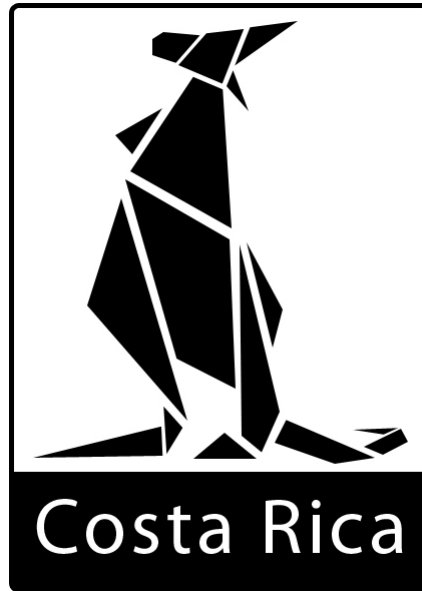


# Canguro Matemático Costarricense



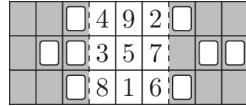
Cadet Test  
Seventh grade

Name of the student: \_\_\_\_\_

Name of the institution: \_\_\_\_\_

3 puntos

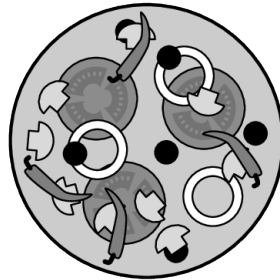
1. Mike has a leaflet with numbers and holes in the flaps on both sides, as shown in the picture. He folds the right flap along the dotted line and sees the numbers 2, 3, 5 and 6 through the holes. Then he folds the left flap along the other dotted line.








What is the sum of the numbers he sees now?

- (A) 10                      (B) 12                      (C) 14                      (D) 9                      (E) 8

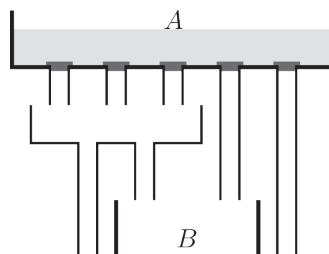
2. Emilio put slices of tomato, black olives, chillis, mushrooms and onion rings on top of a pizza, but not necessarily in that order. He only put one ingredient at a time. His finished pizza is shown in the picture.



Which was the third topping he put on the pizza?

- (A) tomato slices   
 (B) black olives   
 (C) chillis   
 (D) mushrooms   
 (E) onion rings 

3. Container *A* holds 10 litres of water. All five plugs at the bottom of container *A* are taken out at the same time and the water flows out.

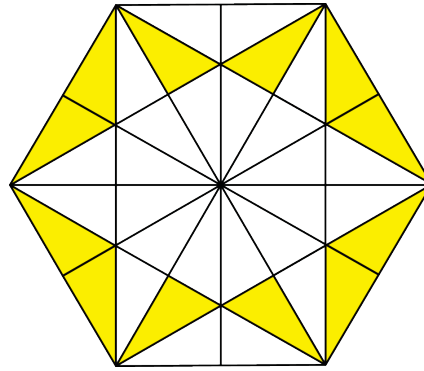


What volume of water flows into container *B*?

- (A) 3 litres                      (B) 4 litres                      (C) 5 litres                      (D) 6 litres                      (E) 8 litres



8. The regular hexagon shown is divided into many triangles of equal area.



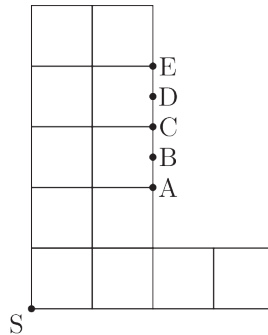
Which fraction of the hexagon is shaded?

- (A)  $\frac{1}{2}$       (B)  $\frac{1}{3}$       (C)  $\frac{1}{4}$       (D)  $\frac{1}{5}$       (E)  $\frac{1}{6}$

9. There are ten more truth-tellers than liars in a room. Everyone in the room was asked, “Are you a truth-teller?” and everyone gave an answer. A total of 20 people answered, “Yes.”. How many liars are in the room?

- (A) 0      (B) 5      (C) 15      (D) 20      (E) 25

10. The shape in the diagram is made of identical squares. Point B is halfway between points A and C. Also, point D is halfway between points C and E. Maria wants to divide the shape into two parts of equal area.

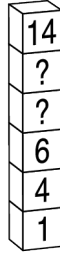


Which of the points A, B, C, D or E should she connect with a straight line to point S to do this?

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

4 puntos

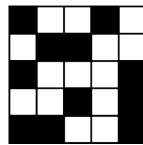
11. Vera has built a tower of blocks. She wants to replace the two blocks with the question marks on with two blocks with numbers on. She wants the number on each block in her tower to be at least 2 more than the number on the block below it.



In how many ways can Vera do this?

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

12.



Which shape, or any rotation of the shape, **cannot** be placed onto the white parts of the large square?

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

13. My school’s swimming team is practising for a relay competition. Five swimmers swam the same distance, one after the other. The pictures below show the times on their coach’s stopwatch when each swimmer had finished their leg. The first swimmer needed 2 minutes and 8 seconds.



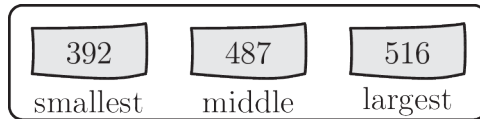
Which one of the swimmers needed the least time?

