THINKING SKILLS

Paper 9694/11
Problem Solving 11

Key messages

Candidates should be encouraged to show their working and not just write down answers. Most questions are worth more than a single mark, and partial credit is available for intermediate steps in the working, even though the final answer may be incorrect.

Tidy presentation of work will not only help the candidate to work accurately but will also help the Examiner to follow the thought process of the candidate, with a view to being able to award partial credit.

Candidates are provided with answer lines after each part question and they should write their solutions, and not just their final answer, on these lines. Many candidates seemed to think that they needed to squeeze their working outside of these lines and around the edge of the page. This makes it difficult for the Examiner to follow what is happening.

When an explanation is asked for in a question where numbers are involved, as is usual on Paper 1, it is almost always the case that candidates should engage with these numbers as the core of their explanation.

General comments

In general, the candidates engaged well with the paper, though responses were variable in quality. There were some very good scripts showing an excellent proficiency in problem solving. Most candidates offered good responses to at least some of the questions on the paper. It was particularly pleasing to see that when candidates were not able to solve earlier questions, they persevered and often earned marks in the later questions. As always, candidates are advised to read the questions carefully and take note of each piece of information.

Comments on specific questions

Question 1

(a) Most candidates correctly identified Petro as the candidate who achieved the largest increase in their test score between any two consecutive weeks, being 34 between weeks 2 and 3. A methodical approach to working out the increases was often seen, usually on the table. The most common incorrect answer was Dominic, who had the second-largest increase, 31.

(b) Most candidates correctly identified Hayley as the candidate who achieved the largest increase in their test score across three consecutive weeks, being 36 between weeks 3 and 5. The most common incorrect answer was Petro, who had the second-largest increase, 35.

Question 2

Just over half of the candidates scored full marks on this question. Candidates needed to use the table to identify the three distances that Donald travelled: 153, 400 and 413 km respectively. Some candidates did not know how to interpret the table and gave, for example, the distance from Targhill to Kingburg as 245 + 400 km. The total distance travelled, 966 km, is then divided by six to find the number of litres of fuel required and multiplied by $1.20 to find the total cost of the fuel. This gives $193.20. The hire cost for three days, $270, must be added to this to give the total cost. The profit for the whole job is found by subtracting this total cost from $600.

A common error was to include only one $90 for the hire cost. Other errors occurred in solutions in which candidates found the cost of fuel per day. This approach often led to poor rounding errors and approximations.

Question 3

(a) The majority of candidates realised that the pink and white ducks would be on different bars and gave an appropriate arrangement. The obvious error was to place the pink and white ducks on the ends of the same bar. A small number of candidates suggested an arrangement of four completely different colours, usually green, orange, purple and black.

(b) Although most candidates gave an answer to this part, only a minority offered the correct answer of 8 arrangements. The most common incorrect answer was 4 arrangements, closely followed by 2, 3, 6, 12 and 16.

Question 4

This question was one of the least well-answered on the paper, with generally poor presentation. Interestingly, some candidates put all their energy into drawing a beautiful plan of the theatre with every seat shown, but rarely made any progress in solving the problem. In general, it was often difficult to identify the calculations that candidates presented within their solutions. Most errors resulted from misunderstanding the nature of the discount: an overall discount of $10 for two seats next to each other in the same row and on the same side of the central aisle. The smallest possible total income arises when the greatest possible number of seats are discounted. This is when 14 pairs of seats on each side of the central aisle are discounted. Errors which were commonly seen were

- discounting all seats including the aisle seats
- discounting 29 of the 30 seats in each row
- giving a $10 discount on every seat instead of every pair, so, for example, a pair of discounted seats costs $45 instead of $50
- discounting only the seats next to the central aisle.

It was not uncommon to see that the numbering of the back rows as 11–40 was interpreted as meaning there were 29 rows.

Question 5

(a) About one-third of the candidates gave the three possible combinations of cakes that Adam could buy: 9 small and 2 large, 7 small and 4 medium or 8 small, 2 medium and 1 large. The question did not say how many correct combinations were possible, so it was pleasing to see that these candidates carried out a comprehensive search. A good number of candidates gave one or two possible combinations of sizes of cakes and these were credited. Other candidates gave a long list of possibilities, most of which gave a total cost of $41 but did not meet the other condition of a total of 11 cakes. Interestingly it was rare to see the 11 cakes condition being met with the $41 not met.

(b) This part fared better than **part (a)** with a good number of correct answers. It was not always clear how the correct answer of 11 cakes had been obtained. Some candidates used a trial approach, but usually omitted the condition that there must be twice as many small cakes as large cakes.

Question 6

This question was found to be challenging. There were relatively few fully correct solutions, though most candidates made a fair attempt at **part (a)**.

(a) The main error which led to incorrect times for the end of the tournament seemed to be in understanding how many games were being played. With four groups each containing three teams and each team playing the other two teams in their group, there are three matches per group, so 12 matches in total. These are followed by two semi-finals and one final, giving a total of 15 games. The most common error was to think that there were 6 games in total: one game in each group, one semi-final and one final. Sometimes this came from misunderstanding the fact that the matches were played consecutively and assuming that all the group matches could take place at the same time. With each team involved in two group matches this is clearly impossible.

Candidates were able to work with the different lengths of the matches and breaks between matches, but once the number of matches was incorrect, the end time was necessarily incorrect.

(b)   There were very few correct answers to this part.

(c)   There were very few correct answers to this part, but without a correct understanding of the context it was unlikely that candidates would make any real progress in these last two parts.

Question 7

Responses to this question fell into three categories. Just under half of the candidates understood the problem and gave the correct number of correct solutions to each part. A minority of candidates omitted the question. The remaining candidates missed the important point in the question, namely that <u>every</u> digit displayed was one higher or one lower than the correct digit. These responses changed some digits but not all.

Question 8

(a)   A wide variety of different answers were seen to this part, with just one-third giving the correct answer of 12 bags. After Week 3's delivery, 17 + 20 + 12 bags had been delivered and 17 + 20 returned, so there were 12 at my house. The rule determining how many bags can be returned on any given week are that it is the smaller of the number of bags delivered and 25. This was clearly stated in the stem of the question, yet many candidates did not absorb it.

(b)   In this part, less than 25 bags are delivered in each of Weeks 1, 2 and 3, so the second part of the rule does not come into play. In Week 1, 17 bags are delivered, so these can be returned in Week 2. In Week 2, 20 bags are delivered, so these can be returned in Week 3.

(c)   In Week 4, 27 bags are delivered, and now, only 25 of these can be returned in Week 5, leaving 2 bags at my house. In Week 5, 10 bags are delivered, so at the end of Week 5, I have 12 bags at my house. I can only return 10 of these in Week 6, when I receive another 41, so at the end of Week 6, I have 43 bags at my house. In Week 7, I can return only 25 bags, and I receive another 16, so I have 43 − 25 + 16 = 34 bags at the end of Week 7. A common error in this part was to miss the fact that only 10 bags could be returned in Week 6, leading to a final answer of 32 bags. Partial credit was awarded if it was clear in the candidate's working that either only 25 bags were being returned in Week 5 or that I had 12 bags at the end of Week 5.

(d)   Those candidates who had followed the process carefully in **parts (a)** and **(b)** usually obtained the correct answer of $5.45 in this part. Partial credit was available to those candidates who had obtained the incorrect answer of 32 in **part (b)**.

Question 9

(a) (i)   The vast majority of candidates did not realise what was required to answer this part successfully. They offered a *verification* that if F was equal to 5 then, since FEE scores 19, E must be 7. Some candidates then went on to show that B = 1 and A and C are equal to 3 and 6. The question required an explanation as to why F *could only be* 5.

Candidates thought that they had answered **part (a)** adequately and so were not deterred from continuing with the remaining parts of the question, using the information that F = 5 and E = 7.

(ii)   Many candidates were able to deduce the value of B as 1 and that A + C must equal 9, so 3 and 6 in some order. This leaves the possible score for D as 2 or 4, leading to a score for CAD of 11 or 13.

(b)   The key to the solution in this part is to note that the letters A, C and E are contained in the word ACUTELY and score 16 in total. This leaves the letters L, T, U and Y which, to obtain the least possible score, must be paired with 8, 14, 21 and 22 respectively. The score for ACUTELY is therefore 81. The most common incorrect answer was 71, coming from taking A, C and E as 1, 2 and 3.

(c) A good number of candidates were able to make some progress in this part and deduce that T is paired with 15. The most common incorrect answer was 19.

