Canguro Matemático Costarricense

Benjamin Test
Sixth grade

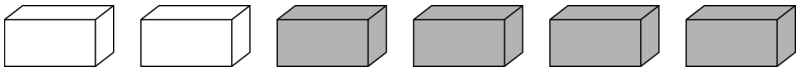
Student name:_____

Name of the school:_____

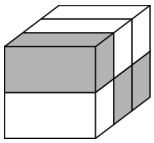
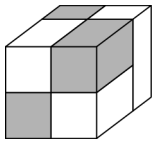
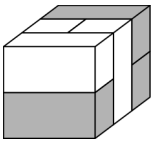
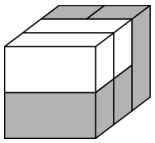
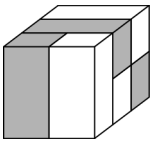
Kangourou Sans Frontières
Costa Rica 2021

3 points

 # 1.



Which of the following solid shapes can be made with these 6 bricks ?

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

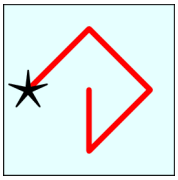
 # 2. In how many places in the picture are two children holding each other with their left hands?

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

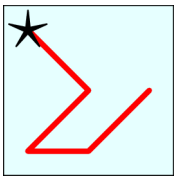
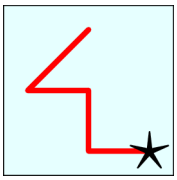
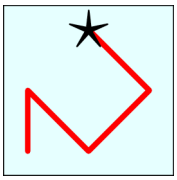
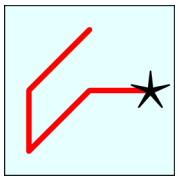
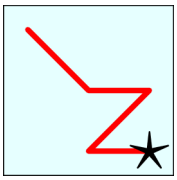
 # 3. In the square you can see the digits from 1 to 9.

1	2	3
4	5	6
7	8	9

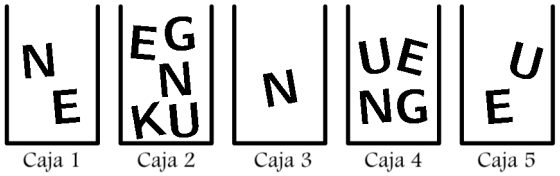
A number is created by starting at the star, following the line and writing down the digits along the line while passing.



For example the line shown represents the number 42685. Which of the following lines represents the largest number?

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

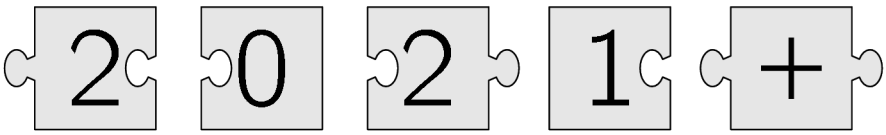
 # 4. Sofie wants to write the word KENGU by using letters from the boxes. She can only take one letter from each box.



What letter must Sofie take from box 4?

(**A**) K (**B**) E (**C**) N (**D**) G (**E**) U

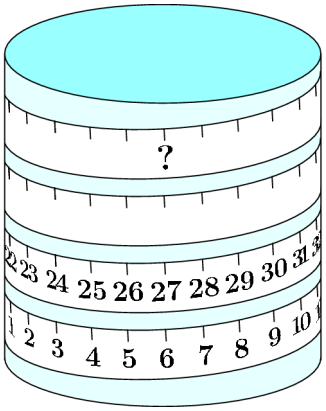
 # 5. When the 5 pieces shown are fitted together correctly, the result is a rectangle with a calculation written on it.



What is the answer to this calculation?

