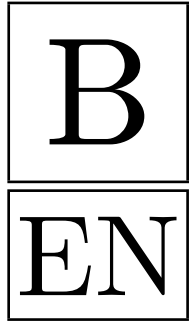


# KANGAROO 2021

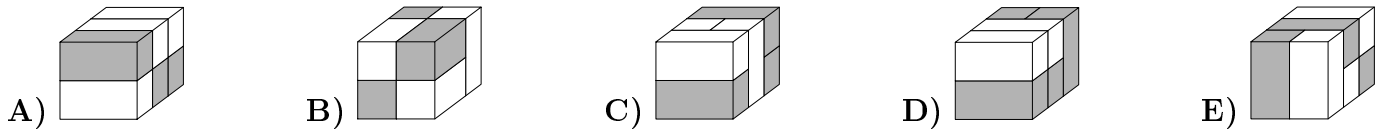
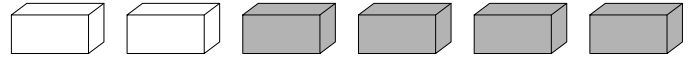


Time allowed: 75 minutes  
Calculators are not permitted  
The participants solve problems independently

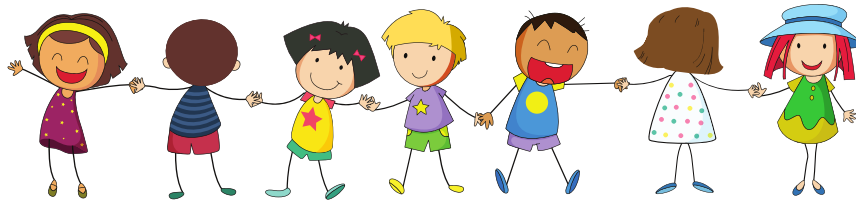
Benjamin  
5–6 grades

## Questions for 3 points

1. Which of the following solid shapes can be made with 6 bricks shown on the right?



2. In how many places in the picture are two children holding each other with their left hands?

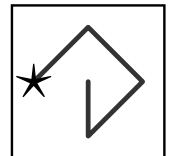


- A) 1 B) 2 C) 3 D) 4 E) 5

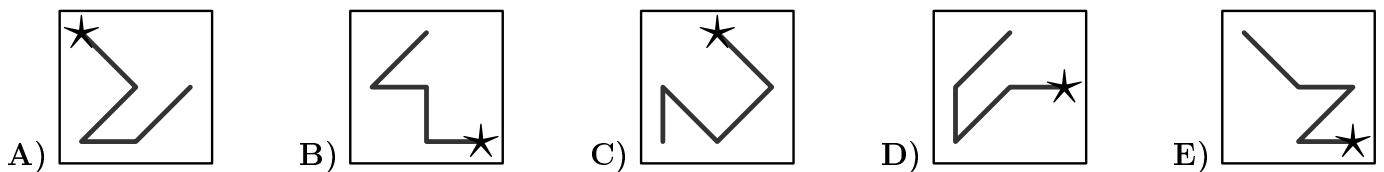
3. In the square you can see the digits from 1 to 9 (see pic. 1). A number is created by starting at the star, following the line and writing down the digits along the line while passing. For example the line shown in pic. 2 represents the number 42685. Which of the following lines represents the largest number?

1	2	3
4	5	6
7	8	9

Pic. 1



Pic. 2



4. Sofie wants to write the word KENGU by using letters from the boxes. She can only take one letter from each box. What letter must Sofie take from box 4?

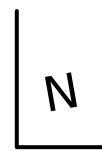
- A) K B) E C) N D) G E) U



1



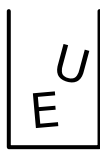
2



3



4



5

5. When the 5 pieces shown are fitted together correctly, the result is a rectangle with a calculation written on it. What is the answer to this calculation?



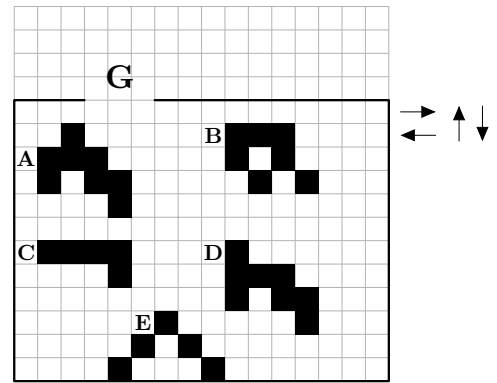
- A) 22 B) 32 C) 41 D) 122 E) 203

6. The year 2021 is written with two consecutive natural numbers 20 and 21 in ascending order. After how many years will this happen again for the first time?