Question 10

(a) Many candidates made a fair attempt at finding combinations of basketballs and volleyballs that satisfied the two conditions, that their total weight is in the range 178 to 182 g and that there are 19 or 20 in total. Just over one-third of candidates found the three combinations other than the given one of 7 basketballs and 13 volleyballs. A surprising number of candidates included this given combination in their list of three, whereas the question clearly asked for 'the other three combinations'. A minority of candidates focused on satisfying only the weight restriction, regardless of the total number of balls being 19 or 20.

(b) The difficulty in this part has increased with the addition of footballs as well as two other conditions, that the number of each type of ball must be at least five and different to the number of any other type of ball. There are five different combinations of the three types of ball that satisfy all the necessary conditions. Partial credit was awarded to any combination which included 19 or 20 balls but in which one of the other conditions was not quite met: weight up to 2 grams outside the required range, only 4 of one type of Sportie or the same quantity of two types of Sportie.

Question 11

(a) Since Laura has 8 more books than Peter and 1 more book than Kirsty, Peter has the least number of books. Assuming Peter has the minimum allowed number of one, Laura will have 9 and Kirsty will have 8, giving a least total of 18 books. Generally, candidates either gave the correct answer with minimal working or they had no idea how to answer the question.

(b) To satisfy the condition that there are at most 100 books, and given that Laura has 8 more books than Peter and 1 more book than Kirsty, the largest numbers of books that Peter, Laura and Kirsty can have are 28, 36 and 35. This gives a total number of 99 books which is the best that can be achieved. So Kirsty has at most 35 books. Of the candidates who attempted this part, most used trial and improvement. Partial credit was awarded for a set of three numbers of books in which the condition that Laura has 8 more books than Peter and 1 more book than Kirsty was satisfied, but the total number was in the range 90 to 108.

Question 12

This question proved to be challenging, not unexpectedly for the last question on the paper. Over 40 per cent of candidates gave no response, while 10 per cent obtained the correct answer of 49 km. There were three steps to a successful solution. Firstly, the halfway distance can be found as 126 + 88 − 41 = 173 km. Secondly, the distance travelled in the first two hours can be deduced as 173 − 41 = 132 km. This leads to Wayne travelling 49 km in the second hour of his journey. A few candidates attempted an algebraic approach, but rarely made any progress.

THINKING SKILLS

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Paper 9694/12
Problem Solving 12

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Key messages

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When an explanation is asked for in a question where numbers are involved, as is usual on Paper 1, it is almost always the case that candidates should use these numbers in their explanation.

General comments

In general candidates engaged very well with the paper. Many candidates attempted most of the questions and there were many answers of a pleasingly good standard. Most of the candidates were able to engage with at least some of the questions in a meaningful way.

Comments on specific questions

Question 1

Almost all candidates realised that they needed to divide the length 7.2 metres by a number representing the 8 spaces between the 9 seeds and the double sized spaces left at each end of the row. Most candidates realised that length should be divided by 12, but many other divisors were seen. Some candidates gave the answer in centimetres, but included the correct units.

Question 2

The majority of candidates found that the price on Monday was $109, but rather fewer found the correct price of $103 on Tuesday, and so did not find the correct saving.

Question 3

(a)   Most candidates found the correct number of each of the four meals. A small number of candidates omitted to add on the extra 10 per cent, while some others made arithmetic slips. A few candidates misunderstood the question, for example by increasing 1200 by 10 per cent.

(b)   Most candidates understood that they did not need to use the value of 264 for the prawn meals found in **part (a)**, and decided that the smallest total would come from buying 240 meals, almost all using the price of $2 per meal to arrive at the wrong answer of $480. Only a small minority realised that buying 251 meals at the cheaper price of $1.50 would give the smallest total amount.

Question 4

(a) Almost all candidates arrived at the correct answer of 7, most by listing the possible start times of each session with some candidates also giving finishing times, which was not necessary. Some candidates divided the total time the centre ran by the time of 55 minutes for a Darts session plus a 10-minute gap.

(b) Most candidates realised that 10 Bowling sessions required only 9 10-minute gaps and so would just fit in. Some candidates divided the time available (390 minutes) by 40 minutes, getting the answer 9.75, which they invariably rounded down to 9 sessions – not realising that no 10-minute gap would be needed after the last session. A small minority of candidates gave the answer as $80, having used the correct number of sessions, but forgetting that 12 people can attend a session.

(c) The three correct times for the start of each 10-minute meeting were often seen; some candidates also gave the end times, which was not really necessary. A small number of candidates gave only one or two of the correct answers, while others included one or more of 10:50, 12:50 and 14:50.

(d) Some candidates gave the four correct possibilities though quite a lot of candidates missed one or more of them – usually the four sessions of Bowling or the combination of Archery, Bowling, Judo. A small number of candidates did not realise that Sam has to spend exactly $32.

Question 5

(a) Most candidates realised that Jack and Lara would drive 700 kilometres each day and worked out $14\,224 \div 700$ to give 20.32 days, or 20 days with another 224 km to go. Although many went on to give a completely correct answer, quite a number were not able to identify the day of arrival as Monday, with many giving Tuesday, and others thought Lara was driving. A common wrong way of identifying Lara as the driver was to say that 0.32 days is equivalent to 7.68 hours so, since Jack drives for the first 5 hours, Lara is driving.

(b) Although many correct answers were seen, quite a lot of candidates gave the answer 57, having forgotten that the tank was full to start with, while some left the answer as 56.896.

(c) Most candidates knew how to do this; the main errors were caused by premature rounding of the number of litres needed or the number of times the vehicle would need refuelling.

Question 6

(a) All the possible options were seen as answers to this part. Although some candidates showed some working leading to the correct answer, many candidates appeared to have guessed. The correct answer, Queensland, was the most common answer.

(b) There were few correct answers to this part.

(c) There were few correct answers to this part. Many candidates omitted it.

Question 7

Some candidates realised that the Fairy zone must be between the Unicorn and Pirate zones, and that the Kitten zone must be between the Rainbow and Sparkle zones. Only a minority of these went on to state that these two groups of zones can be arranged next to each other in 4 ways. A very small number of candidates completed the answer by pointing out that the Pirate zone must be zone 4 or zone 5, leading to a total of 8 different ways. The explanations shown by candidates were often difficult to follow. A considerable number of candidates made no progress with this question or omitted it completely.

Question 8

(a) Many candidates did this question correctly, usually first working out that Joanne could write $5 \times 750 + 2 \times 1500\ (= 6750)$ words in the first week. A small minority gave Friday May 12th as their answer, others gave an incomplete answer such as 'Thursday' or 'Thursday 11th'.

(b) In order to make any progress with this part candidates needed to realise that Joanne had 11 days to complete her short story but, since 4 of these days are at the weekends when she can write twice as many words as on weekdays, this is equivalent to 15 weekdays. Many candidates wrongly divided the 8000 words remaining by 11 or 13 or some other wrong number. Candidates were expected to round their answer up to 534 words. A small minority of candidates attempted this part by trial and improvement, often gaining some credit.

Question 9

Most candidates realised that the bills of $24.59 and $55.41 would give Shirley 33 loyalty points, so the other three visits to Everlo would result in 38 points, though a small number of candidates made arithmetic errors. Many candidates then went on to point out that 15 + 15 + 8 gives a total of 38, so the smallest possible amounts spent were $40.00, $40.01 and $30.00, giving a total of $110.01, or $190.01 if the first two amounts are included. This answer gained partial credit. Full credit was given to candidates who realised that a better answer was to make up the 38 points as 27 + 8 + 3, giving an overall lowest total amount that Shirley could have spent of $186.60. A small number of candidates omitted this question.

Question 10

(a) Quite a lot of candidates did not understand that the comparison required was between the profit Amy would make when Jack bought his usual 6 cups of coffee at the full price of $2.10 per cup over a 2-week period and the profit Amy would make if Jack completely filled his loyalty card, by buying 11 cups of coffee at the full price and having 4 cups free. Those who did understand the question usually arrived at the correct profits for each case to show that Amy makes less profit if the loyalty card is used.

(b) This part was found difficult by many candidates. To arrive at the correct answer candidates had to realise that if Jack uses his loyalty card to buy 12 cups of coffee he only pays for 9 of them. This means that the profit Amy makes is only $4.50, which is $0.90 less than she would make if Jack bought his usual six cups of full-price coffee.

(c) This was a straightforward part for candidates who had done **parts (a)** and **(b)** correctly.

Question 11

(a) Most candidates gave the correct answer for this part, either by working out the total of the five travel times and the four 5-minute delivery times, or by writing out a detailed schedule. The answer 09:21 was seen from time to time, by candidates who included the 5 minutes to deliver to Li.

