KÄNGURU DER MATHEMATIK 2018

15. 3. 2018

Level: Benjamin, Grade: 5 – 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: ¼ of the points for this 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

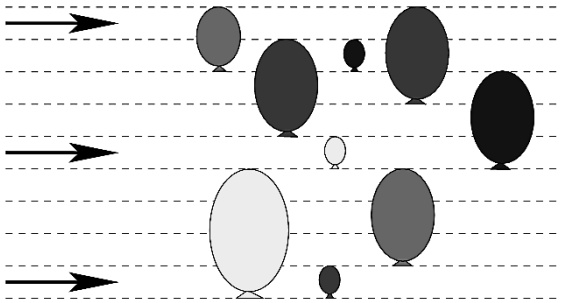
Information über den Känguruwettbewerb: www.kaenguru.at
Wenn du mehr in dieser Richtung machen möchtest,
gibt es die Österreichische Mathematikolympiade;
Infos unter: www.math.aau.at/OeMO/

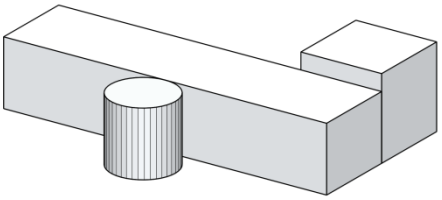
Känguru der Mathematik 2018
Group Benjamin (Grade 5 and 6)
Austria – 15. 3. 2018

- 3 Points Examples -

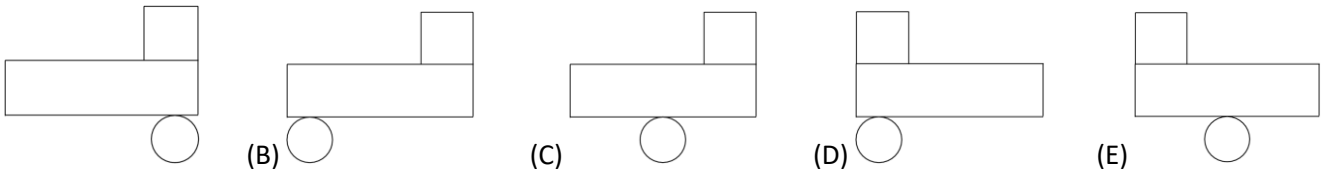
1. As seen in the diagram, three darts are thrown at nine fixed balloons. If a balloon is hit it will burst and the dart continues in the same direction it had beforehand. How many balloons will not be hit by a dart?

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



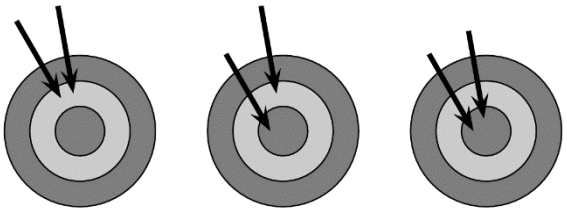


2. Peter places three building blocks on a table, as shown.
What does he see when he is looking at them from above?



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

3. If you hit the target board, you score points.
The number of points depends on which one of the three areas you hit. Diana throws two darts, three times at the target board. On the first attempt she scores 14 points and on the second 16 points.
How many points does she score on the third attempt?

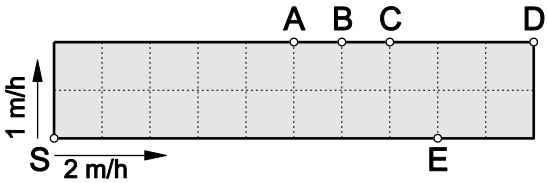


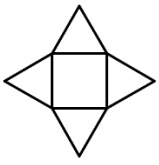
(A) 17 (B) 18 (C) 19 (D) 20 (E) 22

14 Points ***16 Points*** ***???***

4. A garden is split into equally sized square-shaped lots. A fast and a slow snail crawl in different directions along the outside edge of the garden. Both start at the corner S. The slow snail crawls 1 m in one hour and the fast one crawls 2 m in one hour. In which position will the two snails meet for the first time?

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





5. A star consist of a square and four triangles. All sides of the triangles are equally long. The perimeter of the square is 36 cm. What is the perimeter of the star?

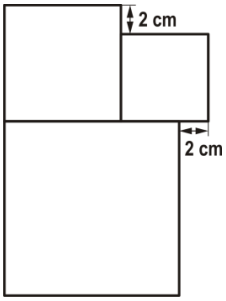
(A) 144 cm (B) 120 cm (C) 104 cm (D) 90 cm (E) 72 cm

6. A big spot of ink covers most of a calendar page of a certain month. Which day of the week does the 25th day of that month fall on?

