

**MARK SCHEME for the October/November 2010 question paper
for the guidance of teachers**

9694 THINKING SKILLS

9694/41

Paper 4 (Applied Reasoning), maximum raw mark 50

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

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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- 1 (a) If they choose the shortest distance possible for each section of the race, who will win and by how much time? [2]

Bill by 9.6 seconds [2]. Allow 9.64 recurring, or 9.65 seconds

Working: Bill will take 80 seconds. Ben will take 89.6 seconds. So Bill will win by 9.6 seconds.

1 mark if they calculate the competitors' times but not the appropriate difference, or 1 mark for an incorrect answer between 9 and 10 seconds (and the name given) with, e.g. Bill by 9.7 seconds.

1 mark for a correct answer but no name given.

- (b) If Ben were deciding the lengths of each section (and was aware of Bill's speeds) what is the shortest total distance he could choose and expect to win? Justify your answer. [3]

1400 metres.

Working: Ben minimising the sections he is worst at will run and swim 100 m. The minimum distance Ben must cycle to beat Bill overall is 1200 metres.

Justification [one of the following]:

- I. If he cycles 1100 metres, their times are 180 seconds (for Bill) and 180.6 seconds (for Ben). If he cycles 1200 metres, their times are 190 seconds (for Bill) and 189.6 seconds (for Ben).

- II. Algebraically: if c is the length of cycling time, $50 + 20 + c/10 > 55.5... + 25 + c/11$
 $c/10 - c/11 > 80.5... - 70$
 $c/110 > 10.5...$
 $c > 1161.1... \text{metres}$
 since c must be a multiple of 100, the minimum $c = 1200 \text{ m}$.

- III. 10.55 seconds down after the running and swimming: he needs to make this up by cycling. He gains 0.91 seconds per 100 metres of cycling.

3 marks for the correct total distance + justification [either calculations for 1100 metres and 1200 metres shown, or an algebraic justification].

2 marks for an unjustified, but correct answer.

Deduct 1 mark if candidates give an answer of 1200 m [instead of 1400 m]

1 mark for a solution proposing 100 metres apiece for swimming and running, and a multiple of 100 m for cycling (e.g. 100 m swimming, 100 m running & 300 m cycling).

- (c) Initially the two competitors agree to fix the swimming distance at 100 metres. Suggest distances for the other two sections of the race which Ben will agree to (thinking he will win), but which are actually likely to lead to Bill winning (according to the training record). [2]

Likely combinations.

Running	Cycling
100 m	w metres, for $400 < w < 1100$ In between 400 m and 1100 m (inclusive)
200 m	x metres For $1000 < x < 1700$ In between 1000 m and 1700 m (incl.)
300 m	y metres For $1500 < y < 2200$ In between 1500 m and 2200 m (incl.)
400 m	z metres For $2100 < z < 2800$ In between 2100 m and 2800 m (incl.)

2 marks for any of these combinations unambiguously given.

1 mark for an answer in which the candidate gives a solution with a cycling distance greater than the upper limit in the table above (e.g. 100 m running and **1200 m cycling**).

- (d) Show that it is possible for Ben to agree to a race that is 500 metres long, and that he thinks he will win, but which Bill will win according to the training record (you do not need to limit the swimming section to 100 metres here). Your answer should show what distances the athletes agree on, and how many seconds they each expect to win by. [3]

A race which involves **300 metres of swimming, 100 metres of running and 100 metres of cycling** will fit the criteria. Bill will finish in 180 seconds, Ben will finish in 200.8 seconds, and Ben believes Bill finish in 201.4 seconds. So Bill believes he will win by 20.8 seconds; Ben believes he will win by 0.6 seconds.

3 marks for both competitors' winning margins, and the lengths of section of the race.

2 marks for EITHER giving the appropriate lengths, but without accompanying margins OR giving one of the suboptimal solutions below [which add up to 600 m].

Swimming	Running	Cycling	Bill thinks he will win by	Ben thinks he will win by
100 metres	100 metres	400 metres	6.9	0.2
100 metres	200 metres	300 metres	12.8	0.9
100 metres	400 metres	100 metres	28.6	1.3

1 mark for one of the given suboptimal answers without the winning time margins.

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- 2 (a) There were a number of close games, particularly in Group B.
How many games in Group B were won by *less than* 10 points? [2]

Answer: 7

award 2 marks

If 2 marks cannot be awarded, award 1 mark for either of the following:

- 9 (assuming that the two matches in Group A with a winning margin of less than 10 points have been included).
- 14 (assuming that each of the seven matches has been included twice – e.g. Gemini v. Leo (61:68) and Leo v. Gemini (68:61)).