(b) Many candidates did not gain any credit on this part, with a considerable number omitting it entirely. The question required justification, so answers needed supporting reasoning. Those who were successful usually did a detailed schedule, working backwards from the estimated time of 09:56 for Li's delivery to find that the driver would arrive at delivery 3 at 09:30 and leave delivery 2 at 09:22, hence leading to the required answer. Other successful candidates worked out that the time taken from leaving delivery 2 to arrival at delivery 5 would be 34 minutes, while the time taken from leaving delivery 3 to arrival at delivery 5 would be 21 minutes; since there were 31 minutes before his delivery when Li logged into the website the delivery driver has last completed delivery 2.

Question 12

(a) Very few candidates gave a correct answer here – 'the number of jars of honey sold is 4 fewer than twice the number of jars of raspberry jam sold', or equivalent. Many candidates said things like more honey was sold than jam, or the opposite; neither of these is necessarily true – it depends on how many jars of each were taken originally.

(b) Only a small number of candidates arrived at the correct answer, often using a trial and improvement method. Of those attempting an algebraic solution, some used variables denoting the numbers of jars of each preserve Sarah sold, some used variables using the number of jars of each preserve Sarah took to her market stall, and others used a combination of both sets of variables.

THINKING SKILLS

Paper 9694/13
Problem Solving 13

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THINKING SKILLS

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Paper 9694/21
Critical Thinking 21
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Key messages

Although this exam to some extent tests generic skills, which are developed as by-products of the study of other subjects, it is impossible to perform well without studying the specification, preferably with the aid of the endorsed textbook and with reference to previous question papers and mark schemes. In particular, it is necessary to know such items as reliability criteria, the specialised meaning of the terms 'argument', 'argument element', 'assumption' and 'analogy', and the names of certain flaws and weaknesses in reasoning.

Candidates should understand that instances of correct evaluation in their answers to parts of **Question 1** may be used to gain credit in their answer to **Question 2** (if used appropriately).

Candidates need to understand the differences between **Questions 2** and **5**. **Question 2** asks candidates to what extent they agree with a claim, so they may give a nuanced conclusion. **Question 5** asks them to write an argument to support **or** challenge a claim, so they must aim to persuade the reader to agree with their chosen side. Giving a counter-position and dismissing it with reason may strengthen their argument, but if it is not dismissed then it weakens the candidate's own argument. In **Question 2**, candidates are expected to engage with the sources provided, whereas the content of answers to **Question 5** should be entirely their own ideas and be neither derived from nor in dialogue with the passage used as the basis for **Questions 3** and **4**.

General comments

The handwriting of a significant proportion of candidates was difficult to decipher. Examiners also found it difficult when a few candidates numbered their answers incorrectly or not at all.

Most candidates attempted the whole exam, but some omitted some parts, especially of **Question 4**. Candidates from some Centres attempted **Question 4a** or the whole of **Question 4** last, presumably because it was the part of the exam in which they were least likely to achieve marks and would therefore matter least if they did not have enough time to complete it. It is unwise to risk not having enough time to attempt **Question 5**, because some of the marks for that question are the most accessible in the exam.

Candidates should read the documents carefully in order to avoid misunderstanding. For example, many candidates on this occasion misread para 1 of the passage provided in *Section B*, which prevented them from identifying correct answers to **Question 4a**.

Certain tasks, such as identifying arguments and evaluating analogies, occur frequently in the exam and it would be very beneficial for candidates to practise these skills in dialogue with mark schemes from previous sessions, so that they know what kinds of answers are expected.

Candidates should not be satisfied with gaining 1 mark from a question to which 3 or 4 marks have been allocated. In **Question 1d(i)**, for example, very few candidates offered more than one element to their answer, even though 3 marks were available. Conversely, it is not a good strategy to spend too long writing an answer for which only 1 or 2 marks are available.

Comments on specific questions

Section A

Topics for **Section A** may be drawn from any academic discipline. On this occasion, the subject areas were economics and business studies.

Question 1

(a) A fair number of candidates judged correctly that Source A was an argument, but more stated that it was not. Although the source did not seek to persuade readers to take any course of action, it did argue in support of a claim, namely that the practice of planned obsolescence 'has multiple advantages for the world economy.' A few candidates wrongly identified the first sentence as the conclusion. A few candidates incorrectly differentiated between 'conclusion' and 'claim', and alleged that Source A included both of them or one but not the other. A significant minority of candidates based their answers on the everyday meaning of 'argument', instead of the specialised meaning used in Thinking Skills, stating, for example, that Source A was not an argument because it did not include a counter.

(b) A fair number of candidates explained that Sources A and B approached the topic of planned obsolescence from different perspectives (economics and consumer protection respectively) and a few identified the difference between minor changes and items becoming unusable, but many summarised or contrasted the content of the two sources instead of answering the question.

(c) Many candidates suggested an alternative explanation which achieved 2 marks, but some answers were incomplete and were awarded only 1 mark. Since the claim referred to washing machines developing faults 'much sooner than they used to', correct answers needed to include some reference to change over time. A few candidates apparently misunderstood the nature of this task and either explained the hypothesis put forward in the question or suggested how consumers might respond to the premature breakdown of domestic appliances.

(d)(i) Nearly all candidates appeared to understand the meaning of the expression 'vested interest', although a few apparently did not and many referred to the fact that the lawyers are described as specialising in the law concerning electronic products, which is irrelevant to the issue of vested interest. Most answers focused more or less successfully on the vested interest of the lawyers to say what the manufacturers wanted them to say, in order to receive their fees. In order to be awarded a mark, it was necessary to state both what someone was likely to do and what they would gain by doing so, but many candidates did not do this. In order to receive full marks, it was necessary to address the VI of **both** the lawyers and the manufacturers **and** to identify **both** positive and negative VI, but nearly all of the candidates who correctly expressed one valid point were content with it and did not look for ways of achieving the other two marks.

(ii) Almost all candidates judged that Source C was not significant to this allegation, but some of them gained 1 mark or 2 for their explanations. Some answers were not credited because they used verbs like 'prove' or 'refute' instead of 'claim' or 'allege'. Answers which summarised all or part of the contents of the source were not credited if they did not explain how the contents were significant in relation to the claim. Many candidates answered this question in terms of reliability, presumably because that was the focus of the first half, but answers of that kind were not credited, because they did not relate to significance.

(e) Many candidates offered the two obvious answers – first and third on the mark scheme – but many other answers were also credited. A few candidates apparently did not understand what they were being asked to do, perhaps because they did not understand the word 'deter'. More candidates omitted this question than other parts of **Question 1**.

Question 2

Some candidates supported the claim, and some opposed it, but the most popular conclusion was, 'I agree to some extent.' The key to achieving higher marks was to evaluate sources and draw pertinent inferences from them, and on this occasion a good proportion of candidates attempted to do this, with varying degrees of success. There were many good instances of inferential reasoning. As on previous occasions, however, many did no more than simply relate some or all of the sources to the claim, thereby achieving 2 or 3 marks out of 8. A few candidates did even less than this, summarising the sources without relating them to the claim, which does not qualify as 'using' them. Although the main focus of this question is on the use of the sources, 2 marks are available to candidates who include some independent thinking in their answers, and on this occasion several candidates made good use of their own knowledge, opinions or experience.

However, some candidates relied entirely on their own thinking, making no use of the sources, which severely limited the mark they could achieve.

Section B

Candidates engaged with the subject of *Section B*, but many disagreed with the author's thesis so profoundly that they appeared to find it difficult to evaluate his reasoning coolly.

Question 3

(a)   A fair proportion of candidates correctly identified the main conclusion, but several wrong answers were also offered, particularly the whole or the second half of the first sentence of the passage. A few candidates attempted to summarise the passage instead of quoting its conclusion *verbatim*, as they had been instructed to do.

(b)   A fair proportion of candidates correctly identified one intermediate conclusion, but not many gave two correct answers. Some candidates lost one or both marks by adding one or two additional elements from the final sentence of the passage to the central element, which was an intermediate conclusion. 'People who are seen to be different from their fellows will be bullied' and 'Being bullied by co-workers or neighbours for being different ruins people's lives' were popular wrong answers.

(c)   Many candidates correctly identified the argument element as an example, but fewer gained the second mark, by correctly identifying its function in the reasoning. Generic accounts of the function, which did not refer to the specific instance, were not credited. Because only 1 mark was available for identifying the argument element, candidates who offered more than one answer received 0 marks, even if one of them was correct. A few candidates appeared not to know what was meant by the expression 'argument element' and summarised or discussed the relevant section of the argument instead of identifying an argument element.