- A) 10 B) 11 C) 12 D) 101 E) 102

7. The 5 figures on the grid can only move in the directions indicated by the arrows. Which figure can leave through gate G?

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



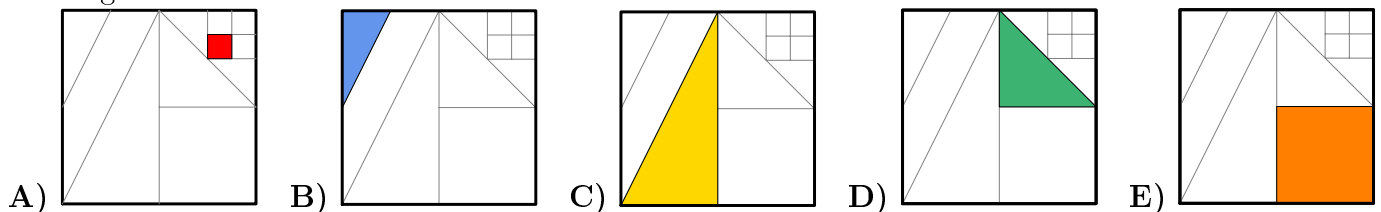
8. Carin is going to paint the walls in her room green. The green paint is too dark so she mixes it with white paint. She tries different mixtures. Which of the following mixtures will give the darkest green colour?

- A) 1 part green + 3 parts white B) 2 parts green + 6 parts white  
 C) 3 parts green + 9 parts white D) 4 part green + 12 parts white  
 E) They will all be equally dark

9. At Ferney's farm, 9 rabbits eat carrots every day, 11 rabbits eat every other day. The other rabbits do not eat carrots. Yesterday, 15 rabbits ate carrots. How many rabbits will eat carrots today?

- A) 9 B) 13 C) 14 D) 15 E) Impossible to determine

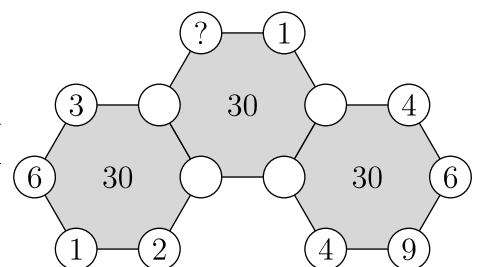
10. There is a square with line segments drawn inside it. The line segments are drawn either from the vertices or the midpoints of other line segments. We colored  $\frac{1}{8}$  of the large square. Which one is our coloring?



**Questions for 4 points**

11. The diagram shows three hexagons with numbers at their vertices, but some numbers are invisible. The sum of the six numbers around each hexagon is 30. What is the number on the vertex marked with a question mark?

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

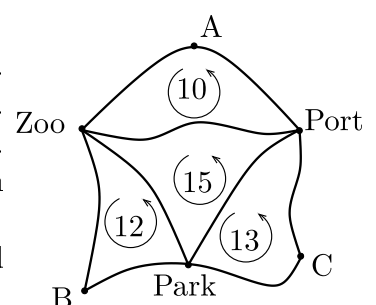


12. The map shows three bus stations at points A, B and C.



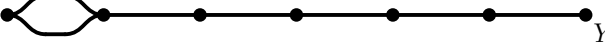
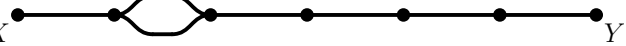



A tour from station A to the Zoo and the Port and back to A is 10 km long.  
 A tour from station B to the Park and the Zoo and back to B is 12 km long.  
 A tour from station C to the Port and the Park and back to C is 13 km long.  
 A tour from the Zoo to the Park and the Port and back to the Zoo is 15 km long.

How long is the tour from A to the Zoo to B the Park to C to the Port and back to A?

- A) 18 km B) 20 km C) 25 km D) 35 km E) 50 km





20. There is a single train track between points  $X$  and  $Y$ : . A train company wants one train to leave from  $X$  and one train to leave from  $Y$  at the same time daily. Moving with constant speed it takes 180 minutes for a train to make a trip from  $X$  to  $Y$  and 60 minutes from  $Y$  to  $X$ . They want to build a double track  to avoid a crash. Where should the double track be?
- A)  B) 
- C)  D) 
- E) 

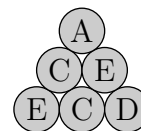
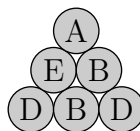
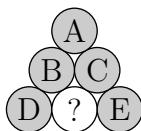
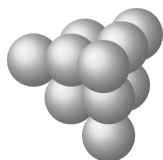
Questions for 5 points