(**A**) 22 (**B**) 32 (**C**) 41 (**D**) 122 (**E**) 203

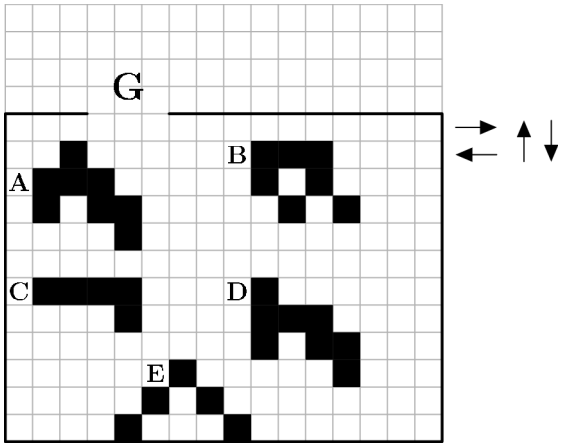
 # 6. A measuring tape is wound around a cylinder.



Which number should be at the place shown by the question mark?

(**A**) 53 (**B**) 60 (**C**) 69 (**D**) 77 (**E**) 81

 # 7. The 5 figures on the grid can only move in the directions indicated by the black arrows.

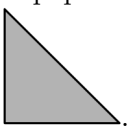


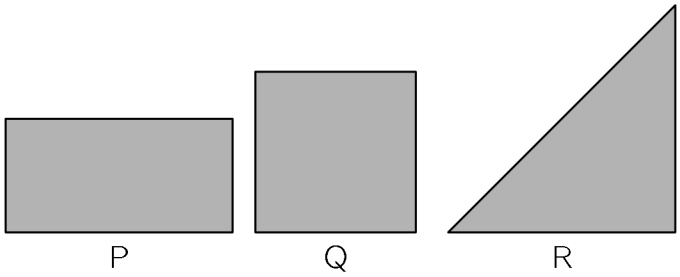
Which figure can leave through gate G?

(**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

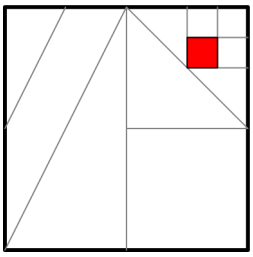
 # 9. Mary had a piece of paper. She folded it exactly in half. Then she folded it exactly in half again. She got this shape  .

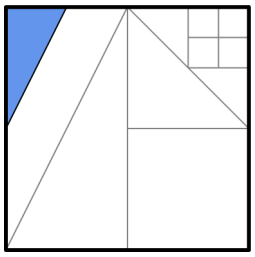


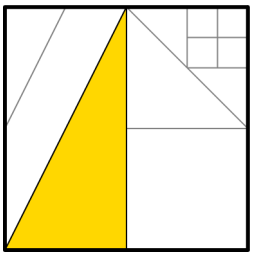
Which of the shapes P, Q or R could have been the shape of her original piece of paper?

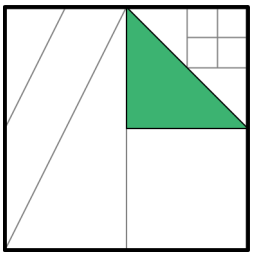
(**A**) only P (**B**) only Q (**C**) only R (**D**) only P or Q (**E**) any of P, Q or R

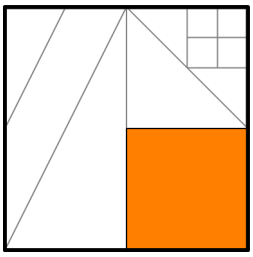
 # 10. There is a square with line segments drawn inside it. The line segments are drawn either from the vertices or the midpoints of other line segments. We colored $\frac{1}{8}$ of the large square. Which one is our coloring?

(**A**) 

(**B**) 

(**C**) 

(**D**) 

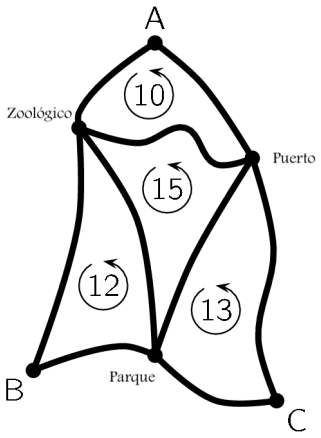
(**E**) 

4 points

 # 11. The number 5021972970 is written on a sheet of paper. Julian cuts the sheet twice so he gets three numbers. What is the smallest sum he can get by adding these three numbers?