(d)   The most popular answer was that kissing in public causes offence to many, but this was stated in the passage and therefore could not be an 'unstated' assumption. A significant minority of candidates gave answers consisting of quotations from the passage. As in previous sessions, the underlying problem seemed to be that candidates interpreted 'unstated assumption' as meaning 'unsupported claim' or 'unpersuasive claim'. Many candidates seemed to have been unconvinced by 'kissing in public' as an example of offensive behaviour. The key parts of the paragraph are:

   R   Some actions...cause offence to many because they go against generally accepted behavioural norms.
   Ex such as kissing in public
   A   Everyone should avoid behaviour which would cause offence to large numbers of people.

   C   Everyone should follow these standards whether they agree with them or not.

   R and A support C jointly.

Question 4

As on previous occasions, most candidates achieved lower marks on this part of the exam than on the other sections; however, more candidates than previously seemed to know what some of the questions meant and the kinds of answers which could be correct.

Candidates need to understand that arguing against a claim made in the source does not constitute identifying a flaw or weakness in it.

(a)   Most candidates argued against the reasoning in this paragraph instead of identifying the flaws in its reasoning. The most popular answers were to reject the statements, 'If a million people hold a particular opinion and one individual disagrees with it, the majority view is correct', 'No one has the necessary time or expertise to form their own opinion about every issue that arises in their life' and 'whatever most people believe is rightly taught to children as factual'. Many candidates omitted the phrase 'about every issue' from the second of these claims, which led them to misunderstand the author's train of reasoning. Several candidates supported their reasoning by implausible examples, particularly that no one opposed Hitler and that Martin Luther King was the only person who

supported civil rights in the US. Some identified appeal to popularity as one or both of the flaws, even though that was the subject-matter of the paragraph. Several candidates wrongly alleged that the counter plus response in the first sentence constituted a contradiction. Answers which listed the names of flaws, without any explanation or indication of whereabouts in the paragraph they occurred, were not credited.

(b) As on previous occasions, candidates were reluctant to say that the analogy was good and emphasised the differences between building on the foundations of a subject and of a house rather than the similarity. Most candidates were understandably more sympathetic than the author to a candidate who challenged a lecturer: some based their approval on alleged differences between a lecture and house-building, while others claimed that frequently inspecting the foundations of a house was a good practice. Most discussed asking questions in lectures in general, rather than specifying challenges to the presuppositions underlying the course, and thereby missed the point. Many candidates overlooked or misunderstood the significance of the expression 'keep distracting' and stated that it is essential to check that the foundations of a building or a subject are sound before building on them. Many of the comments were not credited because they referred to either house-building or challenging the presuppositions behind lectures, but not both.

(c) Many candidates identified the appeal correctly, but some identified it as an appeal to authority or popularity and others did not name an appeal at all. Fewer candidates gained 1 or 2 more marks by identifying the strength and/or weakness of this reasoning. Statements of the intention of the appeal, rather than its effect, were not credited as evaluations.

Question 5

A wide variety of standards was achieved. A fair number of answers were well structured, but others consisted of a single stream of consciousness. Many low-scoring answers were brief and undeveloped and some were repetitive and tautologous. Many candidates argued in separate strands of reasoning and a fair number made appropriate use of 'additional argument elements' (examples, evidence, analogies, counters with response or hypothetical reasoning). Although some candidates constructed their strands of reasoning to support intermediate conclusions, relatively few used argument indicator words to identify those intermediate conclusions. Some candidates received relatively low marks for interesting ideas, because they did not satisfy the criteria for being awarded marks, whereas others received higher marks for commonplace content, because they knew what elements to include in order to gain marks. The marks of some answers were capped at 6, because candidates concluded 'I agree with the claim' or similar, instead of arguing in favour of either the claim stated in the question or one of those listed in the mark scheme as acceptable ways of challenging that claim.

More candidates chose to support the claim than to challenge it. Many candidates ignored the reference to adolescence, and simply argued that everyone should develop their own opinions and values; much of their reasoning was explicitly contrasted with the claim in the passage that everyone should follow the majority.

A few candidates received 0 marks or 1, because they focused on the passage supplied as the basis of **Questions 3** and **4** or because their statements of opinion did not support a conclusion and thereby did not qualify as 'reasons'. Some candidates made much use of rhetorical questions, but these are not amongst the argument elements listed in the mark scheme and are therefore not credited.

Some candidates omitted this question, while others wrote very little. It appears likely that they had run out of time.

THINKING SKILLS

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Paper 9694/22
Critical Thinking 22

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Key messages

Although this exam to some extent tests generic skills, which are developed as by-products of the study of other subjects, it is impossible to perform well without studying the specification, preferably with the aid of the endorsed textbook and with reference to previous question papers and mark schemes. In particular, it is necessary to know such items as reliability criteria, the specialised meaning of the terms 'argument', 'argument element', 'assumption' and 'analogy', and the names of certain flaws and weaknesses in reasoning.

Candidates should understand that instances of correct evaluation in their answers to parts of **Question 1** may be used to gain credit in their answer to **Question 2** (if used appropriately).

Candidates need to understand the differences between **Questions 2** and **5**. **Question 2** asks candidates to what extent they agree with a claim, so they may give a nuanced conclusion. **Question 5** asks them to write an argument to support **or** challenge a claim, so they must aim to persuade the reader to agree with their chosen side. Giving a counter-position and dismissing it with reason may strengthen their argument, but if it is not dismissed then it weakens the candidate's own argument. In **Question 2**, candidates are expected to engage with the sources provided, whereas the content of answers to **Question 5** should be entirely their own ideas and be neither derived from nor in dialogue with the passage used as the basis for **Questions 3** and **4**.

General comments

The majority of candidates attempted to answer all the questions. There was no discernible trend regarding questions that were not attempted.

Candidates sometimes chose to answer questions in an order different from that on the question paper. In these circumstances, they usually covered all the questions, but a minority omitted questions with no clear sign that they had intended to do so. This suggests that perhaps they would have attempted to answer the missing questions had they realised that they had left them unanswered. Should candidates choose to answer questions in any order other than as they occur in the question paper, it is important to ensure that none is accidentally omitted.

Comments on specific questions

Section A

Question 1

Many candidates, when responding to **Questions 1(b)** to **1(e)**, resorted to comments along the lines of 'the author does not provide any evidence for the claim' or 'we do not know where the statistics came from'. Answers such as these rarely, if ever, gain credit.

(a)   Most candidates recognised that Source B was an argument, correctly identifying the first sentence as the conclusion. Quite a few described the conclusion as being supported by 'evidence' or 'examples', rather than by 'reasons'. Although incorrect, they still scored marks as long as they made it clear that the conclusion was being supported by the rest of the material in the source, but they should use the correct expression.

Of those candidates who did not identify Source B as an argument, some did not do so because they appeared to believe that an argument has to present two sides of a question, and that the absence of any claim countering the conclusion ruled the source out as presenting an argument.

A small number seemed to be under the erroneous impression that an argument, to be such, must be trying to persuade people to do something, excluding the possibility that persuasion may be presented merely to induce people to believe the claim that is the argument's conclusion, rather than to take any specific action. Responses along the former lines usually interpreted Source B as trying to persuade readers that they should not buy self-driving cars.

(b) Nearly all candidates recognised that the evidence in Source D cannot be said to be representative of 'people in this country', giving accounts of varying quality and detail why this was so.

Some candidates misunderstood the source and the nature of the task, either criticising the way the data had been presented or claiming that it was weakened because the percentages did not total 100 percent.

(c) Candidates who obtained marks for this question usually did so by making either or both of the first and third points on the mark scheme. However, most usually stopped at identifying the problems, not achieving the second mark by explaining why the issues identified were problems. The question had asked them to do both.

A sizeable portion of candidates suggested weaknesses that were too speculative for credit. For example, 'people may not be able to afford to purchase self-driving cars'. Some candidates believed that the source was internally contradictory, not realising that the first paragraph presented a counter-position that the second aimed to rebut.

(d) Very few candidates realised that the key to responding fully to this question required them to identify why the sources may *appear* to be inconsistent. Doing this was essential to achieving the four marks available for the question. Most candidates who gained credit here did so by recognising that Source's A claim about reduced fuel consumption applied only if people downsize to lighter and less powerful cars, whereas Source B's claim about increased fuel consumption referred to direct comparisons between self-driving cars and conventional ones 'of the same weight and power'.

Where no credit was gained for this question, this was normally for one of the following reasons: (a) candidates interpreted the question wrongly, reading it as asking why each source was not internally inconsistent, rather than why they were not inconsistent with each other; (b) candidates merely listed ways in which the sources agreed with each other; or (c) candidates misread the question and claimed that the sources were inconsistent.