21. Ann, Bob, Carina, Dan and Ed are sitting at a round table. Ann is not next to Bob, Dan is next to Ed and Bob is not next to Dan. Which two people are sitting next to Carina?
- A) Ann and Bob    B) Bob and Dan    C) Dan and Ed    D) Ed and Ann  
E) It is not possible to be certain

22. Maurice asked the canteen chef for the recipe for his pancakes (see pic.). Maurice has 6 eggs, 400 g flour, 0.5 liter of milk and 200g butter. What is the largest number of pancakes he can make using this recipe?
- A) 6    B) 8    C) 10    D) 12    E) 15

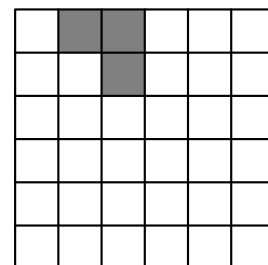
Ingredients for 100 pancakes	
25 eggs	4 l milk
5 kg flour	1 kg butter

23. A triangular pyramid is built with 10 identical balls, as shown on the left. Each ball has one of the letters A, B, C, D and E on it. There are 2 balls marked with each letter. The pictures on the right show three side views of the pyramid. What is the letter on the ball with the question mark?



- A) A    B) B    C) C    D) D    E) E
24. An apple and an orange weigh as much as a pear and a peach. An apple and a pear weigh less than an orange and a peach, and a pear and an orange weigh less than an apple and a peach. Which of the pieces of fruit is the heaviest?
- A) Apple    B) Orange    C) Peach    D) Pear    E) Impossible to determine

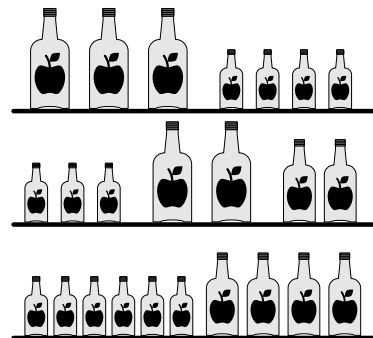
25. Natali's picture on the right consists of 36 identical squares and 3 of them are shaded. What is the smallest number of shaded squares Natali should add to the picture to create a design with four axes of symmetry?
- A) 9    B) 12    C) 13    D) 15    E) 21



26. Three pirates were asked how many coins and how many diamonds their friend Graybeard had. Each of the three told the truth to one question but told a lie to the other. Their answers were:
- Graybeard has 8 coins and 6 diamonds.
  - Graybeard has 7 coins and 4 diamonds.
  - Graybeard has 7 coins and 7 diamonds.
- What is the total number of coins and diamonds that Graybeard has?
- A) 11    B) 12    C) 13    D) 14    E) 15

27. Each shelf holds a total of 6.4 liters of apple juice. The bottles have three different sizes: large, medium and small. How many liters of apple juice does a medium bottle contain?

A) 0.3 B) 0.6 C) 0.8 D) 1 E) 1.4



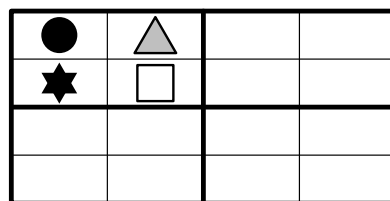
28. A large cube has side-length 7cm. On each of its 6 faces, the two diagonals are drawn in red. The large cube is then cut into small cubes with side-length 1cm. How many small cubes will have at least one red line drawn on it?

A) 54 B) 62 C) 70 D) 78 E) 86

29. In a group of 10 elves and trolls, each were given a token with a different number from 1 to 10 written upon it. They were each asked what number was on their token and all answered with a number from 1 to 10. The sum of the answers was 36. Each troll told a lie and each elf told the truth. What is the smallest number of trolls there could be in the group?

A) 1 B) 3 C) 4 D) 5 E) 7

30. There are 24 different rectangular cards divided into four equal cells with different shapes  $\star$ ,  $\bullet$ ,  $\square$ ,  $\triangle$  drawn in each cell. Cards can be placed side by side only if the same shapes appear in adjacent cells on their common side. Four cards are used to form a rectangle as shown in the figure. Which of the following cards was definitely **not** used to form this rectangle?



- A) 

$\square$	$\star$
$\bullet$	$\triangle$

 B) 

$\square$	$\bullet$
$\triangle$	$\star$

 C) 

$\star$	$\square$
$\triangle$	$\bullet$

 D) 

$\square$	$\star$
$\triangle$	$\bullet$

 E) 

$\square$	$\bullet$
$\star$	$\triangle$