THINKING SKILLS   **9694/41**

Paper 4 Applied Reasoning   **October/November 2010**

                                          1 hour and 30 minutes

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE ON ANY BARCODES
Electronic calculators should be used.

Answer **all** the questions.
Start each question on a new answer sheet.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question.

This document consists of **10** printed pages and **2** blank pages.

1 *Study the information below and answer the questions that follow. Show your working.*

Two athletes are going to compete against each other in a triathlon. This is one race which involves swimming, followed by running, followed by cycling.
Having trained for this race, they have reliable records of their speeds in the different sections of the race.
Their speeds (in metres/second) are as follows:

Training record	Bill	Ben
Swimming	2 m/s	1.8 m/s
Running	5 m/s	4 m/s
Cycling	10 m/s	11 m/s

You should assume that their speeds are constant and are not affected by how long each section of the race is.

Bill and Ben are in the process of deciding how long, in metres, each section of the race should be.

Assume that they are capable of completing any distance for each section of the race, but that they will only choose distances which are multiples of 100 metres.

They decide that they will do at least 100 metres of each section.

You should ignore time spent changing between sections.

You should aim to retain accuracy within your calculations, and give your final answers to a sensible degree of accuracy.

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

(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]

In order to trick Ben into agreeing to a race which Bill can expect to win, Bill convinces Ben that he can only swim at 1.75 m/s (rather than 2 m/s, as his training record shows).

(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]

(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]

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[Question 2 is printed on the next page]

2 *Study the information below and answer the questions that follow. Show your working.*

A popular sport for disabled athletes is Wheelchair Basketball.

Like Able-bodied Basketball, every team is composed of five players and seven substitutes.

Also like Able-bodied Basketball, a goal is credited to the team attacking the basket into which the ball has entered as follows:

- A goal from a free throw scores 1 point.
- A goal from the two-point field goal area scores 2 points.
- A goal from the three-point field goal area scores 3 points.

The group stage of the Ecliptica Wheelchair Basketball Cup has just been completed. Each team has played every other team in its group **once**. The two teams with the most wins in each of the two groups will progress to the semi-finals. In the event of a tie for second place in either (or both) of the groups, the winner of the game between the two teams involved goes through.

Below is a summary of all the results in the group stage.

(The points scored by the team named at the beginning of the **row** are given first; for example, *Aquarius* 49 : *Aries* 61.)

Group A

	Aquarius	*Aries*	*Capricorn*	*Libra*	*Pisces*	*Scorpio*
Aquarius	X	49 : 61	50 : 69	68 : 56	48 : 75	60 : 58
Aries	61 : 49	X	66 : 92	67 : 78	52 : 66	58 : 64
Capricorn	69 : 50	92 : 66	X	63 : 83	62 : 93	73 : 62
Libra	56 : 68	78 : 67	83 : 63	X	59 : 72	96 : 43
Pisces	75 : 48	66 : 52	93 : 62	72 : 59	X	80 : 55
Scorpio	58 : 60	64 : 58	62 : 73	43 : 96	55 : 80	X

Group B

	Cancer	*Gemini*	*Leo*	*Sagittarius*	*Taurus*	*Virgo*
Cancer	X	72 : 73	41 : 87	65 : 46	63 : 59	60 : 73
Gemini	73 : 72	X	61 : 68	79 : 44	67 : 48	66 : 59
Leo	87 : 41	68 : 61	X	48 : 57	50 : 54	76 : 53
Sagittarius	46 : 65	44 : 79	57 : 48	X	34 : 81	41 : 80
Taurus	59 : 63	48 : 67	54 : 50	81 : 34	X	82 : 77
Virgo	73 : 60	59 : 66	53 : 76	80 : 41	77 : 82	X

(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]

(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 twice as many as the number scored from the three-point goal area.

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

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

A major difference between Wheelchair Basketball and Able-bodied Basketball is that in Wheelchair Basketball each player is given a classification points number based upon their ability to play the game. (The eight classes are 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0 and 4.5, with the higher numbers representing greater basketball skills.) At any time during a game of Wheelchair Basketball, the maximum allowable classification points on the floor is 14.0.

