

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TRANSPORT UNIVERSITY

APPROVED

Decision of the Admissions Committee
of National Transport University
May 21, 2026, Minutes № 16

Chair of the Admissions Committee
Rector of National Transport University



Oleksandr HRYSHCHUK

2026 p.

ASSESSMENT CRITERIA
for the Mathematics Section of the Entrance Examination for International
Applicants to the Bachelor's Degree Programme

Kyiv
2026

These Assessment Criteria for the Mathematics Section of the Entrance Examination for International Applicants to the Bachelor's Degree Programme have been developed by the Commission responsible for administering the Mathematics Section of the Entrance Examination for admission to the Bachelor's Degree Programme.

Chair of the Commission for Conducting
the Entrance Examination Section
Candidate of Technical Sciences,
Associate Professor

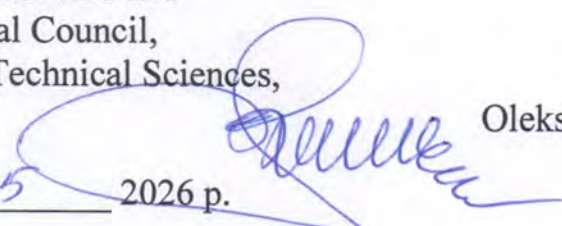
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Reviewed and approved by the Scientific and Methodological Council of National Transport University at its meeting held on May 21, 2026, Minutes № 38.

Chair of the Scientific and
Methodological Council,
Candidate of Technical Sciences,
Professor

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GENERAL PROVISIONS

Purpose of the Entrance Examination

The Mathematics Section of the Entrance Examination for International Applicants to the Bachelor's Degree Programme is intended to assess the applicants' knowledge, skills, and competencies in mathematics.

Requirements for Applicants' Preparation

The Mathematics Section of the Entrance Examination for International Applicants to the Bachelor's Degree Programme is conducted according to the Program of External Independent Evaluation of Learning Outcomes in Mathematics, acquired on the basis of complete general secondary education, approved by the Ministry of Education and Science of Ukraine, on December 4, 2019 (Order № 1513 “On Approval of the Program of External Independent Evaluation of Learning Outcomes in Mathematics”).

When taking the Mathematics Section of the Entrance Examination for International Applicants, an **applicant** to National Transport University **should demonstrate**:

- precise **knowledge** of definitions, mathematical concepts, terms, rule formulations, and theorem properties, as outlined in the curriculum, along with the ability to prove them;
- the **ability** to express mathematical concepts accurately and concisely in oral form;
- confident **mastery** of practical mathematical **skills and abilities** specified in the curriculum, and the ability to apply them in solving problems and doing exercises.

An applicant should be able to:

- perform identical transformations of polynomials, algebraic fractions, and expressions containing power, exponential, and logarithmic functions;
- construct graphs of linear, quadratic, power, exponential, and trigonometric functions;
- solve first- and second-order equations and inequalities, as well as the simplest equations and inequalities involving power, exponential, logarithmic, and trigonometric functions;
- solve problems involving the formation of equations and systems of equations;
- utilize geometric data in solving algebraic problems, use algebraic and trigonometric data in solving geometric problems;
- perform operations with vectors on a plane and employ the properties of these operations;
- apply derivatives when analysing monotonic functions (increasing/decreasing), finding extrema, and constructing graphs of functions.

Format of the Entrance Examination Section

The Mathematics Section of the Entrance Examination for International Applicants to the Bachelor's Degree Programme is conducted orally, without the use of reference materials or supplementary literature.

EXPLANATORY NOTE TO THE TASKS FOR THE ENTRANCE EXAMINATION SECTION

The tasks for the Mathematics Entrance Examination Section are developed in accordance with the Program of External Independent Evaluation of Learning Outcomes in Mathematics acquired on the basis of complete general secondary education, approved by the Ministry of Education and Science of Ukraine, on December 4, 2019 (Order № 1513 “On Approval of the Program of External Independent Evaluation of Learning Outcomes in Mathematics”).

The Entrance Examination card comprises 10 tasks, which differ in content, level of difficulty, and format for answer submission.

Forty minutes are allocated to prepare for communication with the commission members.

