

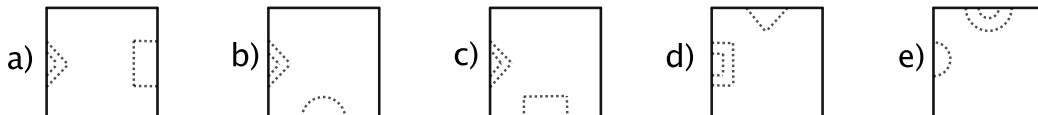
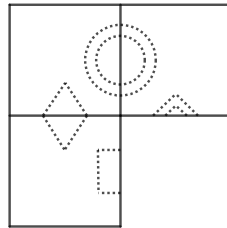
MATHEMATICS COMPETITION FOR THE SEVENTH
GRADERS OF SATAKUNTA, 4-8 MARCH, 2024

- The time allotted is 50 minutes.
- The allowed tools are writing and drawing instruments, i.e. pencil, paper, eraser, ruler and compass. Calculators and mathematical tables are not allowed.
- Each problem has exactly one correct answer. Wrong answers are not punished.
- The problems are not ordered in increasing difficulty, but the first problems are likely to be easier than the last ones.

1. Compute $1.08 - 0.99$.

- a) 0.90 b) 0.09 c) 9 d) 0.08 e) 0.8

2. Which of the following pieces fits into the empty space? It is allowed to rotate the pieces.



3. On the first day, the temperature is -2°C . On the second day, it decreases by five degrees and on the third day it increases by three degrees. What is the temperature after these changes?

- a) 0°C b) $+2^{\circ}\text{C}$ c) -2°C d) $+4^{\circ}\text{C}$ e) -4°C

4. One T-shirt costs 12 euros. There is also a sale that one in every three T-shirts is free. One buys eight T-shirts. How much do they cost in total?

- a) 24 e b) 36 e c) 60 e d) 72 e e) 96 e

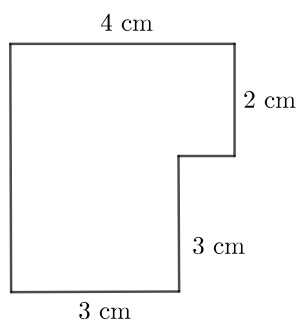
5. A digital clock shows the time in a 24-hour format with one minute accuracy. For example, it can show 20:31. What is the largest possible sum of the digits it can have? For example, when the time is 20:31, then the sum of digits is $2 + 0 + 3 + 1 = 6$.

- a) 6 b) 19 c) 20 d) 24 e) 36

6. Three children share blue and red candies. Each child gets equally many red candies. However, they cannot share blue candies equally and instead one child gets one blue candy less than others. It turns out that one of the following numbers was the original total amount of blue and red candies. Which one?

- a) 32 b) 34 c) 39 d) 40 e) 42

7. What is the perimeter of the figure? Every angle is either 90° or 270° .



- a) 12 cm b) 17 cm c) 18 cm
d) 20 cm e) 24 cm

8. Little Red Riding Hood is 50 meters away from grandmother's cottage and she walks straight towards the cottage. Every time Little Red Riding Hood has walked eight meters, a wolf appears behind a tree to scare Little Red Riding Hood and Little Red Riding Hood backs off straight back two meters. After that, a wolf hides again and Little Red Riding Hood continues her way by walking straight towards the cottage. After Little Red Riding Hood has walked eight meters, the wolf appears again to scare her.

How many meters has Little Red Riding Hood to walk during this 50 meters journey before she reaches grandmother's cottage?

- a) 64 m b) 68 m c) 72 m d) 76 m e) 82 m

9. Which is the largest of the following five fractions?

- a) $\frac{1}{2}$ b) $\frac{5}{7}$ c) $\frac{3}{5}$ d) $\frac{7}{9}$ e) $\frac{9}{11}$

10. How many positive integers of size at most 1000 have a digit 3 appearing at least once? The number 13 is an example of such number.

- a) 243 b) 244 c) 271 d) 300 e) 700

11. Compute the product of those integers that are at least -10 and at most 10 .

- a) 0 b) $-64\,800$ c) $64\,800$ d) $-25\,401\,600$ e) $25\,401\,600$

12. The height of a rectangle is 1 and its width is 2. We form a new quadrilateral by connecting the midpoints of the sides of the rectangle. What is the area of this quadrilateral?

- a) 0.25 b) 0.5 c) 0.75 d) 1 e) 1.25

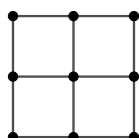
13. Aino says that Eino lies. Eino says that Leo lies. Leo says that Olivia lies. Olivia says that Leo lies. Väinö says that everyone speaks the truth. How many of the five children speak the truth?

- a) 1 b) 2 c) 3 d) 4 e) 5

14. The side lengths of a cube and a square are integers in centimeters. When we add the number that we obtain from the volume of the cube without the unit cm^3 to the number we obtain from the area of the square without the unit cm^2 , the sum is 73. For example, if the volume would be 1 cm^3 and the area would be 4 cm^2 , we would compute $1 + 4 = 5$, but this is not the wanted sum. How many such cube and square combinations are there?

- a) 0 b) 1 c) 2 d) 3 e) 4

15. How many triangles can we form, using vertices in the picture below? Two triangles are different if they have at least one different vertex.



- a) 14 b) 20 c) 40 d) 76 e) 108