All Ireland Linguistics Olympiad
The Problem Solvers' Challenge

Sample Set One - September 2019

Teacher / Student Guide

This pack includes:

Introductory logic and language puzzles (Preliminary Round 2015 Level)
- This includes 4 puzzles (A,C,D,E), an answer booklet and a marking scheme.

Problem-solving career profile from a Language Technology Scientist

Last year's samples, workshops and competition papers:
https://ailo.adaptcentre.ie/sample-puzzles-2019-2/

Career Profile
- Jian Zhang, Language Technology Scientist, Voysis.

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Question A: Big dog, old bull, strong horse
(15 pts)

Danish, spoken in Denmark, and Swedish, spoken in Sweden, are closely related languages. This means that they have many similarities.

Read the Danish and Swedish phrases below, and look for patterns, similarities and differences. In particular, look at how articles (the words *the* and *a*) are used. Then complete the exercises below.

English	Swedish	Danish
a dog	*en hund*	*en hund*
a big dog	*en stor hund*	*en stor hund*
the dog	*hunden*	*hunden*
the big dog	*den store hund*	*den stora hunden*

A1. Identify which of these phrases are Danish and which are Swedish. Tick the appropriate box in the answer book. (8 pts)

a. *en tyr*   a bull
b. *en gammal tjur*   an old bull
c. *tyren*   the bull
d. *en gammel tyr*   an old bull
e. *den gamle tyr*   the old bull
f. *tjuren*   the bull
g. *den gamla tjuren* the old bull
h. *en tjur*   a bull

A2. If the words for 'horse' are *häst* (Swedish) and *hest* (Danish), and the words for 'strong' are *stark* (Swedish) and *stærk* (Danish), complete the table below in your Answer book. (7 pts)

English	Swedish	Danish
a horse		
a strong horse		
the horse	*hästen*	
the strong horse		

Question C: People and places   (20 pts)

In Japanese (*Nihongo*) as in many languages, proper names (names of people and places) often have a literal translation that describes some local feature (e.g. Smallfield, Whitehill, Longridge).

Here are some Japanese personal or place names and their jumbled up literal translations into English. All you have to do is match up the names and the translations.

However as you might expect there are one or two difficulties. The order of the elements in the Japanese and most natural translations are not always the same. Also, when two words combine, sometimes one of them changes slightly. Note that in these examples, 'mount' and 'mountain' are different words, as are 'field' and 'rice-field'.

	Japanese		**Translation**
1	*Ōta*	A	Big slope
2	*Nakayama*	B	Tree river
3	*Kigawa*	C	Slope of the mountain
4	*Kazan*	D	Field village
5	*Murakami*	E	Upper village
6	*Kagawa*	F	Upper river
7	*Ono*	G	Middle of the rice-field
8	*Fujisan*	H	Little field
9	*Nomura*	I	Middle mountain
10	*Tanaka*	J	Original rice-field
11	*Sakuragi*	K	Mountain road
12	*Nihon*	L	Cherry tree
13	*Ōsaka*	M	Fire mount (= volcano)
14	*Yamazaka*	N	Big rice-field
15	*Kawakami*	O	Mount Fuji
16	*Honda*	P	Fire river
17	*Yamamichi*	Q	Origin of the sun (= Japan)

Question D: Ye olde English problem
(20 pts)

English has changed a lot since the period in which Germanic languages were brought to these islands over 1500 years ago. In this problem, you will look at the way in which the use of pronouns in Old English (the variety of English that existed in Anglo-Saxon times) differs from the use of pronouns in the modern language. Watch out! The word order in Old English is sometimes not the same as in Modern English.

Look at the following Old English sentences and their Modern English translations then complete the exercises that follow. Note: the letter *þ* is pronounced like 'th'.

wit lufodon þæt mægden	we both loved the girl
þæt mægden unc lufode	the girl loved us both
ge lufodon þone cyning	you all loved the king
se cyning inc lufode	the king loved you both
þæt mægden we lufodon	we all loved the girl
we inc lufodon	we all loved you both
wit eow lufodon	we both loved you all

D1. Translate the following into modern English. (6 pts)

(a)   *se cyning eow lufode*
(b)   *ge lufodon þæt mægden*
(c)   *wit inc lufodon*

D2. When they function as subject, the Old English phrases for 'the prince' and 'the child' are *se æþeling* and *þæt cild*, respectively. Using this information, translate from the following from Modern English into Old English. (14 pts)

(a)   The prince loved the child
(b)   The child loved the prince
(c)   We all loved the child
(d)   The child loved you both
(e)   The girl loved you all

Question E: It's all Greek to me   (25 pts)