(**A**) 3244 (**B**) 3444 (**C**) 5172 (**D**) 5217 (**E**) 5444

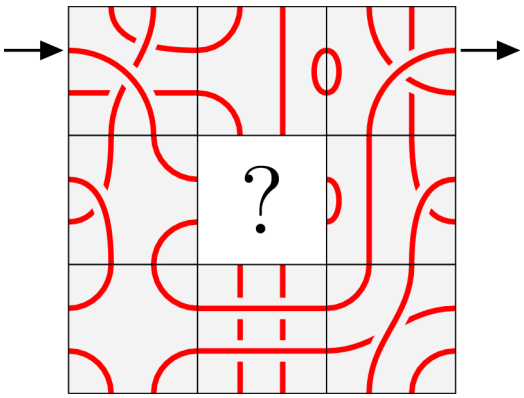
 # 12. The map shows three bus stations at points A, B and C. A tour from station A to the Zoo and the Port and back to A is 10 km long. A tour from station B to the Park and the Zoo and back to B is 12 km long. A tour from station C to the Port and the Park and back to C is 13 km long. Also A tour from the Zoo to the Park and the Port and back to the Zoo is 15 km long.



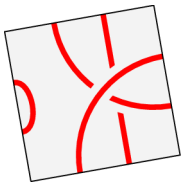
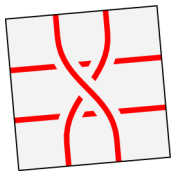
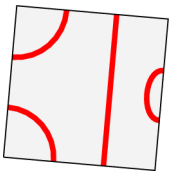
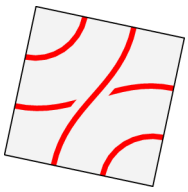
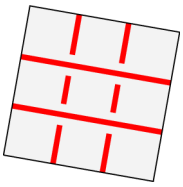
How long is the shortest tour from A to B to C and back to A?

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

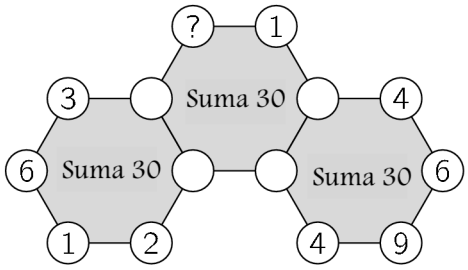
 # 13. Rosa wants to start at the arrow, follow the line, and get out at the other arrow.



Which piece is it NOT possible to put in the middle to obtain that?

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

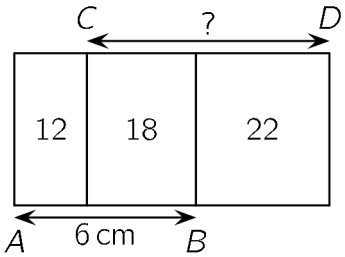
 # 14. The diagram shows three hexagons with numbers at their vertices, but some numbers are invisible. The sum of the six numbers around each hexagon is 30.



What is the number on the vertex marked with a question mark?

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

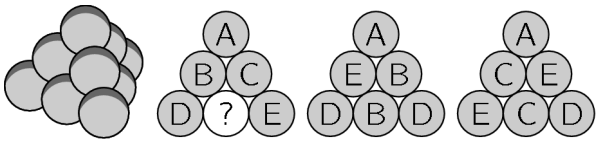
 # 15. Three rectangles of the same height are positioned as shown. The numbers within the rectangles indicate their areas in cm^2.



If $AB = 6$ cm, how long is CD?

(**A**) 7 cm (**B**) 7.5 cm (**C**) 8 cm (**D**) 8.2 cm (**E**) 8.5 cm

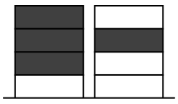
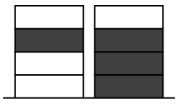
 # 16. A triangular pyramid is built with 10 identical balls, as shown. Each ball has one of the letters A, B, C, D and E on it. There are 2 balls marked with each letter. The picture shows three side views of the pyramid.



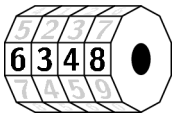
What is the letter on the ball with the question mark?