This is the *Pisces* team that has qualified for the semi-finals:

Name	Classification points
B. Ream	4.5
C. Oley	2.5
P. Laice	2.0
T. Ench	1.5
H. Addock	4.5
T. Rout	2.0
S. Turgeon	3.0
M. Ackerel	1.0
T. Urbot	4.0
M. Innow	2.5
F. Lounder	2.5
S. Hark	4.0

(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]

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]

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

(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]

DOCUMENT 1

Speak English not Singlish

(**Singlish** is an English-based creole, a dialectical English spoken by Singaporeans, as a primary *lingua franca*[1] apart from their mother tongues which are mainly Chinese, Malay or Indian. Currently it is being discouraged by the Singaporean administration, which emphasises the need for Singaporeans to speak Standard English as defined by the administration – "*English that is grammatical, using standard sentence structure, and is commonly understood around the world*".[2])

The following is a speech by the Chairman (KTA) of the Speak Good English Movement, which the Singapore Government runs:

"This year, the Speak Good English Movement continues with its mission to encourage Singaporeans to speak Good English – English that is intelligible to English speakers all over the world. It is not about accent. It is about speaking grammatically correct English, so as to be understood, as our tag line puts it, 'not only in Singapore, Malaysia and Batam.'

"In an increasingly complex, knowledge-based global economy, the better our command of English, the greater will be our ability to comprehend and communicate in contexts where English matters. Those of us who are weak in a language are disadvantaged in the company of others who speak it well. How many of us are tongue-tied even when we have ideas to contribute, or have independent views to express, because we do not have proficiency in the language? Singaporeans should have effective command of our respective mother tongues and of English. Proficiency in English widens our opportunities, enables us to function effectively in more arenas, and increases our competitive edge in many diverse areas.

"The ability to speak and use Standard English is also important in achieving social standing. As the medium of instruction in our national education system is English, all our children ought to acquire a proficiency in the language in the classroom. It's not only about being understood; it's also about intellectual development, understanding what is being taught, grasping new, even difficult, ideas, expressing and developing what one has learned, holding one's own in discussion or being able to argue and oppose arguments.

"Parents and teachers should ensure that their children do not speak in sentences which, being direct translations from the speaker's mother-tongue or army slang, are ungrammatical and unintelligible. Anyone who learns a second or foreign language will learn the standard form, not a dialect or sub-standard variety. Therefore when we learn English as a second or foreign language, we must learn to use English in the standard form.

"To enable this, parents and teachers should immerse children in an environment where adult role models speak Standard English. Each one of us can take it upon ourselves to speak Standard English with our family members, friends and acquaintances – whenever we use the language, whether on the playground, in the market place or at work. Our personal example will encourage people close to and around us to speak Standard English too. It is possible that in time it will be the norm to speak only Standard or good English in our society. This is why Singaporeans should make it a rule to speak English well in any context. Indeed, native English speakers have said that in the region, the standard of English in Singapore is comparatively high. But like anything that is not maintained and improved, it can only deteriorate. Our current advantage is only relative as others are fast learning English too, and learning it well."

KTA

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[1] "*lingua franca*" – a common language
[2] The Singapore Minister of State for Education speaking at the same meeting as is referred to in the rest of the document.

DOCUMENT 2

Towards a global perspective

What will happen to English during the next century? Is English splitting into many different fragments, or is it tending to become more standardised because of international use?

There are powerful factors causing divergence between the varieties of English. Rapidly increasing numbers of people aspire to learn English, and are often being taught by teachers who do not themselves have a good command of the language. Do these factors mean that English will fragment into hundreds of mutually unintelligible languages? Or, with the worldwide influence of the Internet, and of American global broadcasters such as CNN, is it likely that English will become more homogeneous, and perhaps more influenced by American English?

It seems likely that both divergence and convergence will take place. The use of English as the major language of communication worldwide is a great asset in international politics, business, education, and the media. Speakers of English (whether first-language or not) learn to use two 'dialects'—one with their own community, and one in the international context. When communicating with people from other parts of the world, they possess the intuitive ability to suppress words from their regional variety that might not be understood. In international politics, business, and education, in the media, and on the Internet, it is likely that English will remain mutually intelligible because of the constant interaction (electronic and otherwise) between the 'Englishes' of various parts of the world, and because of the value of English as a *lingua franca*.