(e) The first two responses on the mark scheme were the most popular, with the majority of candidates obtaining credit in this way, identifying either or both of these points.

Question 2

Responses were split more or less evenly between support and challenge to the given claim. Some candidates, including a few who did not perform well in **Questions 1**, **3** and **4**, achieved good marks in this question (and in **Question 5**) by planning their responses carefully. Their plans on the exam booklet showed a sensible degree of forethought.

Good responses made use of all four sources, explicitly doing so, rather than leaving the Examiner to infer that this was the intention. Some candidates believed that Source D was not related to the given claim. While the relationship was not direct, the best responses recognised that the significance of this source was that it suggested that even if self-driving cars are deemed to be good for the environment, the take-up by the car-buying public may be too low for the environment to benefit from their use. Such responses usually obtained credit not only for use of the source, but also for inferential reasoning from it.

Many candidates attempted to access the three marks available for evaluation of sources. Where credit was not given, this was usually because they had not focused their evaluation with sufficient precision. For example, it is not enough to attribute expertise to a source; it is important to state the nature of the expertise. Likewise, when claiming that a source is biased, the direction of the bias needs to be given, as well as how the bias may affect the content of the source material in question.

Some otherwise good responses were undermined by candidates not ensuring that their use of sources, and any associated evaluations, reinforced their chosen conclusions, whether support or challenge. For example, for a challenge conclusion, using Source A (which supports the claim given in the question) was fine as long as its weaknesses were highlighted by a negative evaluation; but use of the source with either no evaluation or a positive one undermines a challenge conclusion.

Section B

Question 3

(a)   A significant number of candidates correctly identified the third sentence of the first paragraph of the passage as the main conclusion. The most common wrong answer was the last line of the fifth paragraph ('it seems that people are more likely to find happiness indirectly.'). Candidates who did not answer this question correctly often gave the correct main conclusion in response to **Question 3(b)**.

(b)   The most common correct answer given was the first one stated in the mark scheme. Most candidates stated it accurately, without including the supporting reason that precedes it, thereby gaining both available marks. The other two intermediate conclusions, less easy to spot, were given in roughly equal measure. The most common wrong answers were the first and last sentences from the second paragraph. Some candidates misread the question, seeking intermediate conclusions in the wrong paragraphs.

(c)   There was a variety of answers offered. Many candidates who rightly identified the argument element as 'reason' omitted to give a creditworthy account of its function, so were only awarded a single mark from the two available.

(d)   There was only a single assumption made by the passage, although it could have been expressed in various ways. The question asked for just one assumption to be given; if candidates gave two, they were awarded one mark if one of their answers was correct. A fair-sized portion of candidates took 'unstated assumption' to mean a phrase stated in the passage without any support, so offered quotations from the second paragraph as their responses.

Question 4

There were many good responses to this question, with some candidates obtaining one or more marks for all four parts of it.

(a)   Many candidates correctly identified the appeal in paragraph 1 as an appeal to the authority (occasionally 'to expertise') of professional psychologists. A minority obtained a single mark for correctly identifying the appeal as involving professional psychologists, but did not name (or describe) the appeal being made, so could not receive full marks for the question. Some identified the appeal as being an appeal to popularity or authority, citing the first sentence of the paragraph, thereby gaining the single mark available for this.

(b)   The relatively obvious 'slippery slope' was identified by the majority of candidates. However, many responses omitted to identify the 'bottom' of the slope, making reference only to 'ruined relationships with family and friends', without moving on to 'loneliness' and 'an unhappy life'. To receive the first mark available, it was necessary to take the second step. Candidates who did not receive the first mark sometimes received the second one, by questioning the inevitability of the exaggerated progression described in the passage.

(c)   This question was often well answered. Candidates did not need to know who Eleanor Roosevelt was to obtain full marks and some achieved either two or three marks without making reference to her at all, although some candidates did make the creditworthy point that she was not necessarily an expert on the topic of happiness.

(d)   This question too was generally answered well, with the second point on the mark scheme being the one most commonly made. Some candidates were sidetracked into criticising the archery part of the analogy, claiming that, contrary to what was stated in the passage, archers do aim directly for the centre of a target. Sometimes, they went on to make creditworthy points, but there were a

few who apparently thought that, having made this remark, they had fatally undermined the analogy and nothing more needed to be said. As often happens with analogy questions, there were some responses that merely stated that the two things being compared were too different for the analogy to have any value.

Question 5

As with **Question 2**, support and challenge to the stated claim were found in approximately equal measure. Generally, candidates focused correctly on their chosen conclusions, but a minority misread the question as asking whether or not money can buy happiness.

Some responses did not receive high marks because they were poorly structured, especially with respect to making use of intermediate conclusions to enhance the reasoning. Such responses often took the form of 'lists' of reasons why money is (or is not) necessary for happiness.

Weaker responses sometimes did not gain many marks because they were overly rhetorical in nature – usually when challenging the claim that people need money to be happy.

Candidates often used good counter-arguments or counter-assertions in their reasoning, which obtained credit as an additional argument element. A few candidates missed out on this credit because they did not provide adequate responses to the objections that they had raised to their chosen conclusion.

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THINKING SKILLS

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THINKING SKILLS

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Paper 9694/31
Problem Analysis and Solution 31
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Key messages

Candidates should check that their answers (or the units in which an answer is given) are plausible for the scenario of the question.

'Show that' questions are often intended to help the candidate understand the key features of the model or scenario in which the question is set. If they do not get the given answer first time, they should check again more carefully rather than proceeding to the rest of the question carrying a critical misunderstanding.

In questions asking the candidate to show that something 'must be' or 'is certain', responses based on something being 'likely' will not be correct.

General comments

There has been an improvement in labelling terms and using units, but some candidates still seem reluctant to add words. Those candidates who wrote e.g. 34 days or 34 computers generally did not get confused between what their own numbers were.

Some arithmetic errors appeared to be candidates unable to read their own handwriting; those with less good handwriting should take particular care when setting out final answers, as credit will not be given if it is not possible, for example, to distinguish their 4 from their 9.

There has been an increase in the number of responses given against the wrong question or part, e.g. 5(a)(i), or responses to 3(b) labelled as 2(b).

There were no times of day in any of the questions in this paper, which reduced the scope for calculation errors.

Comments on specific questions

Question 1

(a)   A wide range of responses were given, rarely with any working to suggest why. With 2 marks available, some working would be expected, but it was seldom seen.

(b)   Again, many candidates appeared to have considered some of the relevant details, but, without showing working, did not receive any marks. Some just gave the points in the current round and not the total.

(c)   Almost all candidates identified that the adjacent squares were critical, but a few inverted the logic or only mentioned the absence of ticks.

(d)   Most candidates found all three sets.

(e)   Many wrong answers were given without any working. Unlike the responses to **Question 4**, which were routinely one out, in this instance very few gave the boundary of 20 rather than the correct maximum of 19.

Question 2

(a) (i)   Most candidates correctly answered this, although some gave double the number of points.

(ii)   Almost all candidates correctly identified Ochre.

(b)   Most candidates correctly identified Ocean, but a few added one or more extras.

(c)   Plenty of candidates gave the correct answer. Where working was shown with wrong answers it often indicated simple arithmetic errors rather than lack of understanding of the relevant process.

(d)   Most candidates noted that the total was not a multiple of 3. A few did not calculate the total correctly. Some attempted to answer just a question about the game in progress and not the general point that this applies to all games.

(e)   Most candidates found at least one of the totals, but some did not detect that although 47 (like 44) was a possible tie, it would not have won. Some described the possible scenarios without giving the totals, and a few gave the just the total for the final game.

(f)   A few candidates offered one player in more than one pair. Some offered answers that looked like answers to a completely different part, e.g. '27 points'.

(g)   The 4 marks for this part offered a strong hint that there were at least 4 things to observe to give a complete answer. Many candidates did not spot the need to determine that no ties for first place were possible. Most noted that Lemon could not win and that Mustard would be ahead of Saffron. Few candidates noted the impossibility of a difference of 6. Some offered words such as 'likely', which cannot be correct when showing that something is 'certain'.

Question 3

Some candidates assumed that every resident in the election would get at least one vote. Others equated a simple majority with needing at least 51 per cent.

(a) (i)   Many candidates gave 301, the minimum number that guarantees a valid win.

(ii)   Many candidates gave 299, but a few 300 and many more 199.

(b)   Some candidates responded with 6000, and few with much larger numbers which should have been obviously wrong when there are 10 groups of 600.

(c)   Most candidates obtained the special case mark; only a few found the fully correct answer.

(d)   Some candidates found the constituency maximum of 448, but few considered the option of 100 per cent turn-out in the rest of the constituencies.