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

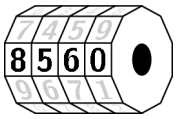
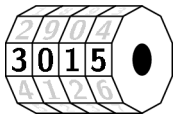
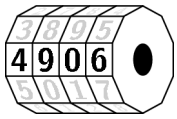
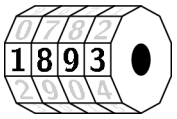
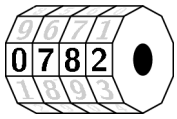
 # 17. Ronja had four white tokens and Wanja had four grey tokens. They played a game in which they took turns to place one of their tokens to create two piles. Ronja placed her first token first. Which pair of piles could they not create?

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

 # 18. My little brother has a 4-digit bike lock with the digits 0 to 9 on each part of the lock as shown. He started on the correct combination and turned each part the same amount in the same direction and now the lock shows the combination 6348.



Which of the following CANNOT be the correct combination of my brother's lock?

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

 # 19. There were 20 apples and 20 pears in a box. Carl randomly took 20 pieces of fruit from the box and Luca took the rest. Which of the following statements is always true?

(**A**) Carl got at least one pear.

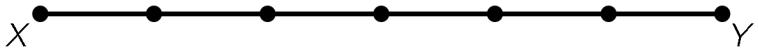
(**B**) Carl got as many apples as pears.

(**C**) Carl got as many apples as Luca.

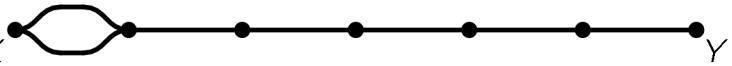
(**D**) Carl got as many pears as Luca got apples.

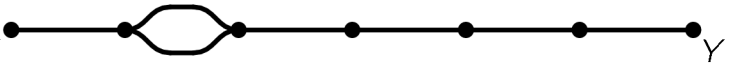
(**E**) Carl got as many pears as Luca.

 # 20. There is a single train track between points X and Y.



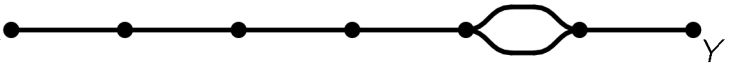
A train company wants one train to leave from X and one train to leave from Y at the same time daily. Moving with constant speed it takes 180 minutes for a train to make a trip from X to Y and 60 minutes from Y to X. They want to build a double track  to avoid a crash. Where should the double track be?

(**A**) 

(**B**) 

(**C**) 

(**D**) 

(**E**) 

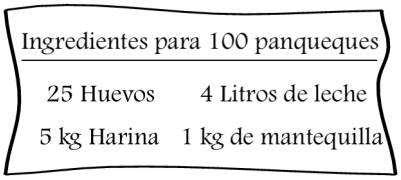
5 points

 # 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

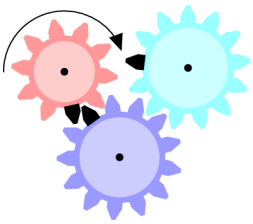
 # 22. Maurice asked the canteen chef for the recipe for his pancakes.



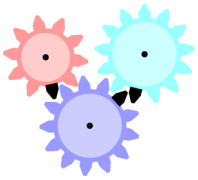
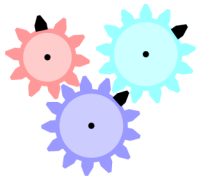
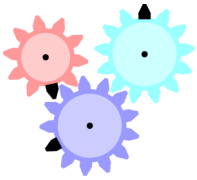
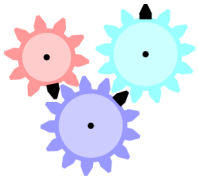
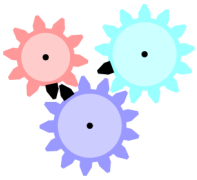
Maurice has 6 eggs, 400g flour, 0,5 liters of milk and 200g butter. What is the largest number of pancakes he can make using this recipe?

(**A**) 6 (**B**) 8 (**C**) 10 (**D**) 12 (**E**) 15

 # 23. The picture shows three gears with a black gear tooth on each.



Which picture shows the correct position of the black teeth after the small gear has turned a full turn clockwise?