In the table below are some Greek place names, written in the Greek alphabet (without marking stress), together with their pronunciations in both ancient and modern Greek. All you have to do is fill in the blanks (in the answer sheet)

The pronunciations are shown using the International Phonetic Association (IPA). The IPA symbols have their expected values, except as follows:
θ is pronounced like *th* in *think*, ð is like *th* in *then*
x is the *ch* sound in German *Bach*, Scottish *loch*, or in Irish broad *ch* as in *chara*
ɣ is a voiced x, like the *g* in Spanish *avogado*, or in Irish the broad *dh* in *dhorn*
ç is the softer *ch* sound in German *ich*, or in Irish slender *ch* as in *oíche*
ʝ is a voiced ç, like the slender *dh* in *dhearg*
ɔ is like the vowel in *caught*, ɛ is like the vowel in *fair*
the : symbol after a vowel indicates that it is long
the raised ʰ after a consonant denotes that it is aspirated (pronounced with additional breath)

	Ancient Greek	**Modern Greek**	**English**
Αθως	/atʰɔːs/	/aθos/	Athos
Θουριοι	/tʰourioi/	/θurii/	Thurii
Αργος	/argos/	/arɣos/	Argos
Φρεγελλα	/pʰregella/	/frejella/	Fregellae
Χρυση	/kʰrusɛː/	/xrisi/	Chryse
Γολγοθα	/golgotʰa/	/ɣolɣoθa/	Golgotha
Δελφοι	/delpʰoi/	/ðelfi/	Delphi
Εφεσος	/epʰesos/	/efesos/	Ephesus
Θεοδωσια	/tʰeodɔːsia/	/θeoðosia/	Theodosia
Αιγινα	/aigina/	/ejina/	Aegina
Καληδονια	/kalɛːdonia/	/kaliðonia/	Caledonia
Καδμεια	/kadmeia/	/kaðmia/	Cadmea
Σαρδεις	/sardeis/	/sarðis/	Sardis
Φθια	/pʰtʰia/	/fθia/	Phthia
Αχερων	/akʰerɔːn/	/açeron/	Acheron
Χιος	/kʰios/	/çios/	Chios
Θυμαινα	/tʰumaina/	/θimena/	Thymaina
Χαονια	/kʰaonia/	/xaonia/	Chaonia
Μοσχα	/moskʰa/	/mosxa/	Moscow *
Βλαχια	(a)	(b)	(c)
Φλεγεθων	(d)	(e)	Phlegethon
Βηρυτος	(f)	(g)	Beirut
(h)	(i)	/frijia/	Phrygia
Βαβυλωνια	(j)	(k)	(l)

* Note that Moscow was unknown in ancient Greece, but the table shows how the name would have been pronounced at that time.

Question A: Big dog, old bull, strong horse
(15 pts)

A1. Identify which of these phrases are Danish and which are Swedish. Tick the appropriate box (8 pts)

	Dan	Swe
a. *en tyr* — a bull		
b. *en gammal tjur* — an old bull		
c. *tyren* — the bull		
d. *en gammel tyr* — an old bull		
e. *den gamle tyr* — the old bull		
f. *tjuren* — the bull		
g. *den gamla tjuren* — the old bull		
h. *en tjur* — a bull		

A2. If the words for 'horse' are *häst* (Swedish) and *hest* (Danish), and the words for 'strong' are *stark* (Swedish) and *stærk* (Danish), complete the table below (7 pts)

English	Swedish	Danish
a horse	....	....
a strong horse	....	....
the horse	*hästen*	....
the strong horse	....	....

(a) ....   (b) ....

Question C: People and places   (20 pts)

Write the letter corresponding to the appropriate translation in the space next to each number:

1	
2	
3	
4	
5	
6	

7	
8	
9	
10	
11	
12	

13	
14	
15	
16	
17	

Question D: Ye olde English problem (20 pts)

D1. Translate the following into modern English. (6 pts)

(a)   *se cyning eow lufode* ....

(b)   *ge lufodon þæt mægden* ....

(c)   *wit inc lufodon*...

D2. Translate the following from Modern English into Old English. (14 pts)

(a)   The prince loved the child ....

(b)   The child loved the prince ....

(c)   We all loved the child ....

(d)   The child loved you both ....

(e)   The girl loved you all ....

Question E: It's all Greek to me   (25 pts)

Βλαχια

Φλεγεθων

Βηρυτος

(h) ....

Βαβυλωνια

(a) ....

(d) ....

(f) ....

(i) ....

(j) ....

(b) ....

(e) ....

(g) ....

/friɟia/

(k) ....

(c) ....

Phlegethon

Beirut

Phrygia

(l) ....