At the same time, it also seems likely that mutually unintelligible forms of English will increasingly develop, as the language is taught and learned in areas of the world which are isolated from contact with first-language speakers. For example, English is used in Africa for communication between people of different language groups who have absolutely no contact with first-language English speakers. This can lead to the development of pidgin varieties with numerous borrowings from one or more of the local languages.

Whereas one can only speculate on likely trends, the one certainty is that the English language will continue to change in the future, as its use increases across the world.

Source: www.askoxford.com

DOCUMENT 3

English 'world language' forecast
BBC Online Thursday 9 December 2004

A third of the people on the planet will be learning English in the next decade, says a report.

Researcher David Graddol, author of the report, says two billion people will be learning English as it becomes a truly 'world language'. This growth will see French declining internationally, while German is set to expand, particularly in Asia.

The *Future of English* report, launched in Edinburgh at a British Council conference on international education, has used computer modelling to forecast the onset of a 'wave' of English-learning around the world. According to the British Council report, there were about a billion English learners in the year 2000, but a decade later this number will have doubled. The research has looked at the global population of young people in education – including 120 million children in Chinese primary schools – and at how many countries are embedding English-language learning within their school systems. The linguistic forecast points to a surge in English-learning, which could peak in 2010.

Charles Clarke, the UK Education Secretary, argued that the UK needed to improve language skills, and conceded that the country was still lagging behind in learning languages. "To be quite candid, I'm the first to acknowledge that there is an immense amount to do," said Mr Clarke, "not least to contest the arrogance that says English is the world language and we don't have to worry about it – which I think is dangerous and pernicious."

The author of the report, Mr Graddol, states that English speakers should not be complacent because they can speak this increasingly widely-used language. He says that Chinese, Arabic and Spanish are also going to be key international languages. "The fact that the world is learning English is not particularly good news for native speakers who are not able to speak another language. The world is rapidly becoming multi-lingual, and English is only one of the languages people in other countries are learning," said Mr Graddol. He also warns there could be a backlash against the global spread of English and a reassertion of national languages.

Source: Scottish Centre for Information on Language Teaching, University of Stirling

DOCUMENT 4

Mother tongue

"Cor lumme, wotcha no? A fowzan' years af'er 'em blimmin' Normans came an' skroodup good ol' Anglersaxern wiv 'em fancy froggy wurds an' wotnot, peep'l are still get'n 'ot un'er the coller 'bow how we spee' the muvver tung. Yeah, I'm tork'n 'bow nunuvavan the Queen's Inglish innit. An' yer know hoos in the fierin' line now? Only 'Er Majerstee 'erself, gorblessa[1]."

(Translated: "God love me, what do you know? A thousand years after those blooming Normans came and screwed up good old Anglo-Saxon with those fancy French words and what not, people are still getting hot under the collar about how we speak the mother tongue. Yes, I'm talking about none other than the Queen's English, isn't it? And you know who is in the firing line now? Only Her Majesty herself, God bless her.")

It's true. A professor of phonetics at the University of Munich has done a survey of all the Queen's Christmas broadcasts. And guess what? He's found that she has changed with the times. "Good grief," some commentators are fuming, "what are we coming to? Is even the Queen's English changing? Is this the end of civilisation as we know it?"

And there's worse. According to *another* professor of phonetics, UK teenagers today urgently need elocution lessons, because they speak so badly that employers can't tell what they are saying.

What's really peculiar, though, is that radio and TV were supposed to make us all speak the same. That was Lord Reith's aim when he started the BBC in 1922. He told his announcers to solve "the problem of spoken English" by devising "a common denominator of educated speech" that he expected everyone in Britain to adopt.

That never happened, thank goodness. The sort of English that children speak is shaped much more by them listening to their peers and role models, rather than to perceived authority figures such as parents and newsreaders. Their refusal to speak as their mums and dads would wish is a way of asserting their own individuality.

