CYPRUS MATHEMATICAL SOCIETY
REGIONAL COMPETITION
NOVEMBER 2026

PRIMARY - LEVEL 6

Date: 07/11/2026 *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 (Tip-Ex) is not allowed.
5. The use of a calculator is not allowed.

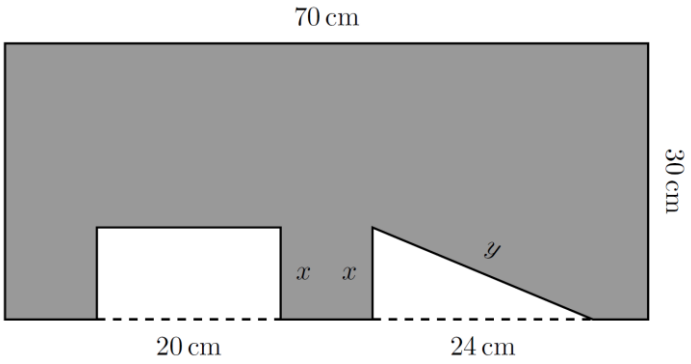
PROBLEMS

Problem 1

From a rectangular sheet of paper measuring $70\text{ cm} \times 30\text{ cm}$, a rectangle with a base of 20 cm and a right-angled triangle with a base of 24 cm are removed. Both pieces have the same unknown height x, as shown in the diagram. The area of the remaining shape is 1780 cm^2.

a) Calculate the height x of each piece.

b) Given that the side y of the triangle is 26 cm, calculate the perimeter of the remaining shape.



Problem 2

a) Calculate the value of the following expression:

$$\kappa = \left(2 - \frac{2}{3}\right) \times \left(2 - \frac{3}{4}\right) \times \cdots \times \left(2 - \frac{10}{11}\right)$$

b) In triangle ΑΒΓ, whose area is 90 cm^2, point Δ lies inside side ΒΓ and point Ε lies inside segment ΑΔ, such that:

$$\Delta\Gamma = 4 \times B\Delta, \quad \Delta E = 2 \times AE$$

Find the area of triangle ΕΔΓ.

c) Calculate the fraction λ

$$\lambda = \frac{7 + 14 + 21 + \cdots + 70}{21 + 42 + 63 + \cdots + 210}$$

and the area of the part of the ΕΔΓ triangle corresponding to that fraction.

Problem 3

Two players, John and Nick, play a game with 20 marbles on a table. The rules are as follows:

- The players take turns (one player followed by the other).
- On each turn, a player may remove 1, 2, or 3 marbles from the table (a player cannot remove more than 3 marbles).
- The player who takes the last marble remaining on the table loses.

If John plays first, how many marbles should he remove on his first turn, and what strategy should he follow thereafter to be certain of winning, regardless of what Nick does? Give a winning strategy.

Problem 4

Giorgos performs a job alone in 12 hours while Christos performs the same job alone in 8 hours.

a) If they work together, how many hours will it take them to finish the job?

b) If Christos arrives later and starts working 90 minutes after Giorgos begins, determine how long after Christos arrives the job will be completed, and what fraction of the job each person completes.