

**Mathematical Competition "Master of irrational numbers", Group A**

(Select the correct answer on the answer sheet, putting an "x". If you make a mistake, glorify 'x' circle, and then select the correct answer).

**Zad. 1.** Number  $\frac{2}{2-\sqrt{2}}$  equals:

- A.  $\frac{1}{1-\sqrt{2}}$       B.  $2+\sqrt{2}$       C.  $\frac{4+\sqrt{2}}{2}$       D.  $\frac{-2}{\sqrt{2}-2}$

**Zad. 2.** The irrational number is:

- A.  $(2\sqrt{2})^2$       B.  $(\sqrt{2})^3$       C.  $(2+\sqrt{2})^2$       D.  $\sqrt{12} \cdot \sqrt{3}$

**Zad. 3.** The solution of equation:  $(x+\sqrt{3})(3-\sqrt{3})=9+\sqrt{3}$  is:

- A.  $\frac{9+\sqrt{3}}{3-\sqrt{3}}-\sqrt{3}$       B.  $\frac{30+12\sqrt{3}}{6}$       C.  $5+\sqrt{3}$       D.  $5+2\sqrt{3}$

**Answer sheet:**

Ex. 1	A	B	C	D
Ex. 2	A	B	C	D
Ex. 3	A	B	C	D

**Name of student:** .....

**Class:** .....

**Mathematical Competition "Master of irrational numbers", Group A**

(Select the correct answer on the answer sheet, putting an "x". If you make a mistake, glorify 'x' circle, and then select the correct answer).

**Zad. 1.** Number  $\frac{2}{2+\sqrt{2}}$  equals:

- A.  $\frac{4-\sqrt{2}}{2}$       B.  $\frac{1}{1+\sqrt{2}}$       C.  $2-\sqrt{2}$       D.  $\frac{-2}{-\sqrt{2}-2}$

**Zad. 2.** The irrational number is:

- A.  $(\sqrt{3})^3$       B.  $(3\sqrt{3})^2$       C.  $(3+\sqrt{3})^2$       D.  $\sqrt{32} \cdot \sqrt{2}$

**Zad. 3.** The solution of equation:  $(x+\sqrt{5})(2-\sqrt{5})=1+\sqrt{5}$  is:

- A.  $-7-3\sqrt{5}$       B.  $\frac{1+\sqrt{5}}{2-\sqrt{5}}-\sqrt{5}$       C.  $-7-4\sqrt{5}$       D.  $\frac{14+6\sqrt{5}}{-2}$

**Answer sheet:**

Ex. 1	A	B	C	D
Ex. 2	A	B	C	D
Ex. 3	A	B	C	D

**Name of student:** .....

**Class:** .....

Right answers:

Gr. A:

Ex. 1	A	B	C	D
Ex. 2	A	B	C	D
Ex. 3	A	B	C	D

Gr. B:

Ex. 1	A	B	C	D
Ex. 2	A	B	C	D
Ex. 3	A	B	C	D

## Mathematical rules of the competition "Master of irrational numbers"

### Objectives:

- Activating students to encourage competition;
- Consolidate the ability to perform operations on expressions containing the elements of the second and third degree;
- Exercise problem solving skills closed;
- Selecting the best student in mathematics at Secondary School in the numbers of irrational actions.

### Description:

- All pupils of High School take part in the competition.
  - Competition is a single step.
  - Duration of the competition: 15 min.
  - The competition takes the form of 'multiple choice' test (the correct response to one task can be from 0 to 4).
  - During the competition, the student may use their own calculator and a simple 'set design'.
- The winners of the first three places will receive a prize of a partial assessment of '6' with a weight of 10 in mathematics.

### Scope of knowledge:

- Arithmetic roots of the second and third degree

### Range of skills:

- Removal of the irrationality of the denominator of the fraction
- Sign off before the element factor
- The use of short multiplication formulas
- Perform operations on expressions containing the elements, including solving linear equations