MATHEMATICS WITHOUT BORDERS

AGE GROUP 2

AUTUMN 2018

INSTRUCTIONS

1. Please DO NOT open the test papers before receiving the proctor's permission.

2. The test contains 20 problems with open answers.

3. You must write down your answers in the ANSWER SHEET.

4. You will get 2 points for each correct answer, 1 point for an incomplete answer, and 0 points for a wrong or missing answer.

5. Using calculators, phones or other electronic devices, as well as books or formula sheets is NOT ALLOWED.

6. You have 60 minutes to complete the test. In the case of two students having the same number of points, the student who completed the test quicker will get a higher ranking place.

7. Taking the test papers and any other notes out of the room is NOT ALLOWED.

8. Receiving any help from a proctor or anyone else during the competition is NOT ALLOWED. The organisers insist on honesty and fair play on the part of all participants in the tournament.

GOOD LUCK!

Arithmetics

Problem 1. 10, 13, 16, 17 and 20 are two-digit numbers. How many are the remaining two-digit numbers smaller than 22?

Problem 2. Which of the numbers 15, 18, 33 can be written down in such a way that $\square > 16$ would be correct?

Problem 3. Nicole has 7 dolls, and Maria has 6 more. What is the total number of dolls that Nicole and Maria have?

Problem 4. Find the missing number.

$$60 + 20 = ? - 20.$$

Problem 5. Serena added the numbers 1, 3, 6 and 9 correctly. Her sister Venice added the numbers 2, 4, 7 and 10 correctly. By how much is Venice's sum greater than Serena's sum?

Logical Thinking

Problem 6. Peter had 11 apples. He ate all but 7. How many apples does he have left?

Problem 7. Four segments have eight end points in total. One of them was separated in two. How many end points are there now?

Problem 8. Three children: Alec, Steven and Mary were sitting on a bench. They were sitting in the following order (from left to right): Alec, Steven and Mary. At first Alec switched places with Mary, then Mary switched places with Steven. Who stayed in the middle?

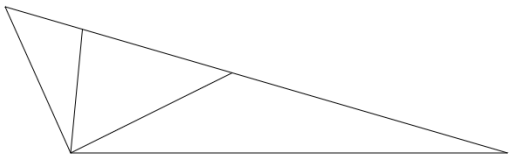
Problem 9. My bunny eats either 2 cabbages or 3 carrots a day. It ate exactly 6 carrots in a week. How many cabbages did my bunny eat during this same week?

Problem 10. Alex, Boris and Catherine live in the cities of Rome, Berlin and Cairo. Alex does not live in Rome, Boris lives in Berlin, and Catherine does not live in Cairo. Where does Catherine live?

Geometry

Problem 11. A triangle has side lengths of 3 cm, 4 cm and 5 cm. A square has a side length of 2 cm. How many centimeters is the difference of the perimeters of the triangle and the square?

Problem 12. There are more than 4 triangles on the diagram. How many triangles are there?



Problem 13. A band has a length of 1 meter. Iva cut out a part of the band and got a band with a length of 9 dm. How many centimeters did Iva cut out from the original band?

Problem 14. Mila jumped 60 cm high, and Jenny jumped 1 dm higher. Calculate how high Jenny jumped in centimeters.

Problem 15. A square with a side length of 4 cm has been divided into two identical rectangles. How many centimeters is the parameter of each of these rectangles?

Combinatorics

Problem 16. Peter threw two different dice.

Peter got 4 points from one of the dice and 2 from the other (6 points in total).
In how many other ways can he get 6 points?

Problem 17. Peter presented the number 15 as the sum of different one-digit numbers. Afterwards he subtracted the smaller addend from the greater addend. Find the number of possible differences that Peter can get.

Problem 18. David has three pieces of fruit: an apple, an orange, and a banana. He decided to give them to Peter, Ivan and Stephan. In how many ways can he do that if he is aware that Peter doesn't like bananas?

Problem 19. How many two-digit numbers that contain different digits can we form using the digits 0, 1 and 2?

Problem 20. Ivan has one blue, one green and one red shirt, as well as one blue and one black pair of trousers. In how many ways can he combine a shirt and a pair of trousers of different colors?