

MATHEMATICS COMPETITION FOR THE SEVENTH
GRADERS OF OULU SUB-REGION, 9–13 FEBRUARY 2015

- The time allotted is 50 minutes.
- The allowed tools are writing and drawing instruments, i.e. pencil, eraser, ruler and compass. Calculators and mathematical tables are not allowed.
- Each problem is worth one point. 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 $13579 + 2468$.

- a) 15037 b) 15047 c) 16047 d) 16147 e) 17147

2. Compute $57 \cdot 63$.

- a) 3591 b) 3597 c) 3601 d) 3621 e) 3691

3. What is

$$\frac{1}{1} + \frac{1}{2} + \frac{1}{3}?$$

- a) $\frac{11}{6}$ b) -1 c) 0 d) $\frac{3}{6}$ e) $\frac{2}{5}$

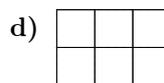
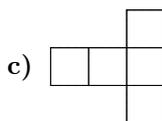
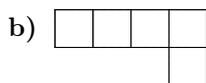
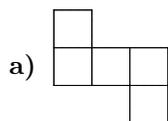
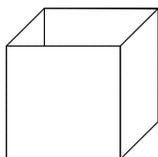
4. Maija needs painkillers. She finds two kinds of capsules: capsules with 600 mg of the active ingredient, and capsules with 200 mg of the active ingredient. She computes that she needs to take $\frac{2}{3}$ capsules with 600 mg of the active ingredient. If she instead takes 200 mg capsules, how many capsules should she take?

- a) 0 b) 1 c) $\frac{3}{2}$ d) 2 e) 3

5. On 3 December 2014 the treasury announced on their homepage that in the proposed budget the actual income without any loans is estimated to be 47.2 billion euros. How many digits are there in the number 47.2 billions when it is written out with digits (without a power of ten)?

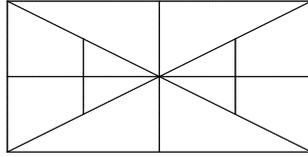
- a) 8 b) 9 c) 10 d) 11 e) 12

6. Which of the following figures **cannot** be folded into a cubical box with one side left open?



- e) All of the above four shapes can be folded into the desired box shape.

7. How many triangles are visible in the picture?



- a) 14 b) 16 c) 18 d) 20 e) 22

8. The velocity of a train is 100 km/h, and the length of the train is 100 metres. The nose of the train passes by a traffic sign. How long does it take for the train to completely pass by the traffic sign?

- a) 0.1 seconds b) 1 second c) 3.6 seconds d) 40 seconds e) 1 minute

9. Which of the following numbers is the smallest?

- a) $\frac{1}{1} + \frac{1}{7}$ b) $\frac{1}{2} + \frac{1}{6}$ c) $\frac{1}{3} + \frac{1}{4}$ d) $\frac{1}{5} + \frac{1}{5}$ e) They are all equal.

10. In a football tournament each team plays exactly one game against every other competing team. If a total of 6 games were played in the tournament, then how many teams participated?

- a) 3 b) 4 c) 5 d) 6 e) 7

11. What is the smallest positive integer of the form $4n + 9m$, where $m, n = 0, 1, 2, 3, \dots$?

- a) 13 b) 9 c) 2 d) 4 e) 0

12. The long side of a rectangular fence is three times as long as the short side. The area surrounded by the fence is 75 m^2 . Compute the circumference of the fence (i.e. the total length of the fence).

- a) 32 m b) 40 m c) 42 m d) 45 m e) 50 m

13. A bag contains balls of which $\frac{1}{4}$ are green, $\frac{1}{3}$ are blue, $\frac{1}{6}$ are yellow, and the remaining 3 balls are purple. How many yellow balls are there in the bag?

- a) 6 b) 5 c) 4 d) 3 e) 2

14. How many two-digit numbers are there in which the digit marking the tens is larger than the digit marking the units?

- a) 10 b) 30 c) 45 d) 50 e) 55

15. Let us write down those of the numbers $1, 2, 3, \dots, 98, 99, 100$ which contain at least one of the digits 2 and 5. How many numbers do we write down?

- a) 0 b) 16 c) 30 d) 36 e) 50