- (b) The only unbeaten team so far is *Pisces*, securing a place in the semi-finals with a 72 : 59 defeat of *Libra* in the final game of the group stage.

In this final game, the number of goals that *Pisces* scored from the two-point field goal area was the same as the number scored from free throws, and exactly as many as the number scored from the three-point goal area.

How many *goals* altogether did *Pisces* score against *Libra*? [2]

Answer: 40

award 2 marks

$$8 \times 3 \text{ points} + 16 \times 2 \text{ points} + 16 \times 1 \text{ point} = 72 \text{ points}$$

If 2 marks cannot be awarded, award 1 mark for evidence of appreciation of at least one of the following:

- 8 three-point goals.
- 16 two-point goals.
- 16 one-point goals.

Alternatively, if 2 marks cannot be awarded, give 1 mark for a solution which represents the situation algebraically : e.g. $3x + 2(2x) + 2x = 72$.

$$\text{Or } 9x = 72$$

$$\text{Or } x = 8$$

$$\text{Or } (3/2)x + 2x + x = 72$$

$$\text{Or } 4.5x = 72$$

$$\text{Or } x = 16$$

- (c) Which *three* teams will join *Pisces* in the semi-finals? [3]

Gemini (Group B winners with 4 wins)

award 1 mark

Libra (3 wins; tied with Capricorn, but beat Capricorn)

award 1 mark

Taurus (3 wins; tied with Leo, but beat Leo)

award 1 mark

Deduct 1 mark for each incorrect team given; e.g. if a candidate gives the answer “Gemini, Libra and Aquarius”, award 1 mark [2 for the two correct teams, –1 for the incorrect one].

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- (d) **Pisces' coach always starts a game with a line-up of five players whose classification total is exactly 14.0. Select two possible starting line-ups (with no individual player named in both) that the coach could select for the semi-final.** [3]

For example,
Ream, Oley, Rout, Ackerel, Urbot.
and Ench, Addock, Turgeon, Innow, Lounder.

(There are a number of possibilities.)

award 3 marks

If 3 marks cannot be awarded, award 1 mark for each of the following (maximum 2):

- Two valid line-ups, but with repetition of one or more players, or one valid line-up only (the second not totalling exactly 14.0, or not five players, or not given at all).
- Evidence of appreciation that the classification points total of the entire team is 34(.0) OR evidence of appreciation that the two players that will not appear in either of the line-ups will have a classification points total of 6(.0); e.g. Laice (2.0) and Hark (4.0).

- 3 (a) **Provide a brief analysis of the structure of KTA's argument in Document 1, identifying the main conclusion, the main reasons (including any intermediate conclusions) and any counter-arguments.** [4]

Main Conclusion: Singaporeans should make it a rule to speak English well (or Good / Standard English) in any context.

R1: those who are weak in a language are disadvantaged in the company of others who speak well.

R2: Proficiency in language widens opportunities, enables us to function effectively in more arenas and increases our competitive edge.

IC1: (Therefore) in an increasingly complex global economy the better our command of English the greater will be (or speaking Good / Standard English will improve or increase) our ability to comprehend and communicate in contexts where English matters.

R4: All our children ought to acquire proficiency in English in the classroom.

R5: It is about fostering intellectual development.

IC2: (Therefore), the ability to speak and use Standard English is also important in achieving social standing.

R6: Anyone who learns a second or foreign language will learn the standard form, not a dialect or sub-standard variety.

IC3: (Therefore) when we learn English as a second or foreign language we must learn to use it in the standard form.

R7: Parents and teachers should immerse children in an environment where adult role models speak Standard English.

R8: Each one of us should see it as our role to speak in Standard English whenever we use the language.

IC4: If we persevere, in time speaking Standard or Good English will become the norm in our society.

IC1+ IC2 + IC3 + IC4 → MC: Singaporeans should make it a rule to speak English well in any context.

C/A: Although the standard of English in Singapore is high, unless we maintain standards (equivalent paraphrase) it can only deteriorate.

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MARKS:

- Summary or general direction of argument [reasons w/o any ICs] – 1
- Gist + 2 or more ICs – 2
- Conclusion + gist – 2
- Conclusion + 1 IC – 3
- Conclusion + 2 or more ICs – 4; Maximum 4 marks.

[Identification of the CA gets same mark the same as identification of an IC]

(b) Give a critical evaluation of KTA's reasoning, assessing any strengths and / or weaknesses and any unstated assumptions made. [6]

(Paragraphs 1–6 refer to the text of KTA's speech beginning with "The following is a speech..." However no penalty for candidates who counted the introductory notes in the parenthesis as first paragraph.)

