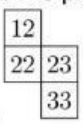
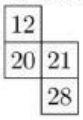
Känguru der Mathematik 2023
Level Benjamin (Schulstufe 5 and 6)
Austria – 16. 3. 2023

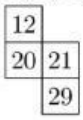
- 3 Point Examples -

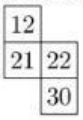
1. Holger writes the numbers up to 40 in the table in the same way as shown.
Which of the pieces A to E can he then cut from the table?

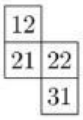
1	2	3	4	5	6	7	8
9	10	11	12				

(A) 

(B) 

(C) 

(D) 

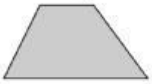
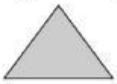
(E) 

2. Matchsticks are arranged to form numbers as shown. To form the number 15 one needs 7 matchsticks.
To form the number 8 one needs the same amount.
What is the biggest number that one can build using 7 matchsticks?



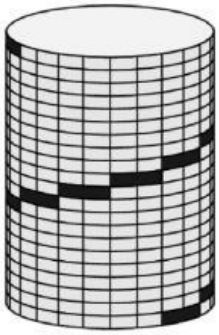
(A) 31 (B) 51 (C) 74 (D) 711 (E) 800

3. Which of the shapes **cannot** be split into two triangles using a single straight line?

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

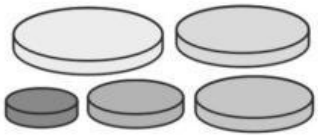
4. Nine steps of a staircase arranged in a cylindrical order starting at the bottom and leading all the way to the top can be seen. All steps are equally high.
How many steps **cannot** be seen?

(A) 9 (B) 10 (C) 11 (D) 12 (E) 13



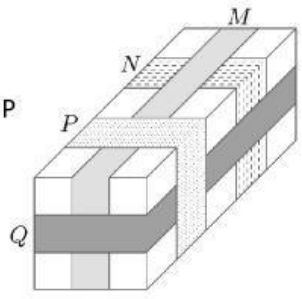
5. Anna has five discs of different sizes. She wants to use 4 of them to build a tower.
She always has to place a smaller one on top of a bigger one.
How many ways are there for Anna to build the tower?

(A) 4 (B) 5 (C) 9 (D) 12 (E) 20

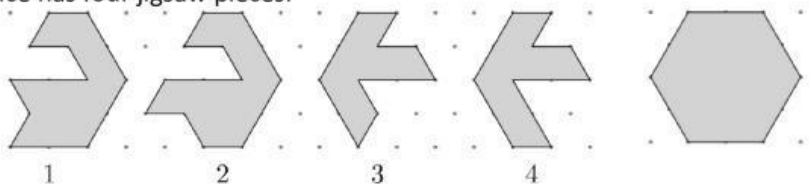


6. Four ribbons M, N, P and Q are wrapped around a box.
In which order were they wrapped around the box?

(A) M, N, Q, P (B) N, M, P, Q (C) N, Q, M, P (D) N, M, Q, P (E) Q, N, M, P



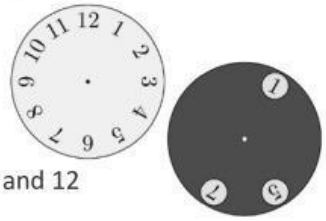
7. Alice has four jigsaw pieces.



Which two can be fitted together to form a hexagon?

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

8. A dark disc with three holes is placed on top of a dial of a watch (see diagram). Then the disc is rotated around its centre.
Which numbers can be seen at the same time?



(A) 4, 6 and 12 (B) 1, 5 and 10 (C) 2, 4 and 9 (D) 3, 6 and 9 (E) 5, 7 and 12

LIVEWORKSHEETS

- 4 Point Examples -

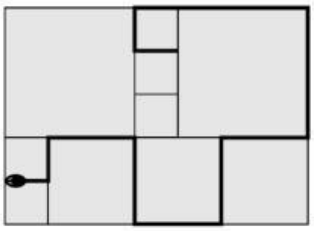
9. Jan sticks these three pieces of paper  on top of a black circle .
Which picture can he **not** obtain?

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

10. Franziska writes down three consecutive two-digit numbers. They are in increasing order. Instead of the digits she uses symbols and writes □◊, ♡△, ♡□.
What does Franziska's next number look like?

(A) □♡ (B) □□ (C) ♡♡ (D) ◊□ (E) ♡◊

11. A terrace is covered with square tiles of different sizes. The smallest tile has a perimeter of 80 cm. A snake lay down along the edges of the tiles (see diagram).
How long is the snake?



(A) 380 cm (B) 400 cm (C) 420 cm (D) 440 cm (E) 1680 cm

12. The picture of a digital watch can be seen in a mirror: 
Which picture of the watch can be seen in the mirror 30 minutes later?

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

13. Maria, Peter, Richard and Tina play football in the classroom. While doing so a window pane broke. When the head mistress wanted to find out who broke the window pane she got the following answers:
Maria: „It was Peter." Peter: „It was Richard." Richard: „It wasn't me." Tina: „It wasn't me."
Later is became clear that only one child spoke the truth. Who broke the window pane?

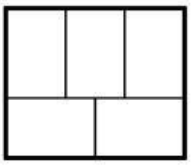
(A) Maria (B) Tina (C) Peter (D) Richard (E) It cannot be determined.

