

Candidate's signature: _____

English for Mathematicians, UNICert III



UNICert[®] LUCE

English for Mathematicians, UNICert[®] III

PART ONE



READING COMPREHENSION



Answersheet

Candidate's Number:

Name:

Surname:

Date:



SUBTEST A (16 points)**Task One**

Read the summary of the text and match the phrases to appropriate gaps.
There are three phrases that do not fit any gap.

Summary

Two mathematicians have uncovered a simple, previously unnoticed property of prime numbers **(1)** ... that immediately follow them.

(2) ... in coin-tossing experiments, Kannan Soundararajan of Stanford University decided to examine patterns appearing in primes. While studying primes in base 3, in which about half of the primes end in 1 and the other half end in 2, he found that primes ending in 1 had a higher likelihood of being followed by a prime ending in 2, and those ending in 2 had a higher chance of being followed by a prime ending in 1. After making observations for primes up to 1,000, Soundararajan called in mathematician Robert Lemke Oliver to investigate further. Lemke Oliver, **(3)**... , developed a program to test larger primes, up through the first 400 billion. They observed the same bias against being followed by a prime ending in the same digit. This bias was also present in other bases, including base 10. Soundararajan and Lemke Oliver at first assumed that a prime would be equally likely to be followed by a prime ending in any of the other primes, but soon discovered other patterns. For example, a prime ending in three was more likely to be followed by a prime ending in 9 rather than one ending in 1 or 7. They found that the preferences they observed follow a model of randomness called the prime k-tuples conjecture, **(4)**... . The conjecture has yet to be proven, **(5)**... .

Phrases:

- A** which predicts the frequency of patterns among prime numbers
- B** inspired by the unexplained phenomena observed
- C** despite being controversial among mathematicians
- D** despite an abundance of evidence supporting it
- E** while trying to prove the prime k-tuples conjecture in relation to
- F** at first not believing the results
- G** surprised by what Soundararajan had found
- H** in relation to the final digits of the primes

Gap No.	1	2	3	4	5
Ending					

Candidate's signature: _____

Task Two

Say whether the following statements are 'True' (**T**), 'False' (**F**) or 'We do not know' (**D**). Circle the correct answer.

1 Soundararajan and Lemke Oliver first studied primes in base 10 up to 1,000.

1	T	F	D
----------	----------	----------	----------

2 Soundararajan was inspired by a lecture on prime numbers given by Tadashi Tokieda.

2	T	F	D
----------	----------	----------	----------

3 Soundararajan and Lemke Oliver have used their findings to prove the prime k-tuples conjecture.

3	T	F	D
----------	----------	----------	----------

4 The prime k-tuples conjecture predicts the biases that Soundararajan and Lemke Oliver have found in primes.

4	T	F	D
----------	----------	----------	----------

5 The prime k-tuples conjecture states precise patterns among prime numbers.

5	T	F	D
----------	----------	----------	----------

Candidate's signature: _____

Task Three

Give a short explanation of the following words (underlined in the article) to match the context of the article. Use less than 60 words for each explanation.

1 repel (verb)

2 predilection (noun)

3 subsume (verb)

Candidate's signature: _____

English for Mathematicians, UNiCert III

4 posit (verb)

5 upend (verb)

6 overarching (adjective)

Candidate's signature: _____

SUBTEST B (14 points)

Task One

Find the extracts/ words in the text and explain in your own words the underlined expressions. Use less than 60 words for each explanation.

1) can be adapted

2) the point under consideration

3) particularly well suited for describing...

4) It is the analogue of the coordinate system

Candidate's signature: _____

English for Mathematicians, UNiCert III

5) provided our curve

6) Its extremity on the surface

7) their respective moving trihedra

Task Two

Find expressions in the text that match the following definitions.

- 1) _____ = being in the same place
- 2) _____ = a straight line that intersects a curve in two points
- 3) _____ = a straight line that meets another line at a right angle
- 4) _____ = a plane that touches a curve or a surface at a given point in such a way that it has a common tangent at the point of contact.
- 5) _____ = A triple of three arbitrary vectors with common vertex, usually three orthogonal vectors are considered. It determines three planes.
- 6) _____ = a point where a surface or a curve becomes degenerate.
- 7) _____ = a spherical image of a curve.

SUBTEST C (20 points)

Write the terms in the table.

Definition no.	Terms defined
Definition 1	
Definition 2	
Definition 3	
Definition 4	
Definition 5	
Definition 6	

Candidate's signature: _____

English for Mathematicians, UNiCert III

Definition 7	
Definition 8	
Definition 9	
Definition 10	

SUBTEST D (15 points)

Gap No.	Phrases
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Candidate's signature: _____

English for Mathematicians, UNiCert III

11	
12	
13	
14	
15	