THE GUIVY ZALDASTANISHVILI AMERICAN ACADEMY IN TBILISI

MATH PRACTICE TEST

YEAR 8

DURATION: 90 minutes

Mathematics – VI-VII Grade Level

1. Natural numbers. Prime and Composite numbers. Factors and Integer Multiples.
2. Prime Factorization.
3. Greatest Common Divisor (GCF) and the Least Common Multiple (LCM).
4. Rational numbers. Different forms of Rational numbers (Fractions, Mixed numbers and Decimals). Comparison of the Rational numbers.
5. Operations with Rational numbers.
6. Percentage. Calculating the percentage/part of a number, and vice versa.
7. Decomposition of the Rational number by its proportional parts.
8. Square of an Integer. The Principal Square Root of a Perfect Square.
9. Remainder and the Quotient. Divisibility rules (for 2, 5, 10, 3 and 9).
10. Absolute Value of a number. Geometrical interpretation of an Absolute Value.
11. Time units; units of Length, Area and Volume; units of Mass.
12. Linear Equation in One Variable. The equations that are reducible to the Linear Equation in One Variable.
13. Word Problems on a Linear Equations.
14. Simplifying Numerical and Algebraic Expressions, containing numeric and variables constants, their application in word problem solving.
15. Numerical Inequalities, containing addition, subtraction and multiplication, their properties; Real Interval.
16. Rectangular Coordinate System. Location of a point by its coordinates on a Cartesian Plane.
17. Axial Symmetry.
18. Rectangle, Square; Areas of Rectangle, Square; Area of the composite plane Shapes made of Rectangles and Squares.
19. Arithmetic Mean.
20. Angle, its elements; Degree Measure of a plane angle.
21. Types of angles: Right Angle, Acute Angle, Obtuse Angle and Open Angle; Vertical and Adjacent Pairs.
22. Triangle, its elements; Types of triangle by its angles and sides.

Section I

10 Multiple-Choice Questions

This section consists of Ten (10) problems. Each of these problems is provided with five (5) answer choices, *only one* out of which is correct.

Under each problem, please, write detailed solution and **circle only one** of the answers of your choice.

You will receive **2** points for each problem, if the correct answer is circled; If this is not the case, you will receive **0** or **1** point, depending on the quality of your work.

Section I Points Subtotal: _____

1. Calculate: $10\frac{1}{2} + 1\frac{2}{3} - 3\frac{1}{6}$

    A) 8   B) $9\frac{1}{3}$ C) 9   D) $8\frac{1}{3}$ E) $15\frac{1}{3}$

2. Solve the equation: $\frac{3}{4}(2x + 8) - \frac{1}{2}x = 5$

    A) -1 B) $-\frac{4}{5}$ C) 11   D) -12 E) 0

3. On a coordinate plane, point $A(1, -6)$ and point B are symmetric across the y-axis. Find the length of AB line segment.

   A) 6   B) 5   C) 1   D) 2   E) 12

4. One side of a rectangle is 4 cm longer than the other side. Find the area of the rectangle, if its perimeter measures 28 cm.

   A) 5 cm²   B) 96 cm²   C) 45 cm²   D) 192 cm²   E) 112 cm²

5. Nana and Giorgi used a *square* shaped pieces of paper for their presentation. One side of Nana's paper equals 12 cm. The area of Giorgi's paper is 81 cm² more than Nana's paper. Find the length of Giorgi's paper.

   A) 12 cm   B) 9 cm   C) 25 cm   D) 225 cm   E) 15 cm

6. There are 550 seats in the *new* building of a school's amphitheater, which is 10% more than the number of the seats in the old building. By how many seats does the new building exceed the number of the seats in the old amphitheater?

   A) 5   B) 50   C) 1.1   D) 55   E) 500

7. Sandro's two exam average score is 64. What score should he get in the third exam, in order to accumulate 70 as an average score of all three exams?

   A) 6   B) 67   C) 134   D) 32   E) 82

8. On Tuesday, the bakery produced 100 more breads than on Monday. On Wednesday, the same bakery baked 50 less breads than on Monday. During these three days, the bakery produced 230 breads in total. How many breads were baked on Monday?

