KÄNGURU DER MATHEMATIK 2024
21. 03. 2024
Level: Benjamin, Grades 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 questions left unanswered: 0 points
each incorrect answer: minus ¼ of the points for the question

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

OESTERREICHISCHE NATIONALBANK
EUROSYSTEM

1	2	3	4	5	6	7	8

9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24

pwc

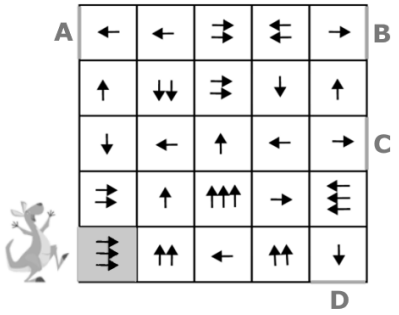
Information über den Känguruwettbewerb: www.kaenguru.at

NXP

Känguru der Mathematik 2024 – Level Benjamin (Schulstufe 5 and 6)
Austria – 21. 03. 2024

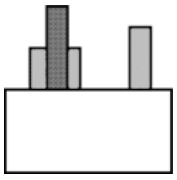
– 3 Point Examples –

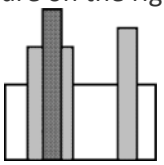
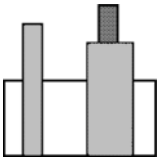
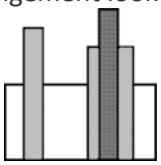
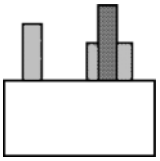
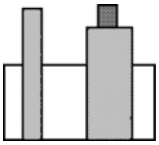
1. Kangaroo Joey wants to jump through the maze. Joey starts in the square on the bottom left (see picture). The number of arrows decides how long the jump must be. A square with three arrows means that Joey has to jump over two squares in the direction of the arrows and land in the third square.
Where will Joey leave the maze?
(A) A **(B)** B **(C)** C **(D)** D **(E)** Joey cannot leave the maze anywhere.



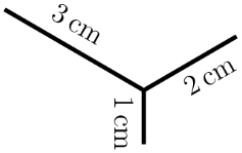
2. The picture shows the foot prints of the first few jumps of a type of hopscotch.
The prints show whether one is allowed to land in that square with the left foot, the right foot or both feet. Mia starts with both feet in the field with the number 1 and repeats the jumping pattern in the direction of the arrow.
In which of the following squares is Mia allowed to land with her right foot only?
(A) square no. 10 **(B)** square no. 1 **(C)** square no. 20 **(D)** square no. 22 **(E)** square no. 23

3. Dina has placed three building blocks behind a wall. From the front, the arrangement looks as shown in the picture on the right. What does the arrangement look like from behind?

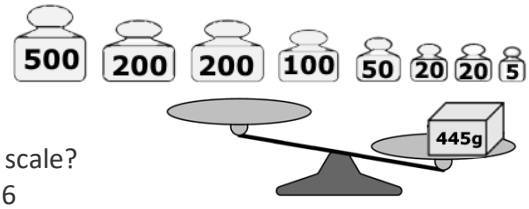


(A)  **(B)**  **(C)**  **(D)**  **(E)** 

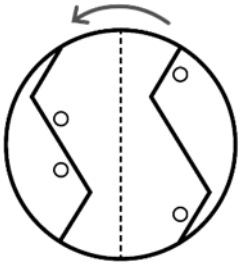
4. Mona wants to draw the figure shown without lifting her pen. The lengths of the segments are known. Mona can start her drawing anywhere and go over segments more than once.
What is the minimum distance in cm that Mona has to move her pen across the paper?
(A) 6 cm **(B)** 7 cm **(C)** 8 cm **(D)** 9 cm **(E)** 10 cm

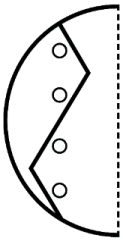
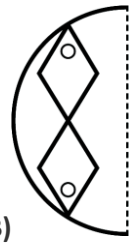
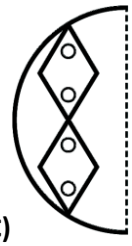
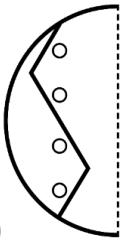
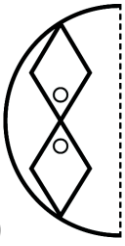


5. Pieter has a parcel that weighs 445 g and the following eight weights:
He places the parcel on the right scale pan (see picture).
Pieter is allowed to place weights on either side of the scale.
What is the minimum number of weights that he needs to balance the scale?
(A) 2 **(B)** 3 **(C)** 4 **(D)** 5 **(E)** 6

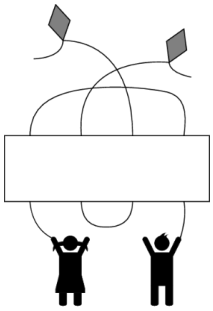


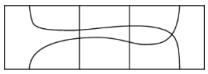
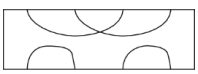
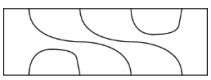
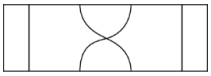
6. Werner has a circular transparent piece of paper with some holes and lines.
He folds it along the dashed line. What does the folded paper look like?



