

MATHEMATICS COMPETITION FOR THE SEVENTH  
GRADERS OF OULU REGION, 11–15 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 one correct answer. Wrong answers do not reduce points.
- The problems are not ordered in increasing difficulty, but the first problems are likely to be easier than the last ones.

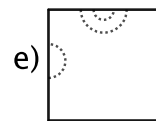
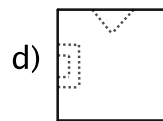
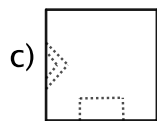
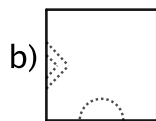
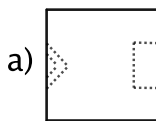
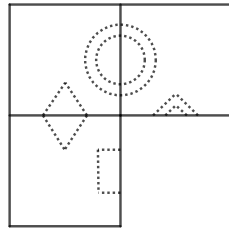
1. Compute  $1 - 0,9 + 10 - 9 + 100 - 90 + 1000 - 900$ .

- a) 100,0    b) 101,1    c) 110,1    d) 111,1    e) 237,9

2. Compute  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8}$ .

- a)  $\frac{7}{4}$     b)  $\frac{3}{8}$     c)  $\frac{4}{8}$     d)  $\frac{7}{8}$     e)  $\frac{3}{14}$

3. Which of the following pieces fits into the empty space? Rotating the pieces is allowed.



4. Anssi's age now is seven years greater than Pinja's age was a year ago. After four years, Anssi's age will be double that of Pinja's. How old is Anssi now?

- a) 6 years    b) 8 years    c) 11 years    d) 16 years    e) 18 years

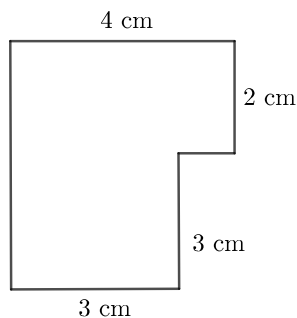
5. Both Juuso and Toni walk around a race track at a pace of one step in exactly one second. It takes Juuso 150 steps and Toni 200 steps to complete a full round around the track. How many rounds has Juuso completed when Toni has completed three rounds?

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

**6.** 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, the sum of the digits is  $2 + 0 + 3 + 1 = 6$ .

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

**7.** What is the perimeter of the figure? Each of the angles is either  $90^\circ$  or  $270^\circ$ .



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

**8.** A positive integer  $N$  has the following properties: the number  $N$  is smaller than 20, the number  $N$  is divisible by 4 and when you multiply the number  $N$  by three, the product is divisible by 9. What is  $N$ ?

- a) 6    b) 9    c) 12    d) 16  
e) The problem cannot be solved with the given information.

**9.** Consider a triangle. Form another triangle inside the original triangle by connecting the midpoints of its sides with line segments. How much of the area of the first triangle does the smaller triangle cover?

- a) 10%    b) 20%    c) 25%    d) 50%    e) 75%

**10.** How many positive integers at most 1000 have a digit 3 appearing at least once? For example, 13 is one such integer.

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

**11.** 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

**12.** Three children share blue and red candies. Each child gets the same number of red candies. However, they cannot share the blue candies equally and instead one child gets one blue candy less than the 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

**13.** 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 from behind a tree to scare Little Red Riding Hood and she backs off straight back two meters. After that, the wolf hides again and Little Red Riding Hood continues her way by walking straight towards the cottage. Again, after Little Red Riding Hood has walked eight meters, the wolf appears to scare her.

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

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

**14.** Veera and Noora each choose one number from the integers 1, 2, 3, 4 and 5. After this, the two numbers are multiplied together. It is revealed, that the product is an even number. Veera and Noora then have the following conversation. Veera says to Noora: "I cannot determine whether your number is even or odd". Noora answers: "In that case, the sum of our numbers is even". "Hence the product of our numbers is at most eight", says Veera. "Now I know which number you chose!", Noora announces. Which number did Veera choose?

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

**15.** Pekka, Laura and Juhani are playing table tennis. They play one-on-one games one game at a time, and the loser always skips the next game. There were a total of 21 games. Pekka played 17 times, Laura 15 times and Juhani 10 times. Who lost the second game?

- a) Pekka      b) Laura      c) Juhani  
d) Either Laura or Pekka, but we don't have enough information to determine which.  
e) The problem cannot be solved with the given information.