   A) 60   B) 40   C) 90   D) 150   E) 180

(*Attention! Questions #9 and #10 refer to the information given in this problem*) The table below provides the list of the quantity and the corresponding colors of the mobile phones sold during the first week of November.

Color	Quantity
White	$8k$
Black	25
Blue	$50 - 2k$
Red	$k + 55$
Total	200

9. How many *blue* mobile phones were sold during the first week of November?

   A) 200   B) 25   C) 65   D) 30   E) Cannot be determined

10. What percent of the sold mobile phones is *black*?

    A) 12.5%   B) 50%   C) 200%   D)25.5%   E) 15%

Section II

5 Student-produced Response Questions

This section consists of five (5) student-produced response problems. Separate test page is allocated to each of the problems.

It is essential that you provide these problems with detailed solutions and box the answers. Otherwise, the answers will not be evaluated!
(Whenever appropriate, please indicate units of measurement as well).

Each of these five problems will be scored on a five-point scale (**0, 1, 2, 3 or 4**).

Section II Points Subtotal : _____

11. Guram participated in 5 day Marathon competition. His *daily average* distance during 5-day run was 12 km. How many kilometers did he run on the fifth day, if his *daily average* distance during four-day run is 10.8 km?

12. Car rental service offers cars at 40 GEL of a daily rental price plus 1.5 GEL for every driven kilometer.

      a) If Luka payed 226 GEL in total, how many kilometers did he drive?

      b) Write an equation of the total daily rental cost, if Luka drove x kilometers on that day.

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13. The perimeter of a triangle measures 75.6 cm. The sum of a and b sides is 45.6 cm, while the sum of b and c sides equals 55.2 cm (see the figure to the right). Find the length of *each* side of the triangle.
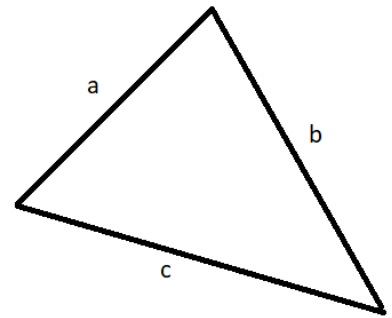
14. The figure to the right represents the building plan of the scale 1 : 250 (every cm of the plan corresponds to 2.5 real meters). According to the plan, find
    a) the real perimeter of the building;
    b) the real area of the building.

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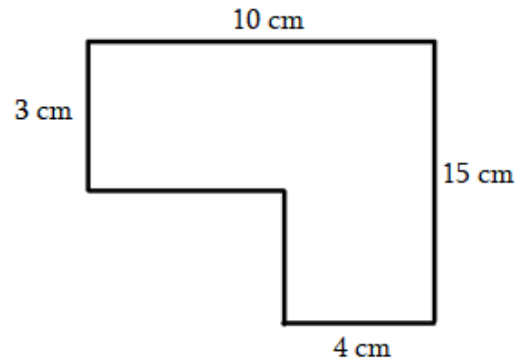
15. A pool has two pipes for the water supply. The first pipe fills the pool in 10 hours, while the second pipe fills the pool in 4 hours.

   a) What part of the pool will be filled in 1 hour by the *first* pipe? by the *second* pipe?

   b) Compare the parts of the pool filled by the *first* pipe in 7 hours and filled by the *second* pipe in 3 hours. Which of the parts is greater?

   c) What part of the pool will be filled in 1 hour if the both pipes supply the water *simultaneously*?

Answer Key:

Part I

1.	C) 9
2.	A) -1
3.	D) 2
4.	C) 45 cm²
5.	E) 15 cm
6.	B) 50
7.	E) 82
8.	A) 60
9.	D) 30
10.	A) 12.5

Part II

11.	16.8 km
12.	a) 124 km; b) $40 + 1.5x$
13.	25.2 cm; 20.4 cm; 30 cm
14.	a) 125 m; b) 487,5 m²
15.	a) $\frac{1}{10}, \frac{1}{4}$; b) the part filled by the second pipe in 3 hours; c) 7/20.