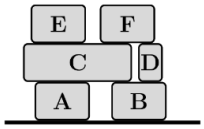
A)  **(B)**  **(C)**  **(D)**  **(E)** 

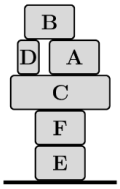
7. Two children are flying their kites.
Which picture fits into the empty space so that each child is holding one kite?

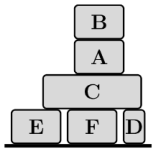


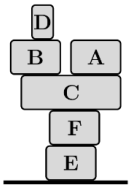
(A)  **(B)**  **(C)**  **(D)**  **E)** 

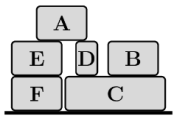
8. There are eight boxes on a lorry (see picture). A worker unloading the lorry is not allowed to pick up a box that has another one lying on top. He places every box either on the floor or on top of another box. Each box is only to be touched once.
Which one of the following towers can the worker **not** build?

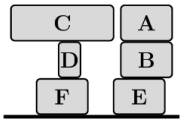


(A) 

(B) 

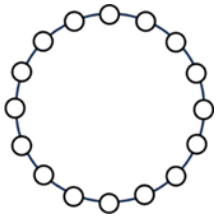
(C) 

(D) 

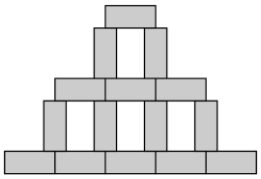
(E) 

4 Point Examples

9. Pia writes a number into each of the 16 little circles (see picture). Numbers in neighbouring circles differ by 1. She writes the number 5 into one of the circles and the number 13 into another one.
How many different numbers does Pia write in the 16 circles?
(A) 9 **(B)** 10 **(C)** 13 **(D)** 14 **(E)** 16

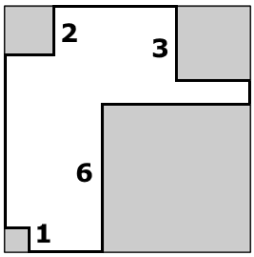


10. The picture on the right is 45 cm wide, 30 cm high and made up of identical rectangles.
What is the area of one such rectangle?
(A) 24 cm^2 **(B)** 27 cm^2 **(C)** 30 cm^2 **(D)** 33 cm^2 **(E)** 36 cm^2



11. The rooms in a hotel are numbered in ascending order (No. 1, 2, 3, ...). No number is left out.
Beaver Benji counts the digits of all the room numbers and finds the digit '2' 14 times and the digit '5' 3 times.
What is the biggest possible room number in this hotel?
(A) 25 **(B)** 26 **(C)** 34 **(D)** 35 **(E)** 41

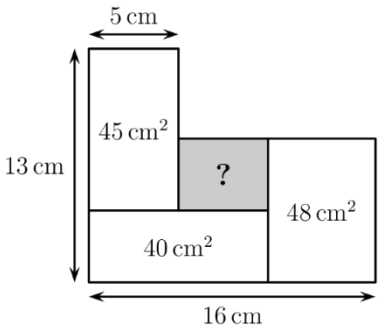
12. Christian cuts out four small grey squares from one big square. The white shape remains (see picture). This shape has half the area of the big square.
The side lengths of the small grey squares are stated in the drawing.
What is the perimeter of the white shape?
(A) 36 **(B)** 40 **(C)** 44 **(D)** 48 **(E)** 52



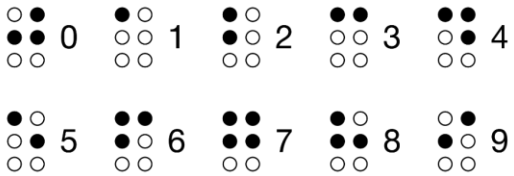
13. The number 2024 is made up of the four digits 2, 0, 2 and 4.
How many different four-digit numbers bigger than 2024 can be formed with exactly those digits?
(A) 4 **(B)** 5 **(C)** 6 **(D)** 7 **(E)** 8

14. Simon has four cups with matching saucers (see picture). He places a randomly chosen cup on each saucer.
Which statement is definitely true?
(A) It is certain that none of the 4 cups are on the matching saucer.
(B) It is certain that exactly one cup is on the matching saucer.
(C) It is impossible that exactly 2 cups are on the matching saucers.
(D) It is impossible that exactly 3 cups are on the matching saucers.
(E) It is impossible that all 4 cups are on the matching saucers.

