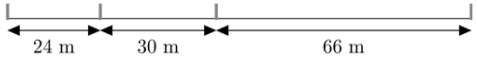
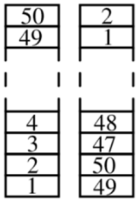
23. The teacher wrote on the board the numbers 1 to 15. She then split them in five groups of three. The sum of the numbers in the first four groups was 25, 27, 30 and 31, respectively. In which group did she put number 4?
(A) the first (B) the second (C) the third (D) the fourth (E) the fifth

24. Four stakes are placed along a 120 m track, as shown. What is the smallest number of stakes that should be added so that the track is divided into sections of equal length?



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

25. On a table there is a tower made of blocks numbered from 1 to 50. Emma builds a new tower in the following way. She takes two blocks from the top of the original tower and puts them on the table as the base of the new tower. She continues by taking the two top blocks from the remainder of the original tower and putting them on the top of the new tower, as seen in the diagram. Which of the following pairs of numbers are on adjacent blocks in the new tower?



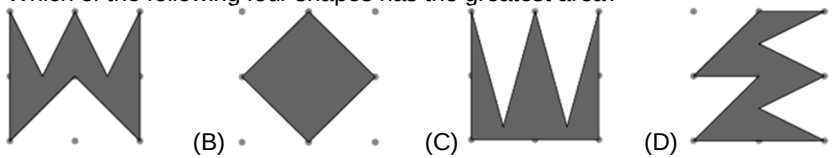
(A) 29 and 28 (B) 34 and 35 (C) 29 and 26 (D) 31 and 33 (E) 27 and 30

26. Martin has three cards with numbers written on both sides. The card with number 1 on one side has number 4 on the opposite side, the card with 2 on has 5 on the opposite side and the card with 3 on has 6 on the opposite side. Martin randomly places three cards on the table and adds up the three numbers he sees. How many different sums can Martin get?
(A) 3 (B) 4 (C) 5 (D) 6 (E) 10

27. In a second hand shop, two hats are sold for the same price as five skirts, three skirts for the same price as eight t-shirts and two t-shirts for the same price as three caps. Which of the following collections is the most valuable?
(A) a hat and five skirts (B) a hat, three skirts and a cap
(C) eight skirts and six t-shirts (D) thirty-seven caps (E) three skirts and three caps

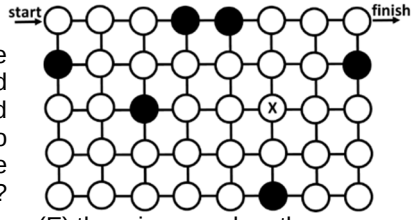
28. Sonia and Robert are playing a game. They can alternately take 1, 2, 3, 4 or 5 tiles from a pile of tiles. Whoever takes the last tile or tiles loses. At one point of the game, there are 10 tiles left in the pile and it is Sonia's turn to take some tiles. How many tiles should Sonia leave to Robert to be sure that she will win?
(A) 9 (B) 8 (C) 7 (D) 6 (E) 5

29. Which of the following four shapes has the greatest area?



(A) (B) (C) (D)
(E) they all have the same area

30. An explorer wants to find a path through the maze shown from the point marked 'start' to the point marked 'finish'. She can only move horizontally or vertically and she can only pass through white circles. She also has to pass through all the white circles exactly once. When she reaches the circle marked X, what will her next move be?



(A) ↑ (B) ↓ (C) → (D) ← (E) there is no such path

Laiks uzdevumu risināšanai – 75 minūtes!

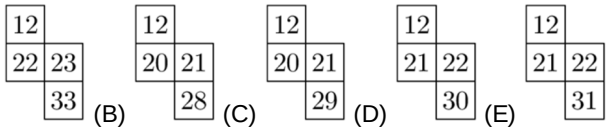
Starptautiskā konkursa „Ķengurs" uzdevumi

23.03.2023. **5.-6. klases**

3 point problems

1. Holger fills the rest of the table with the numbers up to 40, following the system shown. Which of the pieces shown could he cut from the table?

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

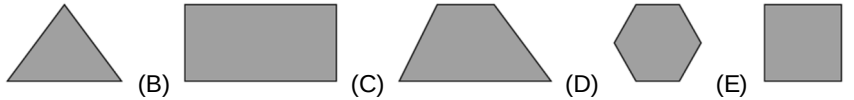


(A) (B) (C) (D) (E)

2. Matchsticks can be placed to build numbers, as shown. For example, to build the number 15, one needs 7 matchsticks, and one needs the same number of matchsticks to build the number 8. What is the largest positive number that can be built with seven matchsticks?

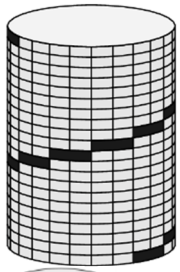
(A) 31 (B) 51 (C) 74 (D) 711 (E) 800

3. Which of the following shapes cannot be divided into two triangles by a single straight line?



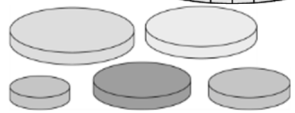
(A) (B) (C) (D) (E)

4. Three frogs live in a pond. Each night, one of the frogs sings a song to the other two. After 12 nights, one of the frogs had sung 3 times. Another frog had listened to 8 songs. How many songs had the third frog listened to?
(A) 9 (B) 8 (C) 7 (D) 6 (E) 5



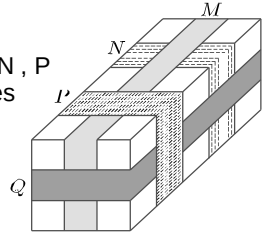
5. Claude climbs from the bottom to the top of the cylindrical tower shown. The steps are all equal sized. Nine steps are visible. How many steps are not visible?
(A) 9 (B) 10 (C) 11 (D) 12 (E) 13

6. Anna has five circular discs of different sizes. She wants to build a tower of four discs so that each disc in her tower is smaller than the disc immediately below it. How many different towers could Anna build?



