the claim that, “The more cholesterol you eat, the sooner you will die.” [5]**

*1 mark for any of the following:*

- Risk of heart disease is not the same as death.
- Being more likely to die of CHD does not mean being more likely to die sooner (high cholesterol could be associated with lower incidences of other categories of fatality).
- There is a presumed identity between the incidence of heart disease within the population and the risk of developing it for a particular individual.
- Dietary cholesterol might not be proportional to blood cholesterol.
- The claim implies that eating cholesterol causes death, but only correlation between blood cholesterol and risk of heart disease is shown.
- There is no information about the link between blood cholesterol and death.
- Only 3 broad categories of concentration could disguise variation within range.
- The two groups (men and women) could have significant differences (e.g. age, occupation, medication, lifestyle).
- There could be significant differences between the members of the three blood cholesterol groups (e.g. age, occupation, medication, lifestyle).

*Do not credit responses on the theme of ‘it does not take into account other factors’ without specific reference to groups or categories.*

**2 Briefly analyse Business Studies Teacher’s argument in Document 1: *Risk-based Pricing*, by identifying its main conclusion, intermediate conclusions and any counter-assertions. [6]**

*1 mark for each element (maximum 3 if MC not identified).*

**CA** – (It might seem obvious that) financial products, (such as insurance policies and bank loans,) should be sold to everyone on equal terms

**MC** – (but in fact) they [financial products] should be priced according to risk.

**IC** – there is therefore no need to change it [the current system].

**IC** – It would be unfair for all householders to pay the same for their household insurance.

**IC** – (Similarly,) the cost of insuring your car against accidents should vary according to the likelihood that you will be involved in an accident.

**CA** – (Sexist male judges have recently argued that) women should pay the same for car insurance as men

**IC** – women must resist this attempt to deprive them of one of the few advantages they enjoy

**IC** – Setting different charges for each individual is the fairest system for both the companies and their clients.

**IC** – The price of bank loans should take into account the possibility that the borrower will default on the loan.

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- 3 Give a critical evaluation of the strength of Business Studies Teacher’s argument in Document 1: *Risk-based Pricing*, by identifying and explaining any flaws, implicit assumptions and other weaknesses. [9]

2 marks for a developed version of any of the following points.  
1 mark for a weak or incomplete version of any of the following points.

#### Paragraph 1

The last sentence is an unsupported **appeal to tradition**.

#### Paragraph 2

**Assumption** – that areas where suspicious behaviour is noticed and reported are not areas of high crime.

#### Paragraph 3

**Assumption** – that a record of unsafe driving in the past is a reliable indicator of the likelihood of being involved in an accident in the future.

**Assumption** – that both drivers (in the second sentence) have been driving for comparable periods of time.

#### Paragraph 4

The claim that women should pay lower premiums relies on the crucial **assumption** that it is fair to assess individuals by reference to classes to which they belong. (Since this is the point under debate, candidates may reasonably describe this section of the argument as **begging the question**.)

The first clause of the second sentence is an **ad hominem** attack on judges, rather than an examination of the grounds for their judgment.

The reference to “the few advantages” is an **appeal to pity**.

The final clause is a **slippery slope** argument.

The final clause is based on a **contradiction**, since the removal of inequality is not a precedent for the removal of equality.

#### Paragraph 5

This paragraph relies on the **assumption** that a fair arrangement is one in which companies can make some profit, but not too much.

#### Paragraph 6

The last sentence is a **straw man**. No one is suggesting that banks should give loans to borrowers who are unlikely to be able to repay them.

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4 'Financial products should be offered to everyone on equal terms.'

Construct a reasoned argument to support or challenge this claim, commenting critically on some or all of Documents 1 to 5 and introducing ideas of your own. [30]