15. The picture on the right shows four rectangles that touch each other.
What is the area of the rectangle with the question mark?
(A) 12 cm^2 **(B)** 14 cm^2 **(C)** 16 cm^2 **(D)** 18 cm^2 **(E)** 20 cm^2

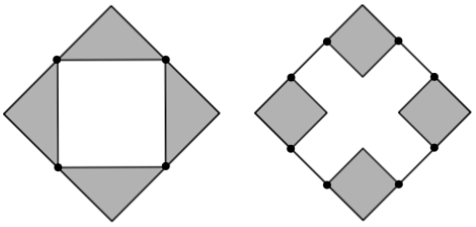


16. Blind people use Braille, in which numbers and letters are displayed as a code with up to 6 tactile dots (black in the picture). The numbers 0 to 9 can be seen on the right.
How many two-digit numbers have exactly four black dots?
(A) 11 **(B)** 12 **(C)** 21 **(D)** 22 **(E)** 23



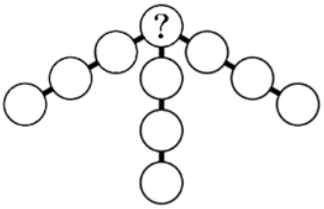
– 5 Point Examples –

17. The two large squares have the same area. Parts of them are coloured grey (see picture). In the left square, the dots divide the sides into two equal pieces. In the right square, the dots divide the sides into three equal pieces. The four grey parts in the left square have a combined area of 9 cm^2.
What is the area of the four grey parts in the right square?



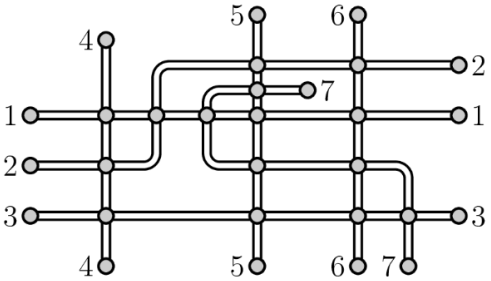
(A) 4 cm^2 **(B)** 8 cm^2 **(C)** 9 cm^2 **(D)** 10 cm^2 **(E)** 12 cm^2

18. Annie wants to write the numbers 1 to 10 in the ten circles (see picture on the right). Each circle should have a different number. Annie wants the sum of the four numbers along each line to be exactly 23.
Which number does she have to write in the circle with the question mark?



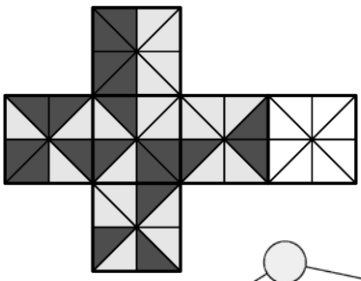
(A) 4 **(B)** 5 **(C)** 6 **(D)** 7 **(E)** 8

19. The map shows the seven subway lines of a city. The stations are represented by circles. Martin wants to colour in the subway lines in the plan. If two lines have a common station, they must have different colours.
What is the smallest number of different colours he can use?



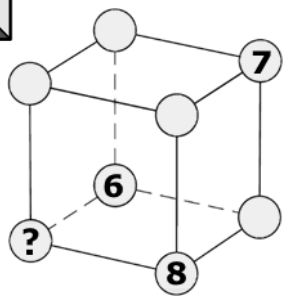
(A) 3 **(B)** 4 **(C)** 5 **(D)** 6 **(E)** 7

20. Dimitri wants to fold the shown net into a cube. If two areas share an edge, the triangles that are next to each other should have the same colour.
How does he have to paint the triangles of the white square?



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

21. Mary wants to write the numbers 1 to 8 in the corners of the cube. For each of the six sides, the sum of the four numbers at the corners should be the same. She has already entered the numbers 6, 7 and 8 (see picture).
What number does Mary have to write in the corner with the question mark?

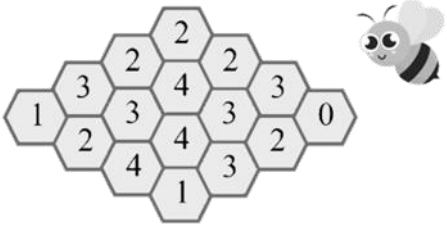


(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

22. Daniel wants to cut a rope into 12 equal pieces and marks the places where he has to cut. Mohammed wants to cut the same rope into 16 equal pieces and marks the cuts as well.
Maya finally cuts the rope at all the marked spots.
How many pieces does Maya get?

(A) 24 **(B)** 25 **(C)** 27 **(D)** 28 **(E)** 29

23. The following image shows a honeycomb with 16 cells. Some cells (but not all) are filled with honey. The numbers in the cells indicate how many of the neighbouring cells are filled with honey.
How many cells of the honeycomb are filled with honey?



(A) 7 **(B)** 8 **(C)** 9 **(D)** 10 **(E)** 11

24. There are three identical dice on a table.
What is the sum of the three numbers that are on the bottom of the dice and touching the table?

(A) 26 **(B)** 40 **(C)** 43 **(D)** 47 **(E)** 56