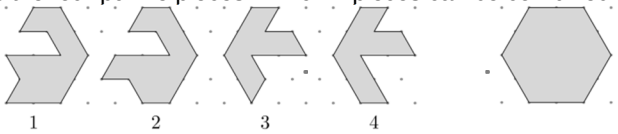
(A) 4 (B) 5 (C) 9 (D) 12 (E) 20

7. The picture shows a parcel around which four tapes labelled M, N , P and Q are placed. In what order, from first to last, were the tapes placed?



(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

8. Alice has the four puzzle pieces. Which 2 pieces can be combined to form the hexagon?



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

9. The black circle with three holes punched in it is placed on top of the clock-face. The black circle is turned around its center. Which three numbers is it possible to see at the same time?

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

10. Jonte glued the three pieces of paper  onto the black circle. Which of the following patterns could he not obtain?

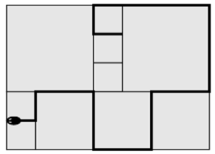
(A)  (B)  (C)  (D)  (E) 

4 point problems

11. Francesca wrote down three consecutive 2-digit numbers in their natural order, but instead of the digits she used symbols: □ ◇, ♡ △, ♡ □. Which number is next?

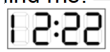
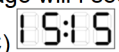
(A) □ ♡ (B) □ □ (C) ♡ ♡ (D) ◇ □ (E) ♡ ◇

12. The Potters have a patio which is tiled with square tiles of three different sizes. The smallest squares have a perimeter of 80 cm. A snake rests on the patio, as shown in the diagram. What is the length of the snake?



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

13. When I look in a mirror, I can see the image of my digital clock standing on the table behind me:  . What image will I see when I look in the mirror 30 minutes later?

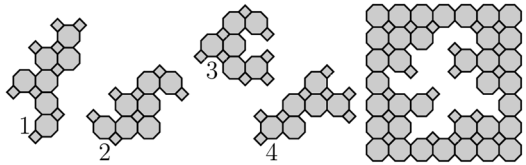
(A)  (B)  (C)  (D)  (E) 

14. Maria, Peter, Richard and Tina were playing football in the classroom and one of them broke a window. When the principal asked who did it, she got the following responses. Maria: "It was Peter. " Peter: "It was Richard. " Richard: "It wasn't me. " Tina: "It wasn't me. " Only one child was telling the truth. Who broke the window?

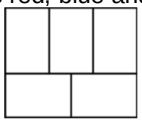
(A) Maria (B) Tina (C) Peter
(D) Richard (E) can't be determined with certainty

15. Which two tiles from 1, 2, 3 and 4 should be used to complete the puzzle?

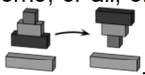
(A) 1 and 2 (B) 1 and 4
(C) 2 and 3 (D) 2 and 4
(E) 3 and 4



16. The diagram shows five rectangles. Lukas wants to colour the rectangles red, blue and yellow so that any two adjacent rectangles are coloured different colours. In how many different ways can he do this?

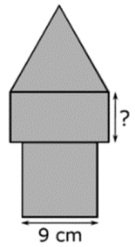


(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

17. Goran has four blocks, stacked as shown:  . In a single move, Goran can take some, or all, of the blocks from the top of the stack and place them upside down, as shown.  . He wants the blocks to be stacked in this order:  . What is the smallest number of moves he needs to make to get to the correct order?

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

18. Katie painted a tower, as the figure shows. The tower consists of three pieces, a square, a rectangle and an equilateral triangle. The three pieces have the same perimeter. If each side of the square is 9 cm, what is the length of the marked side of the rectangle?



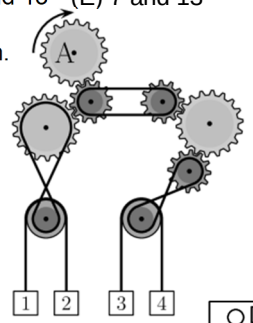
(A) 2 (B) 4 (C) 6 (D) 8 (E) 10

19. Lonneke wants the sum of the numbers in the white cells to equal the sum of the numbers in the grey cells. Which two numbers does she need to swap?

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

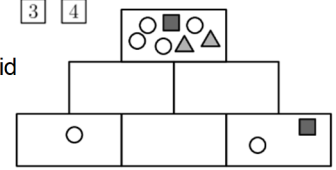
20. The gear marked A is turned clockwise, as shown. Which two boxes will move upwards?



(A) 1 and 4
(B) 2 and 3
(C) 1 and 3
(D) 2 and 4
(E) It cannot be determined

5 point problems

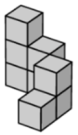
21. Tian wants to draw figures in the six boxes of the pyramid shown. Each box should contain all of the figures in the two boxes directly below it and nothing more. She has drawn the figures in some of the boxes already. Which figures should she draw in the box in the middle of the bottom row?

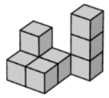
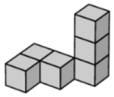
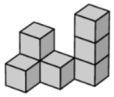


(A)  (B)  (C)  (D)  (E) 

22. Martha chose one of the five structures below and combined it with the structure on the right. The table shows the number of cubes in each column in the combined structure when seen from above. Which of the five structures did Martha choose?

3	2	3
2	1	2
1	0	1



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