14. The sums of the numbers in the white and in the grey fields should be equally big.
Which two numbers have to be swapped so that the sums are equally big?

1	3	5	2	13
7	4	6	8	11

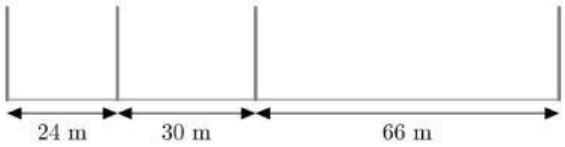
(A) 1 and 11 (B) 2 and 8 (C) 3 and 7 (D) 4 and 13 (E) 7 and 13

15. The big rectangle is made up of five small rectangles (see diagram). Lukas wants to colour in the small rectangles in red, blue and yellow. Two rectangles next to each other should be coloured in different colours.
How many ways are there for Lukas to do that?



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

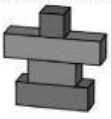
16. 4 posts are placed along a 120 m long running track.
How many more posts have to be placed so that the running track is split into equally long sections that way?

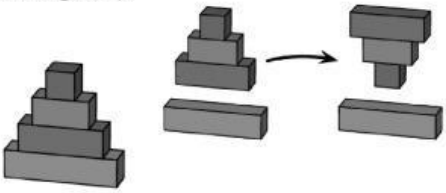


(A) 12 (B) 15 (C) 17 (D) 20 (E) 37

- 5 Point Examples -

17. In a game one is allowed to take (some or all) building blocks from the top of a stack of building blocks, turn them upside down and place them back in the same position within one move (see diagram).

Goran starts with this stack of building blocks: 



In the end all building blocks should be ordered according to size like this:
What is the minimum number of moves Goran needs to make?

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

LIVEWORKSHEETS

18. Robert and Sonja play a game with the following rules: taking it in turn they can take 1, 2, 3, 4 or 5 cards from the pile on each move. Whoever takes the last card has lost.
At the moment there are 10 cards on the pile and it is Robert's turn.
How many cards should he leave for Sonja so that he can be certain to win?

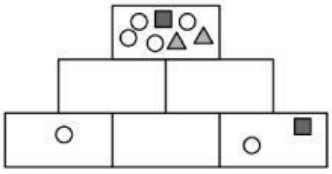
(A) 9 (B) 8 (C) 7 (D) 6 (E) 5

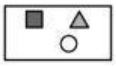
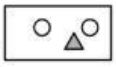


19. A rabbit, a beaver and a kangaroo are having a competition. All three begin at the same time from the "Start" and hop in the same direction.
The beaver always moves one position forwards with each jump. The rabbit always moves two positions forwards with one jump and the kangaroo always three positions.
Whoever takes the least amount of jumps to land exactly in the position labelled „Ziel" is the winner.
Who wins the competition?

(A) Kangaroo and rabbit (B) Rabbit (C) Kangaroo (D) Beaver (E) Kangaroo and beaver

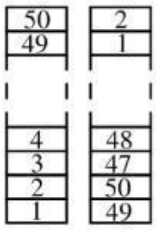
20. Tina draws shapes into each field of the pyramid. Each field in the second and third row contains exactly the shapes of the two fields below. Some fields are already done.
Which shapes does she draw into the empty field of the bottom row?



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

21. A tower is made up of bricks that are labelled with the numbers from 1 to 50 from bottom to top.
Bob uses these bricks to build a new tower.
Each time he takes the two topmost bricks off the old tower and places them down on top of the new tower without changing their order (see diagram).
Which two bricks lie on top of each other when he is finished with the re-arrangement?

(A) 29 and 28 (B) 34 and 35 (C) 29 and 26 (D) 31 and 33 (E) 27 and 30

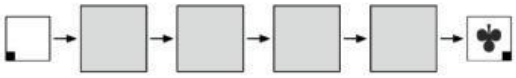


22. Martin has three cards that are labelled on both sides with a number.
Martin places the three cards on the table without paying attention to back or front. He adds the three numbers that he can then see.
How many different sums can Martin get that way?

(A) 3 (B) 5 (C) 6 (D) 9 (E) A different amount.



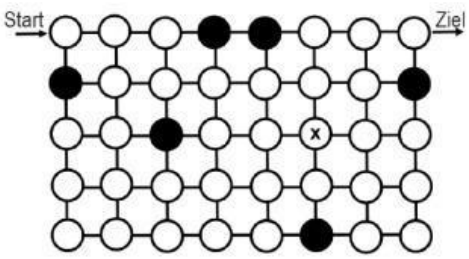
23. Anna has two machines R and S. If she places a square piece of paper in machine R it is rotated 90° in a clockwise direction.  (Hint: Note the marking in the corner!)
If she places the piece of paper in machine S, it gets printed on. 
She wants to produce this picture: 
In which order does Anna use the two machines so that this picture is made?



(A) SRRR (B) RSRR (C) SRSR (D) RRRS (E) SRRS

24. Monika wants to find a path through the labyrinth from 'Start' to 'Ziel'.
She has to stick to the following rules:
She is only allowed to move horizontally and vertically respectively.
She has to enter every white circle exactly once but is not allowed to enter a black circle.
In which direction does Monika have to move forwards when she reaches the circle marked with x?

(A) ↓ (B) ↑ (C) → (D) ←
(E) there are several possibilities



LIVEWORKSHEETS