Question A: Big dog, old bull, strong horse (15 pts)

A1. 1 pt per correct answer (total: 8)

	Dan	Swe
a. *en tyr* — a bull		√
b. *en gammal tjur* — an old bull	√	
c. *tyren* — the bull		√
d. *en gammel tyr* — an old bull		√
e. *den gamle tyr* — the old bull		√
f. *tjuren* — the bull	√	
g. *den gamla tjuren* — the old bull	√	
h. *en tjur* — a bull	√	

A2. 1 pt per correct answer (total 7)

English	Swedish	Danish
a horse	*en häst*	*en hest*
a strong horse	*en stark häst*	*en stærk hest*
the horse	*hästen*	*hesten*
the strong horse	*den starke häst*	*den stærka hesten*

Name: .... School ....

Question C: People and places   (20 pts)

1	N
2	I
3	B
4	M
5	E
6	P

7	H
8	O
9	D
10	G
11	L
12	Q

13	A
14	C
15	F
16	J
17	K

Question D: Ye olde English problem (20 pts)

D1. Translate the following into modern English. (6 pts) 1 pt each for subject and object (nothing for 'loved') ... MUST include 'both' or 'all'

(a) *se cyning eow lufode*   _The king_ loved _you all_ ....

(b) *ge lufodon þæt mægden*   _You all_ loved _the girl_ ....

(c) *wit inc lufodon*   _We both_ loved _you both_ ....

D2. Translate the following from Modern English into Old English. (14 pts)
1 point for each **underlined** word, +1 for word order if marked *
Lose ½ point for any not underlined word that is wrong. But minimum 0 on each part.

(a) The prince loved the child **se** æþeling **lufode þæt** cild   (3) ....

(b) The child loved the prince **þæt** cild **lufode þone** æþeling   (3) ....

(c) We all loved the child *þæt cild* **we** **lufodon** OR **we** **lufodon** *þæt cild* (2)

(d) The child loved you both **þæt** cild **inc** lufode * (3) ....

(e) The girl loved you all   **þæt** mægden **eow** lufode * (3) ....

Name: .... School ....

Question E: It's all Greek to me   (25 pts)

2 pts for each correct answer (so allow 1 pt if there is one mistake), plus 1 pt overall if they remembered the / / brackets.

Βλαχια	(a) /blakʰia/	(b) /vlaçia/	(c) Vlachia
Φλεγεθων	(d) /pʰlegetʰɔːn/	(e) /flejeθon/	Phlegethon
Βηρυτος	(f) /bɛːrutos/	(g) /viritos/	Beirut
(h) Φρυγια	(i) /pʰrugia/	/frijia/	Phrygia
Βαβυλωνια	(j) /babulɔːnia/	(k) /vavilonia/	(l) Babylon

Accept 'β' for 'v' in (b), (g) and (k)

Accept 'Babylonia' for (l)

Career Profile

Name: Jian Zhang

Job title: Language Technology Scientist

Current Company:
Voysis - https://voysis.com/

Industry: Artificial Intelligence (AI), Speech Technology

Education and Work Experience

Undergrad
I studied a B.Sc. in Computer application for software engineering in the School of Computing at Dublin City University (DCU).

Internship
I joined CNGL / ADAPT as an undergraduate intern working on a Centre for Talented Youth (CTYI) course on Search Engines.

Programmer at CNGL / ADAPT
I was in employed by a CNGL research project as a software programmer. My role was to development machine translation engines for several European/Asian languages. Other roles included front/back end server design and implementation.

PhD with ADAPT
I then had the opportunity to do a PhD in Neural Machine Translation and Statistical Machine Translation with ADAPT, DCU, graduating in 2017.

Current Role

Main Tasks and Responsibilities
My main task in Voysis involves developing a text-to-speech (TTS) system using a deep learning technique. It requires me to have the ability to understand the state-of-the-art TTS systems and deep learning knowledges.

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Career Profile

Problems I need to solve in my job on a day-to-day basis
The problem usually cannot be solved in a few days or even weeks. I normally break down the large problem into several small problems with a research plan. The plan is dynamic as new experiment results can change the research directions significantly.

About me

What kind of puzzles/problems do you enjoy?
I like challenges that requires me to think a lot and research a lot.

What school subjects influenced your career path?
I think all school subjects contribute a lot in my career path. The school subjects provide me the basic tools and skills that I need for my PhD and current job.

Who inspired you?
Dr. Alexandru Ceausu, who was my working colleague in CNGL / ADAPT. I learned so much from him. He shared his knowledge with me and made me ready to be a PhD student.

Work/life balance
Yes and No. I always try to have a good balance between work and life. However, it is so hard to have a clear boundary between them if you enjoy what you are doing.

Your top tips?
It is important to have a deep understanding of deep learning in different fields, such as in speech, language and image. Programming is also an essential skill.

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