

KÄNGURU DER MATHEMATIK 2016

17. 03. 2016

Level: Benjamin, Grade: 5 and 6

Name:	
School:	
Class:	

Time: 60 min.

24 starting points

Each correct answer to questions 1. – 8.: 3 Points

Each correct answer to questions 9. – 16.: 4 Points

Each correct answer to questions 17. – 24.: 5 Points

Each question left unanswered 0 Points

Each incorrect Answer: $\frac{1}{4}$ of the points for the question are subtracted



Please write the letter (A, B, C, D, E) of the correct answer in the square under the question number (1 to 24). Write clearly and carefully!

1	2	3	4	5	6	7	8

9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24

S-VERSICHERUNG

VIENNA INSURANCE GROUP

Information über den Känguruwettbewerb: www.kaenguru.at
Wenn du mehr in dieser Richtung machen möchtest,
gibt es die Österreichische Mathematikolympiade;
Infos unter: www.oemo.at



Känguru der Mathematik 2016

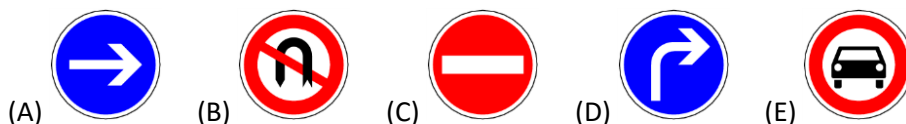
Level Benjamin (Grade 5 and 6)

Österreich – 17. 03. 2016



- 3 Points Questions -

1. Which of the following road signs has the most axes of symmetry?



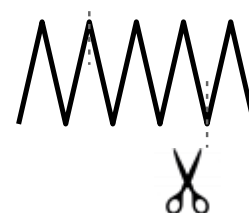
2. Mike cuts a pizza into four equally big pieces. Then he cuts each piece into three equally big pieces.

Into how many equally big pieces did Mike cut the pizza?

- (A) 3 (B) 4 (C) 7 (D) 8 (E) 12

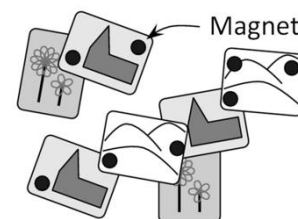
3. A 10 cm long piece of wire is folded so that every part is equally long (see diagram). The wire is then cut through in the two positions marked. How long are the three pieces created in this way?

- (A) 2 cm, 3 cm, 5 cm (B) 2 cm, 2 cm, 6 cm (C) 1 cm, 4 cm, 5 cm
 (D) 1 cm, 3 cm, 6 cm (E) 3 cm, 3 cm, 4 cm



4. Lisa has mounted 7 postcards on her fridge door using 8 strong magnets (black dots). What is the maximum amount of magnets she can remove without any postcards falling on the floor?

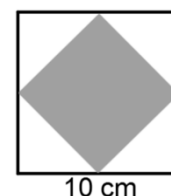
- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6



5. Kathi draws a square with side length 10 cm. Then she joins the midpoints of each side to form a smaller square.

What is the area of the smaller square?

- (A) 10 cm² (B) 20 cm² (C) 25 cm² (D) 40 cm² (E) 50 cm²



6. Maria wants there to be a knife to the right of every plate and a fork to the left of it. In order to get the right order she always swaps one fork with one knife.

What is the minimum number of swaps necessary?

- (A) 1 (B) 2 (C) 3 (D) 5 (E) 6



7. A centipede owns 25 pairs of shoes. He needs one shoe for every one of his 100 feet.

How many more single shoes does the centipede still need to buy?

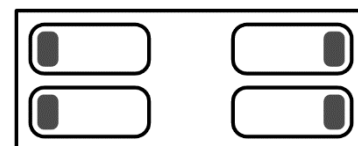
- (A) 15 (B) 20 (C) 35 (D) 50 (E) 75

8. Four girls are sleeping in a room with their heads on the grey pillows.

Bea and Pia are sleeping on the left hand side of the room with their faces towards each other; Mary and Karen are on the right hand side with their backs towards each other.

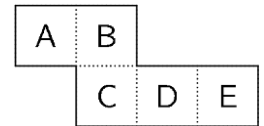
How many girls sleep with their right ear on the pillow?

- (A) 0 (B) 1 (C) 2 (D) 3 (E) 4



- 4 Points Questions -

9. The given net is folded along the dotted lines to form an open box. The box is placed on the table so that the opening is on the top. Which side is facing the table?



- (A) A (B) B (C) C (D) D (E) E

10. Robert has two equally big squares made of paper. He glues them together. Which of the following shapes can he not make?



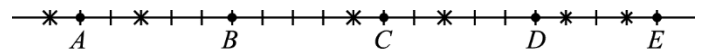
- (A) (B) (C) (D) (E)

11. Mona, Asma and Nadja work in the same nursery. On each day from Monday to Friday exactly two of them are working. Mona works three times and Asma works four times per week. How many times does Nadja work per week?

- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

12. Five squirrels A, B, C, D and E are sitting on the points marked. The crosses indicate 6 nuts that they are collecting. The squirrels start to run at the same time with the same speed to the nearest nut in order to pick it up. As soon as a squirrel has picked up the first nut it immediately continues to run in order to get another nut.

Which squirrel gets a second nut?



- (A) A (B) B (C) C (D) D (E) E

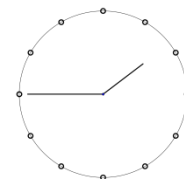
13. There are 30 girls and boys in a class. Always two students share a desk. Every boy shares a desk with a girl. Exactly half the girls share a desk with a boy. How many boys are in the class?

- (A) 25 (B) 20 (C) 15 (D) 10 (E) 5

14. Hansi writes the number 2581953764 on a strip of paper. Twice he cuts through the strip of paper between two digits and obtains three numbers which he adds. How big is the smallest sum he can obtain in this way?

- (A) 2675 (B) 2975 (C) 2978 (D) 4217 (E) 4298

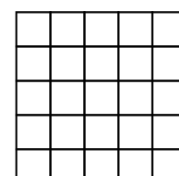
15. Bart sits at the hairdressers. In the mirror he sees a clock as shown in the diagram: What was the mirror image of the clock 10 minutes earlier?



- (A) (B) (C) (D) (E)

16. What is the maximum number of such pieces that can be cut from a 5 x 5 square?

- (A) 3 (B) 4 (C) 5 (D) 6 (E) 7



- 5 Points Questions -

17. Tim, Tom and Jim are triplets. Their brother Carl is exactly 3 years younger. All four are having their birthdays today.

How old can the four brothers be altogether?

- (A) 53 (B) 54 (C) 56 (D) 59 (E) 60

18. Richard writes down all numbers that have the following properties:

The first digit is 1. Each of the following digits is at least as big as the previous one.

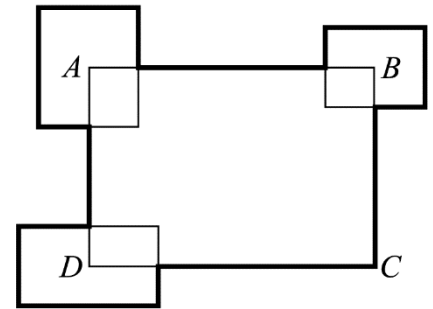
The sum of the digits is 5.

How many such numbers can Richard write down?

- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

19. The perimeter of the rectangle ABCD is 30 cm. Three more rectangles are added so that their centres are in the corners A, B and D and their sides are parallel to the rectangle (see diagram). The sum of the perimeters of these three rectangles is 20 cm.

What is the length of the boarder of the shape (thick black line)?



- (A) 50 cm (B) 45 cm (C) 40 cm (D) 35 cm (E) This cannot be calculated.

20. Luigi owns a few square tables and some chairs for his little restaurant. If he sets out his tables individually with 4 chairs each, then he is 6 chairs short. If he always puts two tables together to create a bigger table with 6 chairs, then he has 4 chairs left over.

How many tables does Luigi have?

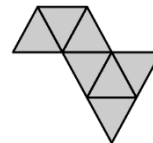
- (A) 8 (B) 10 (C) 12 (D) 14 (E) 16

21. Clara forms one big triangle made up of identical little triangles.

She has already put some triangles together (see diagram).

What is the minimum number of little triangles she has to add?

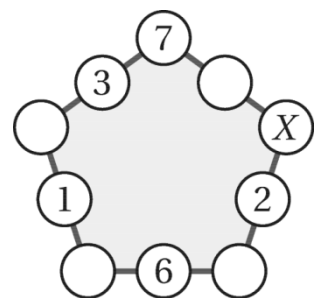
- (A) 5 (B) 9 (C) 12 (D) 15 (E) 19



22. Kirsten has written numbers into 5 of the 10 circles. She wants to write numbers into the remaining circles so that the sum of the three numbers along every side of the pentagon is always the same.

Which number does she have to write into the circle marked X?

- (A) 7 (B) 8 (C) 11 (D) 13 (E) 15



23. The symbols \circ , \square and \diamond represent three different digits.

If the digits of the number $\circ\square\circ$ are added, you receive the two-digit number $\square\diamond$.

If the digits of the two-digit number $\square\diamond$ are added, you receive the single-digit number \square .

Which digit is represented by \circ ?

- (A) 4 (B) 5 (C) 6 (D) 8 (E) 9

24. Two three-digit numbers are made up of six different digits. The first digit of the second number is twice as big as the last digit of the first number. (Note: 0 is also a digit but cannot be the first digit of a number!)

How big is the smallest possible sum of the two numbers?

- (A) 301 (B) 535 (C) 537 (D) 546 (E) 552