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Presidential Schools Grade 5 Pre-Selection Test

Mathematics Test Specification

Transforming societies
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1. Presidential Schools of Uzbekistan

The Agency for Presidential Educational Institutions of the Republic of Uzbekistan (PIIMA) has established 14 Presidential Schools across Uzbekistan to provide young people with a world-class secondary education.

These Presidential Schools aim to “prepare the next generation of leaders to actively and positively contribute to the development of Uzbekistan”.

The PIIMA Presidential Schools programme aims to “support and encourage gifted youth” and produce an “intellectually-developed generation.”

The main priorities of Presidential Schools include:

- Selecting and educating gifted children, creating conditions for their full development
- Promoting in-depth study of sciences, foreign languages, engineering and information technologies
- Establishing modern methods of teaching and assessing students’ knowledge
- Developing students’ leadership, public speaking, critical thinking and analysis skills
- Ensuring student participation in international Olympiads and competitions
- Establishing cooperation with national and international education institutions.

To support the aims of the Presidential Schools, a competitive admissions test has been designed by Cambridge University Press and Assessment.

2. Structure of the admissions test process

The admissions test comprises two stages. The pre-selection test of Mathematics and the main selection test of English Language, Problem Solving and Critical Thinking. Together, Problem Solving and Critical Thinking are referred to as “Thinking Skills”.

Candidates in each region who achieve the highest scores in the pre-selection test will progress to the main selection test. The tests of Mathematics and Thinking Skills are available in three languages: Uzbek, Karakalpak and English.

3. Purpose of the selection test

The purpose of the selection test is to allocate places in the Presidential Schools fairly, objectively and impartially to the most able candidates from each region. These candidates will be those who are most able to fulfil the aims of the Presidential Schools of Uzbekistan.

4. Benefits of Mathematics in admissions tests

Mathematics is a fundamental element of a quality education. It is essential for everyday life and understanding of the world. Mathematics builds problem-solving, logical and reasoning skills, alongside flexible thinking, creativity and perseverance. Mathematics is also a key skill required for many other subjects in school. The pre-selection test is designed to identify students with the strongest skills in mathematical fluency, application and problem-solving.

5. Structure of the Mathematics test

The Mathematics test consists of one 60-minute paper.

The paper contains 30 multiple-choice questions. Each question is worth one mark. Questions have five options from which candidates select one option. Candidates record their answers on a separate answer sheet, which will be scanned.

Questions test a range of knowledge and skills, including number and calculation, algebra, geometry, data and problem solving within a mathematics context.

There will be no penalty for incorrect answers, so candidates are advised to answer all the questions in the paper.

Calculators, mobile phones and any other electronic devices and unauthorized materials, such as dictionaries, are **not** allowed.

Examples of questions are given in Section 7.

6. Subject content

The questions in the Pre-selection test may assess learning in any of the following topic areas: number, algebra, geometry, measure, data and probability. Questions focus mainly on Grade 4 material, incorporating work from previous grades.

7. Sample questions

These sample questions are provided to give an indication of the types of questions that will appear in the test. They are not intended to be a comprehensive description of all the types of questions that will be used.

Example 1

Aziz has 136 coloured pencils.

Zebo has 38 coloured pencils.

Kamola has 29 coloured pencils.

Kamola gives Aziz all her coloured pencils.

Now, how many more coloured pencils does Aziz have than Zebo?

A 98

B 127

C 133

D 145

E 165

Correct answer: **B**

Example 2

Δ is a whole number.

$$67 - 2 \times \Delta + 49 = 100$$

Find the value of Δ.

A 3

B 6

C 8

D 13

E 16

Correct answer: **C**

Example 3

Here is a sequence of numbers.

..... ; 3; 6; 12; ..... ; 48

Two numbers are missing.

What is the sum of the two missing numbers?

A 15

B 19,5

C 24

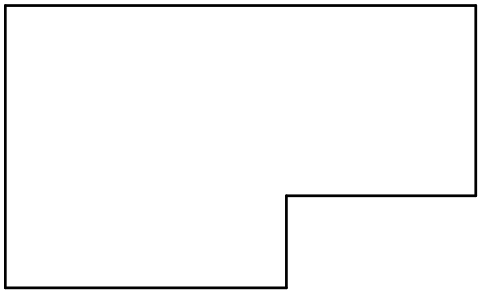
D 25,5

E 30

Correct answer: **D**

Example 4

A square of side length 6 cm and a square of side length 4 cm are joined together to make a new shape.



What is the perimeter of the new shape?

A 24 cm

B 32 cm

C 36 cm

D 40 cm

E 52 cm

Correct answer: **B**

Example 5

An isosceles triangle has a perimeter of 18 cm.

The length of one of the sides is 8 cm.

What is the shortest possible side length in the triangle?

A 2 cm

B 4 cm

C 5 cm

D 6 cm

E 8 cm

Correct answer: **A**

Example 6

$p = 36$, $q = 6$, $r = 4$ and $s = 3$

Which of these statements is/are correct?

I. $p + q : s = 38$

II. $p : q \times s = 18$

III. $p - s \times s + r = 31$

A I only

B II only

C I and III only

D II and III only

E All of them

Correct answer: **E**

8. Rules for selecting candidates for the main selection test

Scores in the Pre-selection Test are used to select the 480 most able applicants in each region, who then go forward to take the final Selection Test for admission to a Presidential School.

To ensure that candidates cannot be advantaged or disadvantaged by any slight differences that might exist in the overall difficulty of the test papers used for different test sittings, a process called Rasch analysis is used to equate the test scores. Instead of candidates being ranked on the basis of their actual score out of 30, they are ranked on the basis of their underlying ability score, which in this case is reported on a scale out of 100.

There is a trend of gradually increasing question difficulty as the Pre-selection Test proceeds. Where more than one candidate has the same ability score for the whole test, they are therefore ranked in the following order:

1. The candidate who scored highest on Questions 21-30.
2. (If still tied) the candidate who scored highest on Questions 11-20.
3. (If still tied) the candidate who scored highest on Questions 1-10.

If the candidates' scores are still tied, the younger candidate will be ranked higher.

CAMBRIDGE

Cambridge University Press & Assessment
The Triangle Building
Shaftesbury Road
Cambridge
CB2 8EA
United Kingdom

partnership@cambridge.org • cambridge.org/partnership • +44 1223 358331