(A) Monday (B) Wednesday (C) Thursday (D) Saturday (E) Sunday

7. How many times do you have to roll an ordinary die in order to be certain that at least one number is rolled twice?

(A) 5 (B) 6 (C) 7 (D) 12 (E) 18



8. A figure is made up of three squares. The side length of the smallest square is 6 cm. How long is the side length of the biggest square?

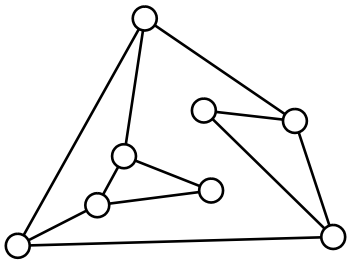
(A) 8 cm (B) 10 cm (C) 12 cm (D) 14 cm (E) 16 cm

- 4 Point Examples -

9. Alice subtracts one two-digit number from another two-digit number. Afterwards she paints over two digits in the calculation.
How big is the sum of the two painted digits?

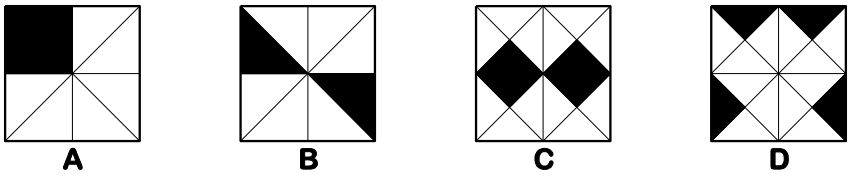
(A) 8 (B) 9 (C) 12 (D) 13 (E) 15

10. In the diagram the circles represent light bulbs which are connected to some other light bulbs. Initially all light bulbs are switched off. If you touch a light bulb then that light bulb and all directly adjacent light bulbs switch themselves on. What is the minimum number of light bulbs you have to touch in order to switch on all the light bulbs?



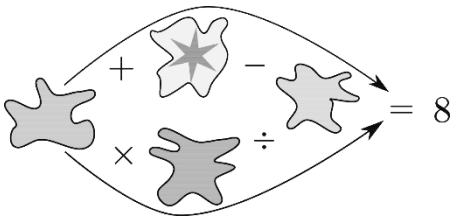
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

11. Four equally big squares are partially coloured in black.
In which of the four squares is the total area of the black parts biggest?



(A) A (B) B (C) C (D) D (E) The total area of the black parts is always equally big.

12. The four smudges hide four of the numbers 1, 2, 3, 4, 5. The calculations along the two arrows are correct.
Which number hides behind the smudge with the star?



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

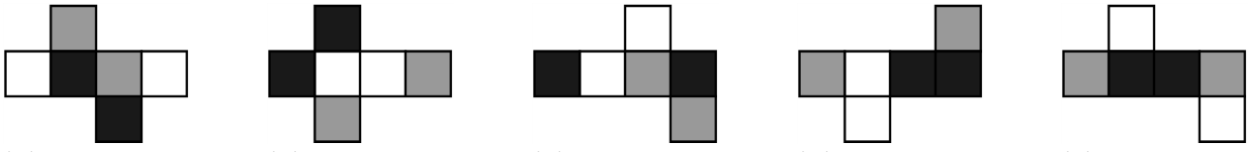
13. A lion hides in one of three rooms. On the door to room number 1 a note reads: „The lion is not here“. On the door to room number 2 a note reads: „The lion is here“. On the door to room number 3 a note reads: „2 + 3 = 5“. Exactly one of the three notes is true. In which room is the lion?

(A) Room 1 (B) Room 2 (C) Room 3
(D) It can be in any room. (E) It is either in room 1 or room 2.

14. The two girls Eva and Olga and the three boys Adam, Isaac and Urban play together with a ball. If a girl has the ball she throws it either to the second girl or to a boy. Every boy only throws the ball to another boy, however not to the one where the ball has just come from. The first throw is made by Eva to Adam. Who makes the 5th throw?

(A) Adam (B) Eva (C) Isaac (D) Olga (E) Urban

15. The faces of a die are either white, grey or black. Opposite faces are always a different colour. Which of the following nets does not belong to such a die?

