**CYPRUS MATHEMATICAL SOCIETY**
**REGIONAL COMPETITION**
**NOVEMBER 2025**

**GYMNASIUM A'**

*Date: 08/11/2025* *Time: 10:00-12:00*

**INSTRUCTIONS**

1. Solve all the problems, fully justifying your answers.
2. Each problem is worth 10 points.
3. Write with blue or black ink (shapes can be drawn with pencil).
4. The use of corrective liquid (Tipp-Ex) is not allowed.
5. The use of a calculator is not allowed.

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**PROBLEMS**

**Problem 1**

α. Calculate the value of the expression:

$$A=\left\{1-\left[\left(2-\frac{3}{2}\right)^2-\left(1-\frac{3}{4}:\frac{3}{16}\right)\right]\right\}:\left(\left(\frac{3}{2}\right)^2-2\right)+(-2)^2-2^2+\frac{1}{2}\cdot\frac{3}{4}:\frac{3}{2}\cdot 2$$

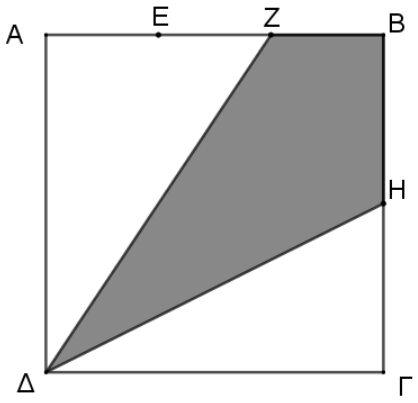
β. Andrew spent $\frac{2}{5}$ of his money and was left with €72. Vasiliki had three times as much money as Andrew had initially but spent $\frac{3}{4}$ of it. Who has the most money now and by how much?

**Problem 2**

We write the sequence 2, 4, 6, 8, 2, 4, 6, 8, 2, 4, 6, 8, ... which repeats.
α) Which number is in the 25th position?
β) Which number is in the 2023rd position?
γ) Determine the sum of the first 2023 terms.

**Πρόβλημα 3**

A square $AB\Gamma\Delta$ is given. On side $AB$ we pick points $E$ and $Z$ such that $AE = EZ = ZB$ and on side $B\Gamma$ a point $H$ such that $BH = H\Gamma$. If the area of the quadrilateral $ZBH\Delta$ is 15 $\text{cm}^2$, determine the area of the square $AB\Gamma\Delta$.




**Πρόβλημα 4**

Each one out of Anna, Vasilis, George, and Danae thinks of a different prime number. The sum of the numbers of Anna and Vasilis is equal to the number of George. The sum of the numbers of Anna and George is equal to the number of Danae. Determine all possible numbers that Anna, Vasilis, George, and Danae could think of so that the above sentences are true.