Level	Structure	Max 8	Quality of argument	Max 8	Use of documents	Max 8	Treatment of counter positions	Max 6
4	<p>Precise conclusion and accomplished argument structure with consistent use of intermediate conclusions. Likely to include at least two of the following:</p> <ul style="list-style-type: none"> <li>• strands of reasoning</li> <li>• suppositional reasoning</li> <li>• analogy</li> <li>• evidence</li> <li>• examples</li> </ul> <p>Argument is structured so the thought process is made clear. Uses vocabulary of reasoning appropriately and effectively to support argument.</p>	7–8	<p>Cogent and convincing reasoning which answers the question which was asked. Subtle thinking about the issue. Use of relevant own ideas and ideas from documents. Very few significant gaps or flaws.</p>	7–8	<p>Perceptive, relevant and accurate use of documents to support reasoning. Sustained and confident evaluation of documents to support reasoning. (Two or more valid <b>evaluative</b> references to documents). Able to combine information from two or more documents and draw a precise inference.</p>	7–8	<p>Consideration of key counter arguments and effective response to these. Use of own ideas in response to counter arguments. Use of valid critical tools to respond to counter arguments. Effective use of appropriate terminology.</p>	5–6
3	<p>Clear conclusion that is more than "I agree". Clear argument structure, which may be simple and precise or attempt complexity with some success. Appropriate use of intermediate conclusions. Use of other argument elements to support reasoning. Generally makes thinking clear. Appropriate use of vocabulary of reasoning.</p>	5–6	<p>Effective and persuasive reasoning which answers the question which was asked. (Although there may be some irrelevance or reliance on dubious assumptions.) Use of own ideas and ideas from documents. Few significant gaps or flaws.</p>	5–6	<p>Relevant and accurate use of documents which supports reasoning. (Must reference 3+ documents.) Some evaluation <b>and</b> comparison of documents to support reasoning. Inference drawn from <math>\geq 1</math> document.</p>	5–6	<p>Consideration of key counter arguments and effective response to these. Some use of appropriate terminology.</p>	3–4

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<b>Level</b>	<b>Structure</b>	<b>Max 8</b>	<b>Quality of argument</b>	<b>Max 8</b>	<b>Use of documents</b>	<b>Max 8</b>	<b>Treatment of counter positions</b>	<b>Max 6</b>
2	<p>Conclusion stated but may be “I agree”.</p> <p>Sufficient clarity for meaning to be clear throughout.</p> <p>Structure may be easy to follow but brief or a longer argument which has a less clear structure.</p> <p>Uses reasons.</p> <p>Some appropriate use of vocabulary of reasoning.</p>	3–4	<p>A reasoned stance which attempts to answer the question which was asked.</p> <p>Some support for the conclusion. (Although there may be considerable irrelevance or reliance on dubious assumptions.)</p> <p>Some thinking/own ideas about the issue.</p> <p>Use of rhetorical questions and emotive language.</p> <p>Some significant gaps or flaws.</p>	3–4	<p>Some relevant use of documents to support reasoning, but some documents used indiscriminately.</p> <p>Some (perhaps implicit) comparison of documents or some critical evaluation of documents.</p>	3–4	<p>Inclusion of counter argument or counter assertion but response to this is ineffective.</p>	2
1	<p>Attempt to construct an argument.</p> <p>Unclear conclusion, multiple conclusions or no conclusion.</p> <p>Disjointed, incoherent reasoning.</p> <p>Use of examples in place of reasoning.</p> <p>Possibly a discourse or a rant.</p> <p>Reasons presented with no logical connection.</p> <p>Documents considered sequentially.</p> <p>Substantial irrelevant material.</p>	1–2	<p>Attempt to answer the general thrust of the question.</p> <p>Attempt to support their view.</p> <p>Excessive use of rhetorical questions and emotive language.</p> <p>Ideas which are contradictory.</p>	1–2	<p>Some use, perhaps implicit, use of documents.</p> <p>No attempt at critical evaluation.</p> <p>No comparison of documents.</p>	1–2	<p>Inclusion of counter argument or counter assertion with no response.</p>	1

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## Example Level 4 Answers

### *Challenge (676 words)*

Whether financial products should be offered to everyone on equal terms or not depends on what is meant by “equal”. Applicants should certainly be treated in the same way as someone whose circumstances are the same as theirs, but products should not be offered to everyone on identical terms, because circumstances vary in significant ways. For the purpose of this discussion, I will interpret “equal” as meaning “identical”.

Most of the argument in Document 1 explains clearly and persuasively why financial products should not be priced on equal terms. The flaws and assumptions in the reasoning do not undermine the validity of the conclusion, and most of the examples – such as those in paragraphs 2 and 3 – support the claim that financial products should be priced according to risk.

Despite the unconvincing straw man argument in the last line of Document 1, the setting which most obviously demands differential rates is bank loans, as explained and justified in paragraph 7. This is supported by the example in Document 4. Although the sympathies of the author of the book seem to be with the fictional Lee, those sympathies are misplaced. The fact that Lee did not know that he was in a high-risk group does not alter the fact that he was, and the XYZ Bank can be thankful that sophisticated information technology alerted them to the risk they would have been running if they had granted him a loan. The more information of this kind that can be made available, the fairer it is both to the bank and to other borrowers, who do not want to subsidise loans made to those who fail to repay them.