(e)   Not only was care needed on what was maximised and what minimised in the various cases under consideration, but there was a range of possibilities giving the same extreme value. Some candidates worked with the relevant difference, rather than absolute values, but many appeared to have worked on a single case, possibly unaware of the range of options.

Question 4

Some candidates made extra assumptions that were not specified, e.g. that the number in each delivery had to be the same, which would be a significantly different question. This question required care with numbering. Most candidates addressed this question last, and many seemed to have run out of time, as a third did not give any responses beyond **4(c)(i)**.

(a)   Many candidates started counting from the first day of installation. Some rounded down the number of days needed.

(b)   Many candidates gave the same answer as they had for **(a)**.

(c) (i)   Few candidates identified the appropriate ratio that indicated where to start searching. Many reused their answer to **(b)**.

(ii)   Very few candidates explicitly identified 34, although since the production was by five per day, rounding up to 35 may have been done without mentioning this detail.

(iii)   A wide range of numbers were offered.

(d) (i)   Some candidates offered general comments that could be derived from the question and would be true for all answers, rather than being based on the specific detail, but many looked for something far more complex than the simple explanation required, as is suggested by having just one mark.

(ii)   This part needed to follow the best case and determine that 3 deliveries would not suffice, but 4 would. It was not sufficient to show or merely assert that it can be done with 4.

(e)   Few candidates attempted this part, and few of those who gave the correct final answer showed that they had checked the limits.

(f)   Not many candidates reached this part, and few of those were awarded the mark for working on the number of computers.

THINKING SKILLS

Paper 9694/32
Problem Analysis and Solution 32

Key messages

Candidates should check that their answers (or the units in which an answer is given) are plausible for the scenario of the question.

'Show that' questions are often intended to help the candidate understand the key features of the model or scenario in which the question is set. If they do not get the given answer first time, they should check again more carefully rather than proceeding to the rest of the question carrying a critical misunderstanding.

In questions asking the candidate to show that something 'must be' or 'is certain', responses based on something being 'likely' will not be correct.

General comments

There has been an improvement in labelling terms and using units, but some candidates still seem reluctant to add words, and may need reassurance that this is not a test of English spelling or grammar, so they will not lose marks for 'beach trees kneeded' or 'votes casted', but rather stand to gain credit if working is seen to be correct.

Some arithmetic errors appeared to be candidates unable to read their own handwriting; those with less good handwriting should take particular care when setting out final answers, as credit will not be given if it is not possible, for example, to distinguish their 4 from their 9.

There were no times of day in any of the questions in this paper, which reduced the scope for calculation errors. Whilst unconventional renderings of, say, $3.21 as 3'21$ were accepted as unambiguous, the use of $3.2 for three dollars and two cents was not. Candidates should not assume that any particular dollar is meant unless it is explicitly stated.

Candidates are not required to do the parts or questions in any particular order, but should use the question paper numbering for their responses.

Comments on specific questions

Question 1

(a) Most candidates showed the relevant calculation. In this case the presentation that the given answer fitted (e.g. 6 × 15 cm = 90 cm) was accepted, but it is better and safer to present responses to 'show that' questions by deriving the answer (i.e. 90 cm / 6 = 15 cm).

(b) Most candidates calculated that 2.4 balls were needed and most of those then rounded this up to 3, although a few inappropriately rounded down to the nearer number. Some confused metres of wool with metres of scarf.

(c) Candidates offered a variety of valid approaches: how much wool for 80 scarves, how many scarves for 8 balls, what length of wool is needed and is available and how do the amounts compare. Most were correct.

(d) A few candidates calculated the price using only the amount of wool needed rather than the amount of wool bought.

Question 2

Algebra sometimes may assist in this paper, but it is not required and is often unhelpful when a relationship has discontinuities. Many candidates made unsuccessful attempts to render this question algebraically.

(a)　Most answered correctly, but some candidates missed one or other of the points that it was one rate for all in a bag and that only complete 100 grams counted, and then wrote a price calculation whose sum was asserted to be the given answer when it was not. These candidates scored few marks in the remainder of the question.

(b)　Most answered correctly. Mistakes on this part were mostly arithmetical.

(c)　Many candidates found the cheapest two-bag case, but few spotted that it could be even cheaper with three.

(d)(i)　Some candidates omitted to reduce the amount available by the cost of one or two bags before considering the allocation of the contents.

(ii)　Few candidates found that there needed to be a multiple of at least 4 in the costs. Those who did generally also noticed the need for the total to be a multiple of 3.

(e)　Many of those attempting this by trial and improvement made an error in the process.

(f)　Many candidates incorrectly offered $2.1 or $2.01. A few candidates gave the next amount above $1.20 as $1.25 or $1.30, seemingly because 1¢ coins may no longer be in use in their (dollar) currency. This was condoned on this occasion.

Question 3

The requirement that strings must be continued if possible was often ignored, particularly by those offering any string ending in 1.

(a)　Some of those who noted that 7 and 11 were special gave the link going to 1 rather than coming from 1.

(b)　Few candidates noted both the strings involving 7 or 11 and those ending in 9 or 5.

(c)　Most candidates found a suitable string, but some offered one that ended in 1 and is thus not complete.

(d)(i)　Many candidates overstated the limitations (e.g. 'neither 7 nor 11 could appear in a string').

(ii)　Most candidates found one of the four possible ways; some wasted time by giving more than one.

(e)　Many candidates found a string which left a number of prime (or at least coprime) singletons. Those who gave a string of six did not realise that this would leave five numbers and thus would lead to inevitable *defeat*. (The one slightly more complicated winning case $6 \rightarrow 2 \rightarrow 4 \rightarrow 12$ was not seen.)

Question 4

(a)　Many candidates simply added an unexplained +1 to get to the desired answer.

(b)　Most candidates found the correct number and price for the pine trees, but many added or removed 4 beech trees to take unnecessary account of the corners.

(c)(i)　Some candidates did not use the bundles available but gave costs based on a proportion of the price if buying complete 100s.

(ii)　As well as occasional arithmetic errors, there were cases where candidates appeared to have written a number of trees and then later used the unlabelled number as a dollar price.

(d)   Some candidates retained the earlier constraint on rows being 11 long and thus offered 88 instead of 90 as the largest acceptable rectangle less than 92.

(e)   Some candidates calculated the difference between their two prices apparently without noticing that the second price they presented was higher than the first, in which case there would be no saving. This should have registered as a warning of at least an arithmetic slip.

THINKING SKILLS

Paper 9694/33
Problem Analysis and Solution 33

Key messages

Candidates should check that their answers (or the units in which an answer is given) are plausible for the scenario of the question.

'Show that' questions are often intended to help the candidate understand the key features of the model or scenario in which the question is set. If they do not get the given answer first time, they should check again more carefully rather than proceeding to the rest of the question carrying a critical misunderstanding.

In questions asking the candidate to show that something 'must be' or 'is certain', responses based on something being 'likely' will not be correct.

General comments

There has been an improvement in labelling terms and using units, but some candidates still seem reluctant to add words, and may need reassurance that this is not a test of English spelling or grammar, so they will not lose marks for 'beach trees kneeded' or 'votes casted', but rather stand to gain credit if working is seen to be correct.

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(e) Many of those attempting this by trial and improvement made an error in the process.

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The requirement that strings must be continued if possible was often ignored, particularly by those offering any string ending in 1.

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(a) Many candidates simply added an unexplained +1 to get to the desired answer.

(b) Most candidates found the correct number and price for the pine trees, but many added or removed 4 beech trees to take unnecessary account of the corners.

(c)(i) Some candidates did not use the bundles available but gave costs based on a proportion of the price if buying complete 100s.

(ii) As well as occasional arithmetic errors, there were cases where candidates appeared to have written a number of trees and then later used the unlabelled number as a dollar price.

(d)   Some candidates retained the earlier constraint on rows being 11 long and thus offered 88 instead of 90 as the largest acceptable rectangle less than 92.

(e)   Some candidates calculated the difference between their two prices apparently without noticing that the second price they presented was higher than the first, in which case there would be no saving. This should have registered as a warning of at least an arithmetic slip.

THINKING SKILLS

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Paper 9694/41
Applied Reasoning 41
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Key messages

In **Question 1**, candidates are expected to quote directly from the text in the document. It is acceptable to use ellipsis (…), so long as the start and end points are completely unambiguous.

In **Question 2**, candidates are expected to evaluate the reasoning in the document with reference to the flaws and weaknesses listed in the syllabus. Responses that simply dispute the reasons given in the argument, or generic statements such as 'there is no evidence to back this up' or 'we do not know the source', are unlikely to gain any credit.

