THE GUIVY ZALDASTANISHVILI AMERICAN ACADEMY IN TBILISI

MATH PRACTICE TEST

YEAR 9

DURATION: 90 minutes

Entrance Exam Topics

Grade 9

1. Natural, whole, and rational numbers
2. Square root of a number
3. Natural exponents, properties of exponents
4. Absolute value
5. Simplifying expressions: the least common denominator, factoring, foils (square of the sum, square of the difference, difference of squares)
6. Solving linear equations; solving equations using the zero product property
7. Solving systems of linear equations with two unknowns using graphical methods, substitution, and elimination
8. Percent; proportion; arithmetic mean
9. Word problems involving linear equations
10. Perimeter of a 2-dimensional geometric shape
11. Triangles (acute-angled, obtuse-angled, right-angled, isosceles, equilateral)
12. Quadrilaterals (square, rectangle, parallelogram, rhombus, trapezoid)
13. Sum of the interior angles in a triangle and a quadrilateral
14. Parallel lines
15. Area of a 2-dimensional geometric shape (triangle, parallelogram, rhombus, rectangle, square)
16. Rectangular coordinate system; plotting points
17. Graphing geometric shapes on the coordinate plane using coordinates of the vertices
18. Remainder
19. Sets: intersection, union, subsets, Venn diagrams
20. Transformations: translation, line symmetry

The admission test requirements fully comply with the national curriculum approved by the Ministry of Education and Science of Georgia in mathematics. For more information, please visit the following address www.mes.gov.ge/uploads/gegmebi/4.matematika.doc (see page 474)

The G. Zaldastanishvili American Academy in Tbilisi

Math Practice Test, Grade 9

DURATION OF THE TEST IS 90 MINUTES

This test consists of **ten (10)** problems. A separate test page is allocated to each of the problems. It is essential to write down detailed solutions under each problem (when applicable, please indicate the measurement unit in your answer)
Each of the five problems will be evaluated on a five-point scale (0, 1, 2, 3 or 4).

Please use the pages attached to the end of the test paper for any rough work. Using other extra papers while the exam is in progress is strictly prohibited!

The use of a calculator is not permitted.

Good Luck!

Name, Surname: _____

Total Points: _____

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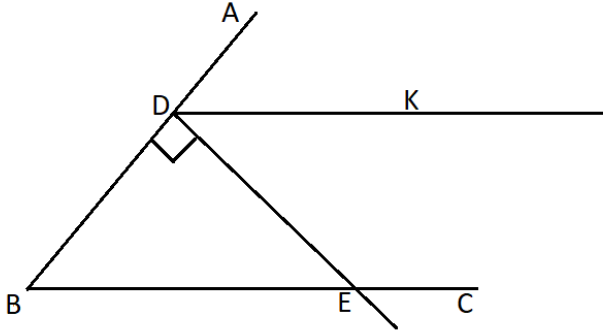
Math Practice Test, Grade 9

1. Given $(a + b)^2 = 16$ and $a^2 + b^2 = 10$, find the product ab.

2. In the following sequence of numbers: $1, 5, a, b \ldots$, the sum of <u>any three consecutive terms</u> equals to 6.
   Find the 20th term of the sequence.

3. Solve the System:
$$\begin{cases} 2(x + y) = 3(x - y) \\ 2x + 4y = 8 \end{cases}$$

4. Plot the following points on the coordinate plane: A (- 3,2), B (0,5), C (10,5), and D (7,2). Then find the area of the geometric figure ABCD, which is formed by sequentially connecting these points.

Math Practice Test, Grade 9

5. On the drawing below, $ABC = 60^0$ the lines DK and BC are parallel and the angle ∠BDE is right. Find the degree measure of angle ∠KDE.

6. Simplify the expression: $$\frac{m^2 + n^2}{m^2 - n^2} - \frac{m - n}{2m + 2n}$$

7. The entrance ticket to the zoo costs 80 tetris for adults and 50 tetris for children. On Sunday, 150 tickets were sold, generating a total of 84 GEL. How many children and how many adult tickets were sold that day?

8. In $\triangle ABC$, angle A=90°, angle C = 28°. Find the degree measure of the angle included between the bisector of angle A and the height drawn to the sides BC.

9. Find the smallest angle between the hour and minute hands at 12:40 *o'clock*.

10. A rhombus, drawn in an equilateral triangle, has a common angle with the triangle (see the figure at right). Given that the perimeter of the triangle is 12.6 cm, find the side of the rhombus and the length of its shorter diagonal.