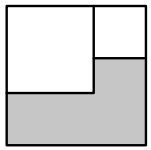
MT Classes Math Olympiad

Ages 13–14 • 90 minutes • October 2026 • English

Multiple-choice problems

Each problem has several answer choices. Choose the one correct answer and write it on the answer sheet.

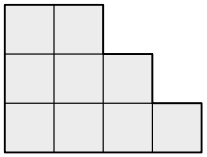
Problem 1 (3 points).



In the figure, a large square is divided into two smaller squares, whose perimeters are 20 cm and 12 cm, and a shaded figure. Find the perimeter of the shaded figure.

(a) 24 **(b)** 26 **(c)** 28 **(d)** 30 **(e)** 32

Problem 2 (3 points).



The figure is made of identical cells, as shown in the picture. How many rectangles with sides along the grid lines are there in the picture in total? Squares are also considered rectangles.

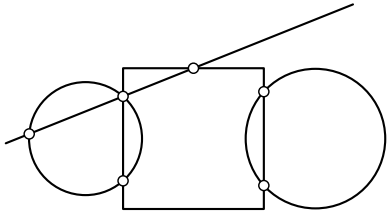
(a) 25 **(b)** 27 **(c)** 29 **(d)** 31 **(e)** 33

Short-answer problems

Write only the final answer (a number, an expression, an example, a short statement — as required in the problem). No solution is needed: only the answer is checked.

Problem 3 (5 points).

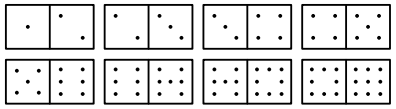
In the figure, two circles, a square and a line have 6 marked intersection points in total.



Give an example of an arrangement of these same geometric figures in the plane that gives exactly 16 distinct intersection points. The positions and sizes of the figures may be changed.

Problem 4 (5 points). A three-digit number is called *self-enamored* if it equals the sum of the cubes of its digits. For example, the number 123 is not self-enamored, because the sum of the cubes of its digits is not equal to 123: $1^3 + 2^3 + 3^3 = 36 \neq 123$. Find any one self-enamored number.

Problem 5 (5 points).



You are given the eight dominoes shown on the right. Use them to tile a 4×4 grid without overlaps so that the sums of the dots in all rows and columns are equal.

Full-solution problems

Write a complete solution: your reasoning, justifications and proof (where required). Both the answer and the reasoning are assessed.

Problem 6 (7 points). A 2026-digit number was formed by the following rule: its first digit is 2, the second is 7, and each subsequent digit is the units digit of the product of the two previous ones. How many times does the digit 8 occur in this number?

Problem 7 (7 points).

Is it possible to place the natural numbers $1, 2, 3, \ldots, 25$ in the cells of a 5×5 square so that for every number greater than 1, **in at least one of the cells sharing a side with it** there is a number that is 1 or 2 less than it, and the numbers $10, 12, 14$ are placed as in the picture?

10				12
14				