In **Question 3**, candidates are expected to evaluate the validity of inferences that might be drawn from data in some form. Responses that simply question the source of the data or speculate about the sample size are unlikely to gain any credit.

In **Question 4**, candidates are expected to create their own argument structure, rather than follow the sequence of the documents. They should structure their arguments clearly, using indicator words such as 'so' and 'therefore' to identify intermediate conclusions, and make use of other argument elements to support their reasoning.
Candidates are asked to write an argument to support **or** challenge a claim, so they must aim to persuade the reader to agree with their chosen side. Giving a counter-position and dismissing it with reason may strengthen their argument, but if it is not dismissed then it weakens the candidate's own argument. Candidates should understand that evaluating ('making critical use of') the documents is not limited to assessing their credibility, which will often be difficult to do if a source has not been given. Other forms of evaluation, including those assessed in **Questions 2** and **3**, should also be used. Instances of correct evaluation in their answers to those questions may be used again in their answer to **Question 4**.

General comments

Most candidates appeared to have enough time to finish the paper with some evidence of time being used to plan answers to **Question 4**. Fewer candidates than in previous sessions wrote disproportionately long answers for the earlier, lower-tariff questions, suggesting that advice from previous reports had been noted.

The standard of candidates varied greatly but there was evidence that some candidates had been well prepared.

Comments on specific questions

Question 1

All parts of **Question 1** rewarded the well prepared candidate. Those who knew what was expected and attempted to analyse the argument usually gained between 2 and 6 of the 8 marks for analysis. Some candidates were unaware that quoting from the text is necessary for answering this question.

(a) Most candidates knew what was required and attempted to identify the conclusion. Fewer than half of the candidates achieved this mark. The most common non-creditworthy responses offered one of the intermediate conclusions as the MC, but some candidates paraphrased the MC or attempted to give the gist.

(b) Candidates were more successful at this part of the question. Most candidates gained 1 mark and many achieved 2. Interestingly, many candidates who stated precise and correct answers in part **(b)** went on to give paraphrased answers in **part (c)**.

(c) A similar proportion of candidates to June 2022 knew how to approach this question. Many still did not understand what was required. Candidates needed to identify (by stating) parts of the paragraph as individual argument elements and, for full credit, to demonstrate relationships between any elements that have been identified. Some responses summarised the meaning of the paragraph, others evaluated it and some attempted to counter the reasoning.

Of those candidates who attempted analysis, some paraphrased the elements (rather than stating them word-for-word), some did not name the elements and some did not demonstrate relationships between them. Some candidates identified an individual argument element as 'reasoning' (as opposed to 'a reason', which might have been creditworthy). It was relatively common for well prepared candidates to be awarded award between 1 and 3 marks, but the award of all 5 marks was rare.

Question 2

The vast majority of candidates were aware of the nature of the task and attempted an evaluation for both parts of the question.

(a) As ever, responses that directly countered points given in the argument were not credited, nor were generic statements like 'there is no evidence to back this up' or 'we do not know the source' (although there were fewer of these this series). Candidates found this question challenging. Many candidates scored 0 and even seemingly well prepared candidates struggled to find more than two creditworthy weaknesses. Marks were most commonly gained for identifying the appeal to tradition in paragraph 2 and the *ad hominem* in paragraph 3 (which a number of candidates referred to as '*ad homien*'. All other marking points were seen, albeit rarely. A few candidates did understand what an assumption was and were able to identify a questionable one, occasionally; most, however, appeared to regard any unsubstantiated claim as an assumption. It is worth reiterating that if it has been stated in the document, it cannot be an unstated assumption.

(b) Most candidates attempted to do what was required for this question. It was common to award 1 mark for identifying the exaggeration (usually phrased as a slippery slope). Full-mark answers were seen, but rarely.

Question 3

Candidates appeared to know what type of answer was expected and most limited the length of their responses to match the number of marks available. As usual, answers that questioned the source of the data or speculated about the sample size were not credited.

(a) The majority of candidates achieved 2 marks here for a versions of the first two bullet points on the mark scheme. However, answers that questioned the validity of inferences drawn from data from 'busy' airports were not credited. Many candidates appeared not to understand the nature of the graph, not realising that they were presented with three years' worth of data (the 2017 figures being a comparison with 2016). Candidates that took time to appreciate the meaning of the data were able to access the last 2 marks on the mark scheme, but no candidate scored more than 2 of these in a single answer.

(b) Most candidates achieved at least 1 mark here and many achieved both, usually for a version of the first bullet point combined with a version of the second or fifth. Generic responses about unknown sample size or the credibility of the source of the information were common and were not credited.

Question 4

Candidates were required to use the documents to construct a reasoned case to support or challenge the conclusion that 'Teenage political activism is a force for good'. Most candidates were able to engage with this topic and attempted to construct their own arguments, with few relying on sequentially summarising the documents. Some candidates were able to arrange their ideas into strands of reasoning that each supported a clear intermediate conclusion and, hence, scored higher than Level 1 for the structure skill. However, few

candidates were using the documents with a critical eye, which meant the marks for 'use of documents' were often restricted to Level 1. Most of those responses that did attempt evaluation limited their critical comments to discussions of credibility of whole documents, which is difficult when no source is given. It is worth noting that other approaches to evaluation, that could be more useful for strengthening an argument, exist. One might, for example, have questioned a perceived inference from the quote in Doc 4 regarding the 'mess the older generation have created' (that the older generation did a bad job) on the basis that the assumption that the younger generation would have done a better job is highly questionable.

Arguments supporting the conclusion were strengthened by effectively responding to potential objections about the lack of experience or potential negative influence of teenagers; those challenging the conclusion were strengthened if they included effective responses to the vested interest teenagers have in their own future or the opportunity for widening democracy. It is worth reminding centres that what is likely to get high marks is a persuasive argument that addresses the conclusion given, with a clear structure that is supported by thoughtful, particularly critical, use of the documents, and thoughtfully considers relevant alternative viewpoints.

THINKING SKILLS

Paper 9694/42
Applied Reasoning 42

Key messages

In **Question 1**, candidates are expected to quote directly from the text in the document. It is acceptable to use ellipsis (…), so long as the start and end points are completely unambiguous.

In **Question 2**, candidates are expected to evaluate the reasoning in the document with reference to the flaws and weaknesses listed in the syllabus. Responses that simply dispute the reasons given in the argument, or generic statements such as 'there is no evidence to back this up' or 'we do not know the source', are unlikely to gain any credit.

In **Question 3**, candidates are expected to evaluate the validity of inferences that might be drawn from data in some form. Responses that simply question the source of the data or speculate about the sample size are unlikely to gain any credit.

In **Question 4**, candidates are expected to create their own argument structure, rather than follow the sequence of the documents. They should structure their arguments clearly, using indicator words such as 'so' and 'therefore' to identify intermediate conclusions, and make use of other argument elements to support their reasoning.
Candidates are asked to write an argument to support **or** challenge a claim, so they must aim to persuade the reader to agree with their chosen side. Giving a counter-position and dismissing it with reason may strengthen their argument, but if it is not dismissed then it weakens the candidate's own argument. Candidates should understand that evaluating ('making critical use of') the documents is not limited to assessing their credibility, which will often be difficult to do if a source has not been given. Other forms of evaluation, including those assessed in **Questions 2** and **3**, should also be used. Instances of correct evaluation in their answers to those questions may be used again in their answer to **Question 4**.

General comments

Most candidates appeared to have enough time to finish the paper with some evidence of time being used to plan answers to **Question 4**. Fewer candidates than in previous sessions wrote disproportionately long answers for the earlier, lower-tariff questions, suggesting that advice from previous reports had been noted.

The standard of candidates varied greatly but there was evidence that some candidates had been well prepared.

Comments on specific questions

Question 1

All parts of **Question 1** rewarded the well prepared candidate. Those who knew what was expected and attempted to analyse the argument usually gained between 3 and 6 of the 8 marks for analysis. Some candidates were unaware that quoting from the text is necessary for answering this question.

(a)   Most candidates knew what was required and attempted to identify the conclusion. However, perhaps because the conclusion was not an entire sentence, many did not select the correct answer and many offered the sentence in which the conclusion was to be found. A few answers gave the gist of the argument.

(b)   Candidates were more successful at this part of the question. Most candidates gained 1 mark and many achieved 2. A lot of candidates offered the whole of the third sentence in paragraph 3 as an answer – *They have no power themselves to create or change laws, so there is no point in their existence.* –, rather than just the part that was the conclusion – *there is no point in their existence*. Most candidates followed the instruction to give only two answers. Interestingly, some candidates who stated precise and correct answers in **part (b)** went on to give paraphrased answers in **part (c)**.