Para 1 & 2

Ambiguous definition / Equivocation: The definition of Standard English is ambiguous: "English that is grammatical, using standard sentence structure and is commonly understood around the world". Different countries have different forms of Standard English according to the variant particularities which have developed over years of usage in the respective country. KTA seems to be conflating Standard English with fluency in English sometimes, and at other times with grammatical correctness.

Assumption – that accent does not hinder understanding what is said, whereas even very grammatically correct English, if spoken with a very foreign accent, can sound unintelligible or incomprehensible.

Assumption – That the rest of the globe speaks English in a common or standard form; or challenge notion that unless English is grammatically correct, effective communication is impossible across globe.

Assumption – that the creole Singlish is unintelligible or cannot be understood, whereas it had developed as the means of communication, or *lingua franca*, between different peoples in the multiracial society and with native English speakers.

Para 3

Necessary condition / Flaw – that competitiveness in global economy depends on command of English, where "English matters" – whereas the "English matters" context is absent in vast regions where the global economy has expanded, e.g. China, Russia, Africa – global traders and businessmen would have to learn indigenous language, or be able to understand the respective creole or pidgin English for effective communication.

Other possible explanations for "tongue-tiedness" which refers to social embarrassment, and feeling of being inhibited by presence of better speakers (insecurity), not because one does not know the language – i.e. being tongue-tied is not the same as inability to express oneself through not having the language.

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Ambiguous definition of proficiency / Conflation of fluency in English with *eloquence* of expression. One can articulate in intelligible, comprehensible English without expressing oneself eloquently. Or KTA judges fluency in English in terms of whether the English spoken is Standard English or non-standard. Social interaction, mutual intelligibility and speaking fluently can be done without resorting to Standard English.

Para 4

Causation fallacy – insistence on **causal link** between use of Standard English and intellectual development. Speaking English well may correlate with intellectual development, but is neither **necessary** nor **sufficient** for intellectual development.

Circularity / Begging the question – if the medium of instruction in national education is English, then that is the learning medium of the child from kindergarten, making the reasoning that children must learn English proficiently nonsensical. (Children will begin education in English medium therefore they will need to become proficient in English).

Contradiction: The insistence that the Singaporean should be equally proficient in English and mother tongues (para 3), does not sit with the assertion that English is the medium of education in the national education system, as then English would be the spoken language in nearly all everyday contexts. In this case the mother tongues would be mostly unused, or the primary language of the growing child would become English, relegating mother tongue to second language. Some candidates may explain this as fallacy, or that the reasoning is based on a false dilemma.

Para 5

Assumption that people learn to speak a second language only by learning in a formal context e.g. in a school or some such educational setting (whereas many people learn a second language through contexts which necessitate frequent communication with native speakers. E.g. oral acquisition of language is often in a non-standard form.)

The **(mistaken) implication / red herring** – that bilingual children translating from mother-tongue is a bad habit (because it is poor English), rather than recognising this as a natural learning process. It is possible for children (and adults) to code-switch between a variant form of English and more formal English.

Assumption – that using slang is not a normal colloquial practice in human society .

Assumption – that all parents can speak Standard English.

Para 6

Assumption that children will emulate adult role models rather than be influenced by peers.

Contradiction – That the standard of English in Singapore is comparatively high, yet it is implied in para 4/5 that Singaporeans may not be speaking good English.

Slippery Slope – that if high standard of spoken English is not 'maintained and improved', i.e. by speaking 'good / Standard English' in every context, the standard of spoken English will deteriorate.

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Fallacy / smoke screen – that there is a relative advantage in speaking Standard English in every context - whereas knowledge of other languages or variant forms of spoken English may be more advantageous when dealing with diverse communities across the globe. It would appear from the last paragraph that KTA is more worried about other countries in the region gaining as good if not better proficiency in spoken English than about any competitive economic advantage or other benefits (as implied in para 3).

Strength – KTA does make a case for the importance of having a good / better command of English because it is more widely used than ever before, due to globalisation. However, this does not really support the main conclusion that Singaporeans should therefore make it a rule to speak English well in every context. Candidates may be credited for pointing to the strength of this single reason, but should not be credited if it is stated as the overall evaluation of entire argument.

2 marks for a well-developed and precisely expressed critical point.

1 mark for a critical point which is loosely formulated, or phrased as a counter-argument.

Overall Evaluation: Overall this is a weak, deductive argument employing persuasive **rhetoric** and based on a **false dilemma** that spoken English in the region is incorrect or unintelligible to the rest of the world. All of the main reasons have to rest on the assumption that it is impossible for one to code-switch between dialectal English and more formal English. The author therefore fails to make a case for why Singaporeans should speak only Standard English in every context. In effect none of the reasons he has put forward requires the use of Standard English strictly. 1 mark for a well-reasoned overall evaluation of the argument.