1. Multiple-Choice Tasks with one correct answer (Tasks 1–7).

Each task consists of a problem statement and five answer options, only one of which is correct. A task is considered completed if the applicant has selected and marked the correct answer option with a “+” or “x” in the corresponding cell of the table on the answer sheet, for example:

A	B	C	D	E
	x			

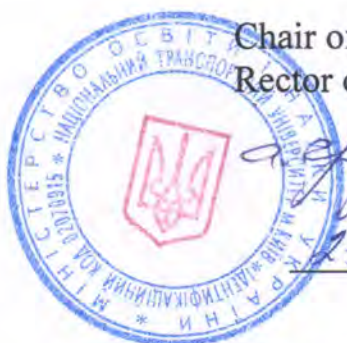
2. Matching tasks (“Logical Pairs”) (Tasks 8–10).

The task consists of a problem statement and two columns of information, marked with numbers (on the left) and letters (on the right). Completing the task requires establishing correspondence (forming “logical pairs”) between the information marked with numbers and letters. The task is considered completed if the applicant has marked “+” or “x” at the intersections of rows (numbers 1 to 3) and columns (letters A to E) in the table on the answer sheet, for example:

	A	B	C	D	E
1	x				
2			x		
3		x			

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Structure of the Entrance Examination Section Assessment

The assessment of the Entrance Examination Section (O) consists of the points assigned by the examination commission for the completion of each of the 10 tasks on the Entrance Examination Section card.

Points for completed tasks are assigned by the commission based on the applicant's oral answers to the tasks prepared by the applicant within the allocated time for preparation during the Entrance Examination Section.

Procedure for Assessing Applicants' Preparedness

The Entrance Examination Section is assessed according to the following procedure:

- 1) The answers to the tasks of the Entrance Examination card prepared by the applicant are reviewed, and the applicant is asked to provide an oral explanation and/or elaboration of the submitted answers.
- 2) After listening to the applicant, the commission awards points for the completion of each Entrance Examination task, evaluating it according to the assessment criteria for task completion provided below.
- 3) The assessment is calculated according to the following formula:

$$O = \sum_{i=1}^{10} B_i,$$

where B_i is the number of points awarded for completing the i -th task within the Entrance Examination Section.

A passing score for the Mathematics Entrance Examination Section is 5 points or higher.

Assessment Criteria for Task Performance

1. Multiple-Choice Tasks with one correct answer.

The completion of each task with one correct answer (Tasks 1–7) is assessed on 2, 1, or 0 point scale: 2 points are awarded if the applicant selects the correct answer option and provides a well-reasoned explanation for the choice during discussion with examination committee members; 1 point is awarded if the applicant selects the correct answer option but provides an insufficient justification for the choice during discussion with examination committee members; 0 points are awarded if the applicant selects an incorrect answer option, selects more than one answer option, or failed to select any answer option.

2. The completion of the Matching Tasks require applicants to establish correspondence between functions and their graphical representations, between sets of geometric figures and the properties of each element within these sets, or between expressions presented in various forms (“Logical Pairs”) ***(Tasks 8–10)*** and is assessed as follows:

6 points – if the applicant correctly matches all three proposed pairs and, during the oral interview with the members of the Admissions Committee, provides a well-reasoned justification for each selection; 5 points – if the justification is insufficient for one of the three pairs; 4 points – if the justification is insufficient for two of the three pairs; 3 points – if the justification is insufficient for all three pairs.

4 points – if the applicant correctly matches two of the proposed pairs and, during the oral interview with the members of the Admissions Committee, provides a well-reasoned justification for each selection; 3 points – if the justification is insufficient for one of the two correctly matched pairs; 2 points – if the justification is insufficient for both correctly matched pairs.

2 points – if the applicant correctly matches one proposed pair and, during the oral interview with the members of the Admissions Committee, provides a well-reasoned justification for the selection; or 1 point – if the justification for the correctly matched pair is insufficient.

0 points – if the applicant fails to correctly match any logical pair or does not indicate any logical pair.

The assessment obtained for the Entrance Examination Section is converted to the 100-200 scale in accordance with the table below.

<i>Assessment (Points)</i>	<i>Score (100–200 Scale)</i>
5	100
6	108
7	115
8	123
9	131
10	134

<i>Assessment (Points)</i>	<i>Score (100–200 Scale)</i>
19	151
20	152
21	155
22	159
23	163
24	167

11	137
12	140
13	143
14	145
15	147
16	148
17	149
18	150

25	170
26	173
27	176
28	180
29	184
30	189
31	194
32	200

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Liudmyla SHEVCHUK

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