However, busybodies continue to make a moral issue over the 'declining standards' of spoken English. "If we can't speak it right, we soon won't be able to spell it, and then where will the language be?" the moaning minnies whinge. Well, when was English written as it was said? Spoken English has never been fixed and never will be. Some experts say that so-called 'received pronunciation' was probably never used by more than 3 percent of the population, even in the 'good old days'. Old fogeys may complain about 'innit'[2]. But in 50 years time I expect that 'innit' will be as OK as, well, 'OK'.

Nor should spoken English be fixed. Only dead languages are spoken in the same way decade after decade, like Latin and Ancient Greek. We should be overjoyed that English is fed with new words, dialects and accents from all over the world every day. It is nature's way of keeping the old verbals[3] fresh.
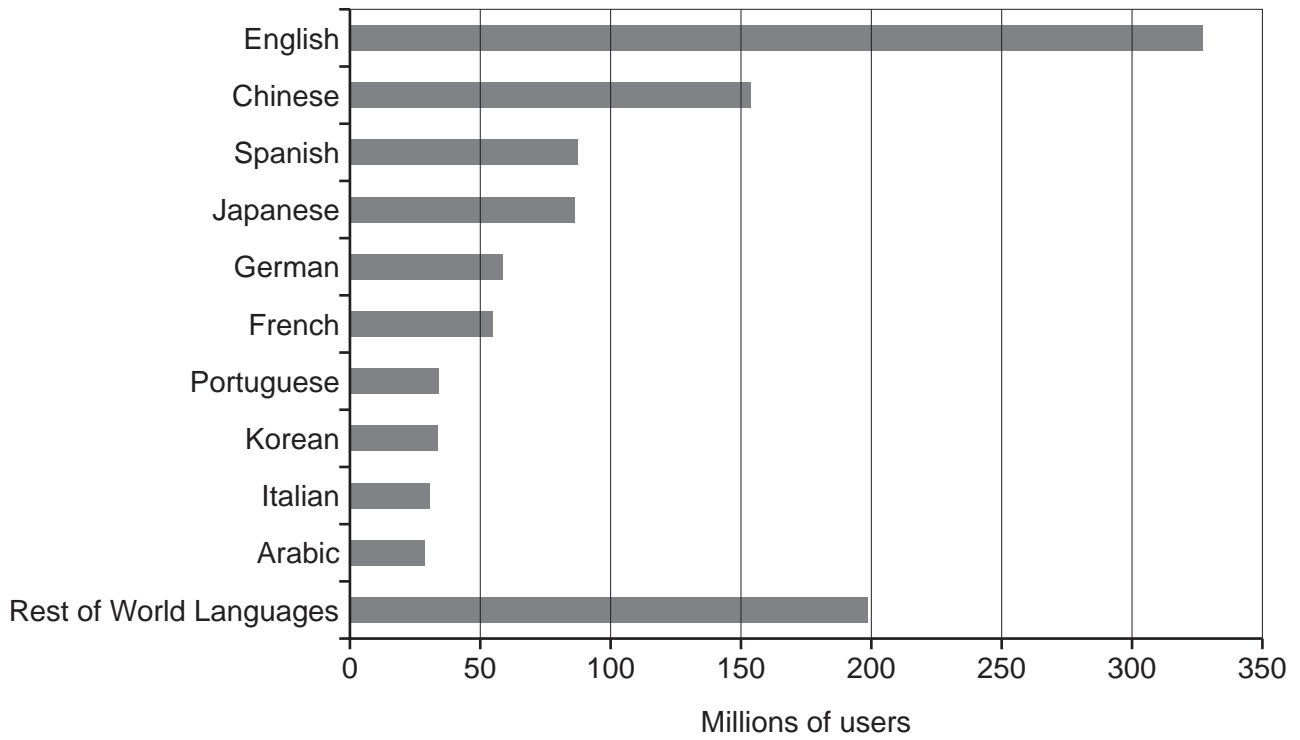
Source: *The Times* (newspaper)

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[1] An example of common non-standard speech amongst Londoners known as 'Cockney'.
[2] A colloquial pronunciation of "isn't it?" in the UK, especially in some inner cities.
[3] "*old verbals*": the way and form in which words are spoken.

DOCUMENT 5

Top 10 Internet Languages

(Data from March 2007)

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