(c)   A similar proportion of candidates to June 2022 knew how to approach this question. Many still did not understand what was required. Candidates needed to identify (by stating) parts of the paragraph as individual argument elements and, for full credit, to demonstrate relationships between any elements that have been identified. Some responses summarised the meaning of the paragraph, others evaluated it and some attempted to counter the reasoning.

Of those candidates who attempted analysis, some paraphrased the elements (rather than stating them word-for-word), some did not name the elements and some did not demonstrate relationships between them. Some candidates identified an individual argument element as 'reasoning' (as opposed to 'a reason', which might have been creditworthy). It was relatively common for well prepared candidates to be awarded award 1 or 2 marks, but the award of all 4 marks was rare.

(d)   Fewer than expected candidates achieved a mark here. The proportion of successful answers was slightly less than that for **part (b)**. It was evidence that some candidates who know what an intermediate conclusion was did not know what a counter-assertion looked like. Many candidates included the response to the counter-assertion as part of their answer.

Question 2

The vast majority of candidates were aware of the nature of the task and attempted an evaluation for both parts of the question.

(a)   As ever, responses that directly countered points given in the argument were not credited, nor were generic statements like 'there is no evidence to back this up' or 'we do not know the source' (although there were few of these this series). Many candidates scored 0 but many were able to successfully identify two weaknesses. Marks were most commonly gained for identifying the appeal to novelty in paragraph 1, the appeal to popularity in paragraph 2 and the false dichotomy in paragraph 4. Answers that questioned each of the questionable assumptions in the mark scheme were seen.

(b)   Most candidates attempted to do what was required for this question. Some answers gained 1 or 2 marks from the first paragraph of the mark scheme. It was rarer to award marks from the second paragraph.

Question 3

Candidates appeared to know what type of answer was expected and most limited the length of their responses to match the number of marks available.

(a)   The majority of candidates achieved this mark, usually for a reference to the assumption of happiness.

(b)   This question differentiated well between candidates. The full range of marks was seen, as were creditworthy versions of every point on the mark scheme.

(c)   This part of the question scored less well. Many answers included versions of either of the marking points and a few included both. However, generic responses about unknown sample size or the credibility of the source of the information were common and were not credited.

Question 4

Candidates were required to use the documents to construct a reasoned case to support or challenge the conclusion that 'Hereditary monarchy is good for a country'. Most candidates were able to engage with this topic and attempted to construct their own arguments, with few relying on sequentially summarising the

documents. Some candidates were able to arrange their ideas into strands of reasoning that each supported a clear intermediate conclusion and, hence, scored higher than Level 1 for the structure skill. However, few candidates were using the documents with a critical eye, which meant the marks for 'use of documents' were often restricted to Level 1. Most of those responses that did attempt evaluation of the documents limited their critical comments to discussions of credibility. It is worth noting that other approaches to evaluation exist, for example highlighting the causal flaw inherent in any inference from Document 5 about the existence of a monarchy increasing the wealth of a country, and these may be more useful with regard to strengthening an argument.

Arguments supporting the conclusion were strengthened by effectively responding to potential objections about the cost or the undemocratic nature of monarchies; those challenging the conclusion were strengthened if they included effective responses to the notion that having a monarchy increases a country's prosperity. It is worth reminding centres that what is likely to get high marks is a persuasive argument that addresses the conclusion given, with a clear structure that is supported by thoughtful, particularly critical, use of the documents, and thoughtfully considers relevant alternative viewpoints.

THINKING SKILLS

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Paper 9694/43
Applied Reasoning 43
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Key messages

In **Question 1**, candidates are expected to quote directly from the text in the document. It is acceptable to use ellipsis (…), so long as the start and end points are completely unambiguous.

In **Question 2**, candidates are expected to evaluate the reasoning in the document with reference to the flaws and weaknesses listed in the syllabus. Responses that simply dispute the reasons given in the argument, or generic statements such as 'there is no evidence to back this up' or 'we do not know the source', are unlikely to gain any credit.

In **Question 3**, candidates are expected to evaluate the validity of inferences that might be drawn from data in some form. Responses that simply question the source of the data or speculate about the sample size are unlikely to gain any credit.

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General comments

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The standard of candidates varied greatly but there was evidence that some candidates had been well prepared.

Comments on specific questions

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All parts of **Question 1** rewarded the well prepared candidate. Those who knew what was expected and attempted to analyse the argument usually gained between 3 and 6 of the 8 marks for analysis. Some candidates were unaware that quoting from the text is necessary for answering this question.

(a) Most candidates knew what was required and attempted to identify the conclusion. However, perhaps because the conclusion was not an entire sentence, many did not select the correct answer and many offered the sentence in which the conclusion was to be found. A few answers gave the gist of the argument.

(b)   Candidates were more successful at this part of the question. Most candidates gained 1 mark and many achieved 2. A lot of candidates offered the whole of the third sentence in paragraph 3 as an answer – *They have no power themselves to create or change laws, so there is no point in their existence.* –, rather than just the part that was the conclusion – *there is no point in their existence*. Most candidates followed the instruction to give only two answers. Interestingly, some candidates who stated precise and correct answers in **part (b)** went on to give paraphrased answers in **part (c)**.

(c)   A similar proportion of candidates to June 2022 knew how to approach this question. Many still did not understand what was required. Candidates needed to identify (by stating) parts of the paragraph as individual argument elements and, for full credit, to demonstrate relationships between any elements that have been identified. Some responses summarised the meaning of the paragraph, others evaluated it and some attempted to counter the reasoning.

Of those candidates who attempted analysis, some paraphrased the elements (rather than stating them word-for-word), some did not name the elements and some did not demonstrate relationships between them. Some candidates identified an individual argument element as 'reasoning' (as opposed to 'a reason', which might have been creditworthy). It was relatively common for well prepared candidates to be awarded award 1 or 2 marks, but the award of all 4 marks was rare.

(d)   Fewer than expected candidates achieved a mark here. The proportion of successful answers was slightly less than that for **part (b)**. It was evidence that some candidates who know what an intermediate conclusion was did not know what a counter-assertion looked like. Many candidates included the response to the counter-assertion as part of their answer.

Question 2

The vast majority of candidates were aware of the nature of the task and attempted an evaluation for both parts of the question.

(a)   As ever, responses that directly countered points given in the argument were not credited, nor were generic statements like 'there is no evidence to back this up' or 'we do not know the source' (although there were few of these this series). Many candidates scored 0 but many were able to successfully identify two weaknesses. Marks were most commonly gained for identifying the appeal to novelty in paragraph 1, the appeal to popularity in paragraph 2 and the false dichotomy in paragraph 4. Answers that questioned each of the questionable assumptions in the mark scheme were seen.

(b)   Most candidates attempted to do what was required for this question. Some answers gained 1 or 2 marks from the first paragraph of the mark scheme. It was rarer to award marks from the second paragraph.

Question 3

Candidates appeared to know what type of answer was expected and most limited the length of their responses to match the number of marks available.

(a)   The majority of candidates achieved this mark, usually for a reference to the assumption of happiness.

(b)   This question differentiated well between candidates. The full range of marks was seen, as were creditworthy versions of every point on the mark scheme.

(c)   This part of the question scored less well. Many answers included versions of either of the marking points and a few included both. However, generic responses about unknown sample size or the credibility of the source of the information were common and were not credited.

Question 4

Candidates were required to use the documents to construct a reasoned case to support or challenge the conclusion that 'Hereditary monarchy is good for a country'. Most candidates were able to engage with this topic and attempted to construct their own arguments, with few relying on sequentially summarising the

documents. Some candidates were able to arrange their ideas into strands of reasoning that each supported a clear intermediate conclusion and, hence, scored higher than Level 1 for the structure skill. However, few candidates were using the documents with a critical eye, which meant the marks for 'use of documents' were often restricted to Level 1. Most of those responses that did attempt evaluation of the documents limited their critical comments to discussions of credibility. It is worth noting that other approaches to evaluation exist, for example highlighting the causal flaw inherent in any inference from Document 5 about the existence of a monarchy increasing the wealth of a country, and these may be more useful with regard to strengthening an argument.

Arguments supporting the conclusion were strengthened by effectively responding to potential objections about the cost or the undemocratic nature of monarchies; those challenging the conclusion were strengthened if they included effective responses to the notion that having a monarchy increases a country's prosperity. It is worth reminding centres that what is likely to get high marks is a persuasive argument that addresses the conclusion given, with a clear structure that is supported by thoughtful, particularly critical, use of the documents, and thoughtfully considers relevant alternative viewpoints.