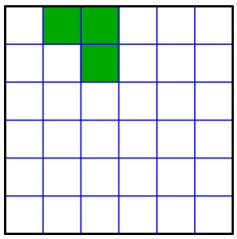
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

 # 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

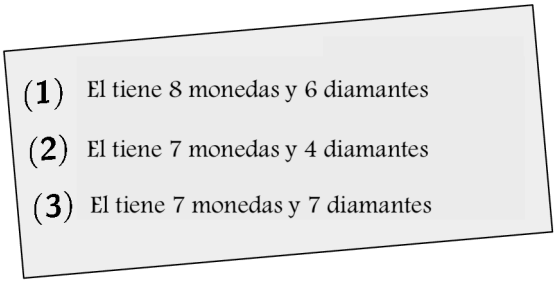
 # 25.



What is the smallest number of shaded squares that can be added to the diagram to create a design with four axes of symmetry?

(**A**) 1 (**B**) 9 (**C**) 12 (**D**) 13 (**E**) 21

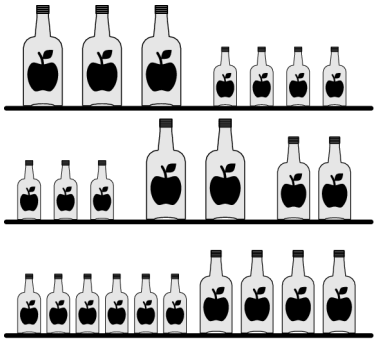
 # 26. Three pirates were asked how many coins and how many diamonds their friend Graybeard had. Each of the three told the truth to one question but told a lie to the other. Their answers are written on the piece of paper pictured.



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 64 deciliters of apple juice. The bottles have three different sizes: large, medium and small.



How many deciliters of apple juice does a medium bottle contain?

(**A**) 3 (**B**) 6 (**C**) 8 (**D**) 10 (**E**) 14

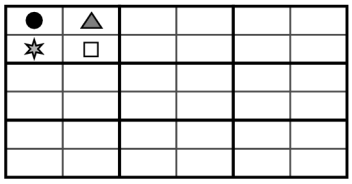
 # 28. A large cube has side-length 7cm. On each of its 6 faces, the two diagonals are drawn in red. The large cube is then cut into small cubes with side-length 1cm. How many small cubes will have at least one red line drawn on it?

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

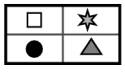
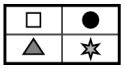
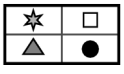
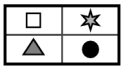
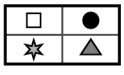
 # 29. In a group of 10 elves and trolls, each were given a token with a different number from 1 to 10 written upon it. They were each asked what number was on their token and all answered with a number from 1 to 10. The sum of the answers was 36. Each troll told a lie and each elf told the truth. What 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 rectangular cards divided into four equal cells with different shapes □, ✲, ●, ▲ drawn in each cell. Cards can be placed side by side only if the same shapes appear in adjacent cells on their common side. Nine 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**)  (**B**)  (**C**)  (**D**)  (**E**) 

Name:_____

School:_____

01.	A	B	C	D	E
02.	A	B	C	D	E
03.	A	B	C	D	E
04.	A	B	C	D	E
05.	A	B	C	D	E
06.	A	B	C	D	E
07.	A	B	C	D	E
08.	A	B	C	D	E
09.	A	B	C	D	E
10.	A	B	C	D	E
11.	A	B	C	D	E
12.	A	B	C	D	E
13.	A	B	C	D	E
14.	A	B	C	D	E
15.	A	B	C	D	E

16.	A	B	C	D	E
17.	A	B	C	D	E
18.	A	B	C	D	E
19.	A	B	C	D	E
20.	A	B	C	D	E
21.	A	B	C	D	E
22.	A	B	C	D	E
23.	A	B	C	D	E
24.	A	B	C	D	E
25.	A	B	C	D	E
26.	A	B	C	D	E
27.	A	B	C	D	E
28.	A	B	C	D	E
29.	A	B	C	D	E
30.	A	B	C	D	E