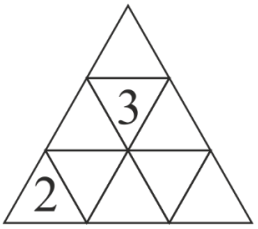


(A) (B) (C) (D) (E)

16. From a list with the numbers 1, 2, 3, 4, 5, 6, 7, Monika chooses 3 different numbers whose sum is 8. From the same list Daniel chooses 3 different numbers whose sum is 7. How many of the numbers were chosen by both Monika and Daniel?

(A) none (B) 1 (C) 2 (D) 3 (E) It cannot be determined.

- 5 Point Examples -



17. Emily wants to write a number into every free small triangle. The sum of the numbers in two triangles with a common side should always be the same. Two numbers are already given. How big is the sum of all numbers in the figure?

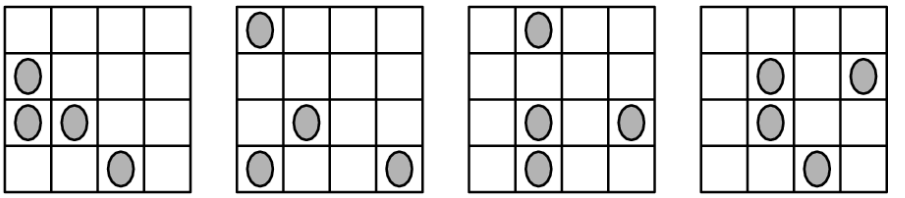
(A) 18 (B) 20 (C) 21 (D) 22 (E) it cannot be calculated

18. Instead of digits Hannes uses the letters A, B, C and D in a calculation. Different letters stand for different digits. Which digit does the letter B stand for?

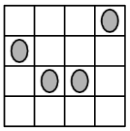
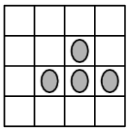
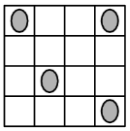
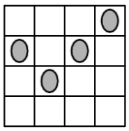
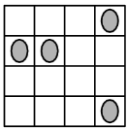
$$\begin{array}{r} A\,B\,C \\ +\,C\,B\,A \\ \hline D\,D\,D\,D \end{array}$$

(A) 0 (B) 2 (C) 4 (D) 5 (E) 6

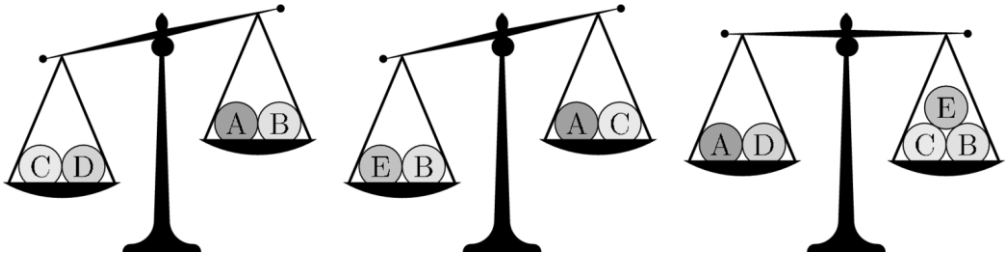
19. Four ladybirds each sit on a different cell of a 4 x 4 grid. One is asleep and does not move. On a whistle the other three each move to an adjacent free cell.
They can crawl up, down, to the right or to the left but are not allowed on any account to move back to the cell that they have just come from.
Where could the ladybirds be after the fourth whistle?



Initial position ***After the first whistle*** ***After the second whistle*** ***After the third whistle***

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

20. The five balls weigh 30 g, 50 g, 50 g, 50 g and 80 g.
Which of the balls weighs 30 g?



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

21. Three different digits A, B and C are chosen. Then the biggest possible six-digit number is built where the digit A appears 3 times, the digit B 2 times and the digit C 1 time.
Which representation is definitely not possible for this number?

(A) AAABBC (B) CAAABB (C) BBAAAC (D) AAABCB (E) AAACBB

22. The sum of Kathi's age and the age of her mother is 36. The sum of the age of her mother and the age of her grandmother is 81. How old was Kathi's grandmother when Kathi was born?

(A) 28 (B) 38 (C) 45 (D) 53 (E) 56

23. Nick wants to split the numbers 2, 3, 4, 5, 6, 7, 8, 9, 10 into some groups so that the sum of the numbers in each group is equally big. What is the biggest number of groups he can build this way?

(A) 2 (B) 3 (C) 4 (D) 6 (E) another number

24. The figure shown on the right consists of one square part and eight rectangular parts. Each part is 8 cm wide. Peter assembles all parts to form one long, 8 cm wide rectangle. How long is this rectangle?

(A) 150 cm (B) 168 cm (C) 196 cm (D) 200 cm (E) 232 cm