Maximum 6 marks.

(c) 'If English is to be the global language, there should be only one standardised form.'

Commenting critically on the viewpoints and information in some or all of Documents 1–5, and using your own ideas, construct a well-reasoned argument either for or against the above statement. [20]

The proposition can be seen in terms of the future of English as a global communicator. At the heart is the problem raised by the multiplicity of regional English, and whether it is possible for English to have an accepted status as a global language. Able candidates would highlight this complexity – that since spoken languages by nature evolve, the idea that any language can be made to conform to a static ideal Standard, so that it becomes a norm, is both unrealistic and unthinkable. Able candidates may argue whether there is any real benefit, or any real purpose served by formulating a global form of spoken English. Arguments may focus on whether a standard form of Global English ought / needs to be grammatically correct, and what rules should apply for a common language.

Credit will be given for the judicious selection of relevant material for and against their own side in the argument. Candidates should demonstrate the ability to select sufficient material of relevance and significance both for and against their proposed conclusion.

Credit will be given for the assessment and interpretation of evidence. This involves ability to critique the evidence and viewpoints they have selected, and draw inferences or intermediate conclusions to support their main conclusion. Candidates may identify the conundrum of the definition of Standard English – is it possible that spoken English can ever attain a common form which every person in the world recognises as Standard? Or candidates may phrase it as 'who is to define what is Standard English?'

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Credit will be given for the critical analysis and evaluation. Candidates should compare and contrast evidence and viewpoints relevantly and synthesise to form additional critical reasoning that can support their take on the debate. For example, Document 2 is largely neutral and theorises that English language will continue to evolve. This can be supported by the reasoning in Documents 3 and / or 4, which emphasise this as a positive quality; both views taken together explode KTA's argument that other forms of English than Standard English are illegitimate or unacceptable. The statistics in Document 5 show that in 2007 more than half the world's internet users used a medium other than English on the web, and when this is read in the context provided by Document 2, an inference may be drawn that the gap is closing and other languages, especially Chinese, may gain ascendancy. By thus comparing and contrasting 2 or more documents, critical reasoning may lead to a synthesised conclusion e.g. that a variant form of English such as Sino-English may emerge to be widely used in the global arena. This can challenge any claim arising from Document 5 for the primacy of English, or the interpretation that the chart provides evidence that English is the most preferred language in the current era of globalisation. On the other hand, it may be critiqued that since invention and marketing of computers were initially largely in the English-speaking West, English already had a head start as the lead language of the net; but with increasing programming of computers in indigenous languages, and translations readily available on the net, English language is bound to change further, impacted by the other languages being used by more than half of all net users.

Credit will be given for the inferences candidates draw from other examples or observations and further lines of argument that they bring to the debate. For example, candidates may cite relevantly examples of how English is viewed or used in their own countries and / or how important it is to have a standard form, or how ownership of English belongs to the country of adoption rather than the native original, or why it would not be feasible or realistic to look for a standard form.

Candidates can access the topmost band **only if**, all things considered, they can effectively anticipate / envisage challenges that can arise to their own position, and demonstrate how they would respond or counter-argue.

No marks are reserved for the quality of written English.

Band	Overall	Within	Score
Top	Effective Critical Reasoning and Synthesis through evaluation of sources. Ability to compare and contrast sources and explicitly consider counter-arguments. Reference to at least 3 doc's.	Candidates must introduce their own ideas and arguments. They must explicitly address counter-arguments to own position.	20 19 18 17
		Explicit critical comments, and inferences and well-reasoned further arguments. Some synthesis.	16 15 14
Middle	A reasoned stance: a clear conclusion, supported by reasons selected from sources, clearly expressed but with not much or little critical analysis. Some independent reasoning. Reference to at least 2 doc's.	Can select useful and relevant material, draw inferences from single sources and implicitly consider counter-arguments. Clear statement of 2/3 reasons in support of further arguments.	13 12 11 10
		Reasons re-stated or selected indiscriminately from sources to support further argument. An uncritical annotation of sources. Some irrelevance / deviation from the question. Argument with nil reference or little meaningful reference to sources. May be multiple conclusions with little support for each one.	09 08 07
Bottom	Unclear conclusion, unclear reasoning (substantial irrelevant material).	Very brief response. Reproduced reasoning from (a) and (b). Incoherent or disorganised summary or inconclusive comments.	06 05 04
		Stream of consciousness. Incomprehensible or gibberish.	03 02 01

Evidence that candidate is drawing relevant inferences from source/s, or comparing and contrasting documents to construct critical reasoning, should elevate the candidate's score by up to 3 marks (depending on the sophistication and clarity of the attempt).