- (A) The first      (B) The second      (C) The third      (D) The fourth      (E) The fifth

14. Each of the cards shown below have two 3-digit numbers written on them, but some of the digits cannot be seen as they are covered in ink. On one of the cards, the sum of the digits of both numbers is the same. On which card are those two numbers?

- (A) **543 and 11**  (B) **58**  **and 11**  (C) **982 and 1**  
- (D) **211 and 6**   (E) **777 and 2**  

15. Mary and Paul each wrote down three 3-digit numbers using the digits 1 to 9 exactly once. Then they ordered their numbers as smallest, middle and largest:

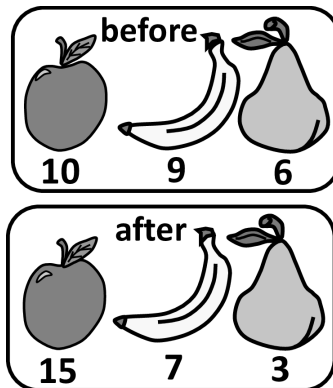


Mary wrote down the largest possible value the middle number could have. Paul wrote down the smallest possible value the middle number could have.

What is the difference between their two middle numbers?

- (A) 642                      (B) 684                      (C) 864                      (D) 888  
 (E) none of the previous

16. A witch had 10 apples, 9 bananas and 6 pears. One day she performed some magic and turned each of her pieces of fruit into one of the other two types. For example, she changed each apple into either a banana or a pear. She now has 15 apples, 7 bananas and 3 pears.



How many of the apples did she change into a banana?

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



5 puntos

21. Werner is on a treadmill in the gym. He keeps looking at two stopwatches. The first shows the time elapsed since he started his session and the second the time remaining until the end of his session. At some point the two stopwatches show the same reading.

14:58	21:32
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What do they show at that point?

- (A) 17:50      (B) 18:00      (C) 18:12      (D) 18:15      (E) 18:20

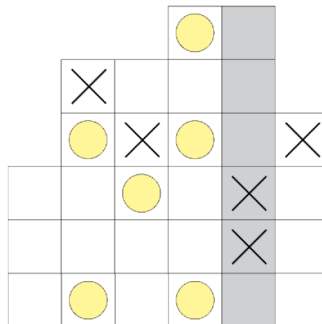
22. Julia wants to fill each  $\square$  with a different prime number less than 20 so that the value of  $A$  is an integer.

$$A = \frac{\square + \square + \square + \square + \square + \square + \square}{\square}$$

What is the maximum value of  $A$ ?

- (A) 20      (B) 14      (C) 10      (D) 8      (E) 6

23. Morten wants to fill in the cells on the diagram shown so that each cell contains either a cross or a circle. He also wants to ensure there is no line of four consecutive identical symbols in any column, row or diagonal.



When has completed the diagram, what will the column coloured grey contain?

- (A) 3 circles and 3 crosses      (B) 2 circles and 4 crosses  
 (C) 4 circles and 2 crosses      (D) 5 circles and a cross  
 (E) a circle and 5 crosses



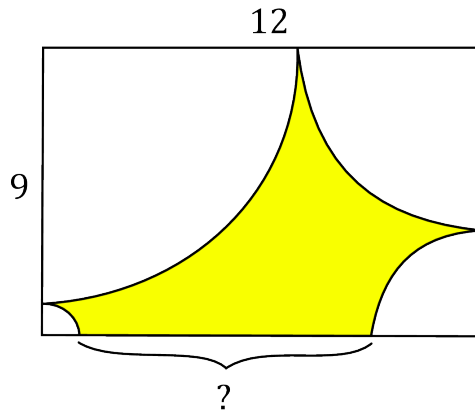
24. Sonia has two bowls of numbered balls.

- Bowl X contains seven balls numbered 1, 2, 6, 7, 10, 11 and 12.
- Bowl Y contains five balls numbered 3, 4, 5, 8, and 9.

Which ball should Sonia transfer from Bowl X to Bowl Y to increase the average number on the balls in each bowl?

- (A) 6                      (B) 7                      (C) 10                      (D) 11                      (E) 12

25. Peter has drawn a quarter circle with centre at each corner of a flag with dimensions 12 cm by 9 cm and coloured the region formed, as shown.



What is the length indicated by the question mark?

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

26. In the six-digit integer  $PAPAYA$ , different letters stand for different digits and the same letter always represents the same digit. Also  $Y = P + P = A + A + A$ .

What is the value of  $P \times A \times P \times A \times Y \times A$ ?

- (A) 432                      (B) 342                      (C) 324                      (D) 243                      (E) 234

27. During two sessions of football training, Paul shoots a total of 17 times at a target. He hits with 60% of the shots he shoots in the first session. He hits with 75% of the shots he shoots in the second session.

How many times did he hit the target in the second session?

- (A) 6                      (B) 7                      (C) 8                      (D) 9                      (E) 10

28. Santiago always leaves for school at 8:00 a.m. His school is 1 km away. When he walks, his speed is 4 km/h. When he cycles, his speed is 15 km/h. He is 5 minutes early when he walks. How many minutes early is he when he cycles?

- (A) 12                      (B) 13                      (C) 14                      (D) 15                      (E) 16



Name: \_\_\_\_\_

Institution: \_\_\_\_\_

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