The justification of gender-based pricing for car insurance in paragraph 4 of Document 1 is as reasonable as the examples in other parts of the document. The second graph in Document 5 supports the claim that female drivers are involved in fewer accidents than men, even though the differential may be less than it appears, if fewer women drive than men. Similarly, the last paragraph of Document 4 raises concerns about the unfairness of pension contributions not differentiated by gender. The source is credible because, as President of the Institute of Actuaries, he is likely to have some expertise in the calculation of risk based on life-expectancy. The first graph in Document 5 supports a claim that on average women have a longer life expectancy than men, at least in certain countries, and there is no reason to believe that these are statistically unusual.

The judgment of the court reported in Document 3 therefore appears to be perverse and unjust to both companies and clients. If it is true that men have more car accidents than women and tend not to live as long, then gender is a relevant factor in assessing risk and taking it into account when fixing premiums and pensions is not discriminatory.

Some of the categories listed in the bullet points in Document 2 are almost certainly associated with increased risk of default on a loan. So from the perspective of a lender, the Law may be regarded as unjust. Receipt of welfare payments, for example, could reasonably be taken as an indication that a borrower might find it harder to meet the terms of a credit agreement than an applicant in a well-paid job.

Age is another factor which should not be excluded from consideration. It is fair to charge a middle-aged person more for life assurance or a pension than they would have paid if they had been twenty years younger, because their life expectancy is now twenty years less than it was then. Similarly, the ECOA is wrong not to allow lenders to charge young people more for credit, because on average young people are more likely to default on financial agreements than those of more mature years.

Differences in risk should be taken into account when pricing insurance, pensions and bank loans, because to do otherwise would be unfair. Therefore financial products should not be offered to everyone on equal terms.

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*Support (750 words)*

Whether financial products should be offered to everyone on equal terms or not depends on what is meant by “equal”. Although some differences between individuals can legitimately and fairly be taken into account when pricing these products, applicants should be treated in the same way as someone whose circumstances are the same as theirs. In particular, people should be treated equally irrespective of their gender, marital status, race or age. For the purpose of this discussion, this is what I will mean by “equal”.

The reason for ignoring these categories is clearly illustrated in the case described in Document 4. The actions of the XYZ Bank are unjust, because the reason given for refusing Lee a loan had nothing to do with him as an individual, but was based on the behaviour of other people with whom he had certain characteristics in common. Those characteristics were not directly related to his credit-worthiness and should therefore not have been taken into consideration. The same applies to gender, marital status, race and age.

The justification of gender-based pricing in paragraph 4 of Document 1 is unreasonable, because it is based on membership of a class, rather than on individual characteristics. Taken at face value, the second graph in Document 5 supports the claim that female drivers are involved in fewer accidents than men, although the differential may be less than it appears, if fewer women drive than men. However, it would be unjust to charge a safe male driver more for his car insurance than a woman with “several convictions for driving recklessly and exceeding the speed limit” (Doc 1 para 3). Similarly, Document 3 implies that the EU reforms will unfairly affect pension contributions because of a difference in life-expectancy between men and women. The first graph in Document 5 supports the claim that on average women have a slightly longer life expectancy than men – at least in certain countries. But since no reason is given for the selection of these seven countries, it is possible that they are statistically unusual. More importantly, there must be many men who outlive many women: the graph just shows averages. Again the justification for gender-based pricing is based on an assumption that variation between individuals within a class is less important than variation between classes. So both men and women should be assessed as individuals, not according to their gender.

The reported judgment of the court in paragraph 2 of Document 3 needs to be explained. In general, discrimination becomes unjust when a generalisation which is true for many members of a group is applied to all of them. For example, it may well be true that men tend to perform better than women at certain jobs, such as mechanical engineering, while many women excel at others, such as nursing, but it constitutes unjust discrimination if someone is refused employment or promotion on the basis of gender, because he or she may well be an exception to the generalisation. Some men are good at avoiding accidents, because they drive only occasionally or very carefully. Some women die young, while some men live to a ripe old age. On that basis, the judges were right to rule that using gender as a factor when setting insurance premiums and pension rates constitutes unjust discrimination.

Most of the bullet points listed in Document 2 are clearly irrelevant to the conditions under which qualified persons should be offered a loan for purchase of a car. Lenders who have experienced members of a particular ethnic community defaulting on loans might well be tempted to add a surcharge to anyone from the same community who subsequently applies for a loan, but doing so would constitute racial discrimination, and the law rightly prevents it. Gender and marital status must be disregarded for similar reasons.

Whether the age of a client can legitimately be taken into account when fixing a price depends on whether the judgement is based on a generalisation or not. It is fair to charge a middle-aged person more for life assurance or a pension than they would have paid had they been twenty years younger, because their actual life expectancy (not an actuarial estimate) is now twenty years less than it was then. But the ECOA (Document 2) is right not to allow lenders to charge young people more for credit, because some young people are a good risk, while some older people are likely to default.

Therefore financial products should be offered to everyone on equal terms.