Kangourou Sans Frontières

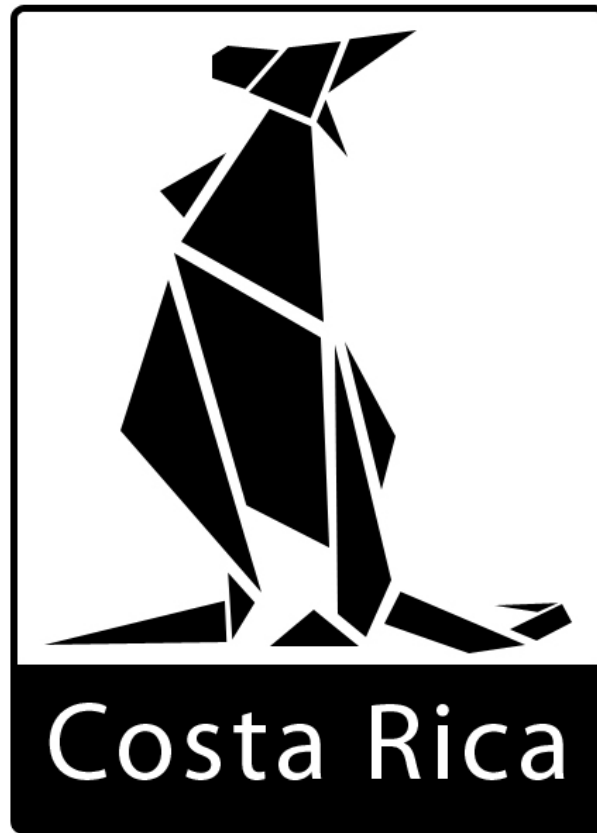Costa Rica

Cadet Test
Seventh Grade

Name:_____

Costa Rica 2018

3 points

1. What is the value of $(20 + 18) : (20 - 18)$?

(**A**) 18   (**B**) 19   (**C**) 20   (**D**) 34   (**E**) 36

2. When the letters of the word MAMA are written vertically above one another, the word has a vertical line of symmetry. Which of these words also have a vertical line of symmetry when written in the same way?

(**A**) ROOT   (**B**) BOOM   (**C**) BOOT   (**D**) LOOT   (**E**) TOOT

3. A triangle has sides of length 6, 10 and 11. An equilateral triangle has the same perimeter. What is the length of each side of the equilateral triangle?

(**A**) 6   (**B**) 9   (**C**) 10   (**D**) 11   (**E**) 27

4. Which number should replace $\star$ in the equation $2 \cdot 18 \cdot 14 = 6 \cdot \star \cdot 7$ to make it correct?

(**A**) 8   (**B**) 9   (**C**) 10   (**D**) 12   (**E**) 15

5. The panels of Fergus'fence are full of holes. One morning, one of the panels fell flat on the floor. Which of the following could Fergus see as he approaches his fence?
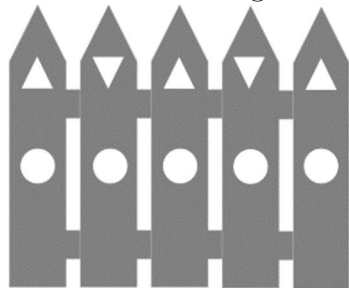
(**A**)   (**B**)   (**C**)   (**D**)   (**E**)

6. Bertie the Builder is assembling stairs which are 15 cm tall and 15 cm deep, as shown in the diagram. How many stairs does he need to reach the second floor of a building 3 m above the first floor?
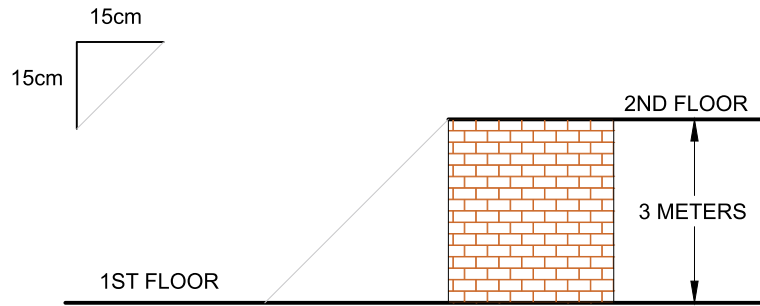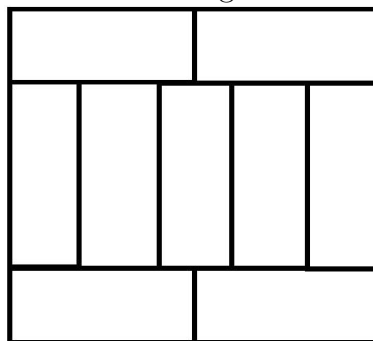

(**A**) 8   (**B**) 10   (**C**) 15   (**D**) 20   (**E**) 25

7. A game consists of dropping a ball from the top of the board with interleaved rows of pins. The ball bounces to either the right or to the left each time it hits a pin. One possible route for the ball to take is shown below. How many different routes could the ball take to reach bin B?
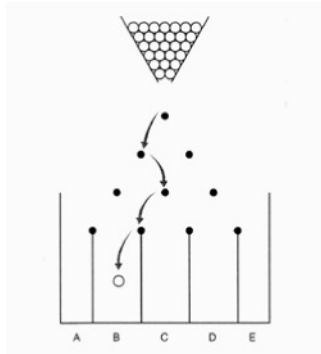
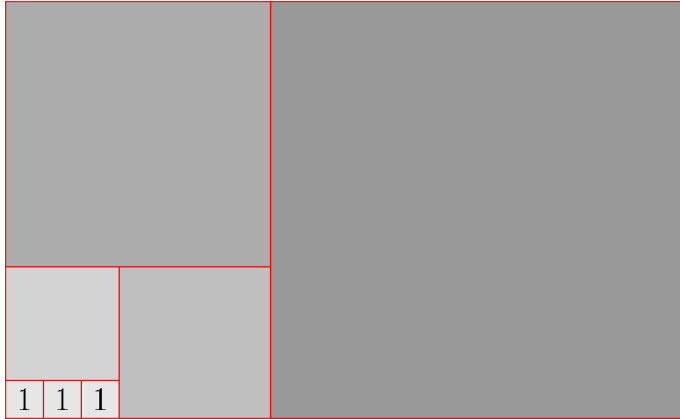(**A**) 2   (**B**) 3   (**C**) 4   (**D**) 5   (**E**) 6

8. A large rectangle is made up of nine identical rectangles whose longest sides are 10 cm long. What

is the perimeter of the large rectangle?

(**A**) 40 cm   (**B**) 48 cm   (**C**) 76 cm   (**D**) 81 cm   (**E**) 90 cm

9. The large rectangle is made up of a number of squares of various sizes. The 3 small squares each have an area of 1. What is the area of the large rectangle?

| 1 | 1 | 1 |

(**A**) 165   (**B**) 176   (**C**) 187   (**D**) 198   (**E**) 200

10. Captain Kook wants to sail from the island called Easter through every island on the map and back to Easter. The total journey is 100 kilometers (km) long. The distance between Desert and Lake is the same as the distance between Easter and Flower via Volcano. How far is it directly from Easter to Lake?
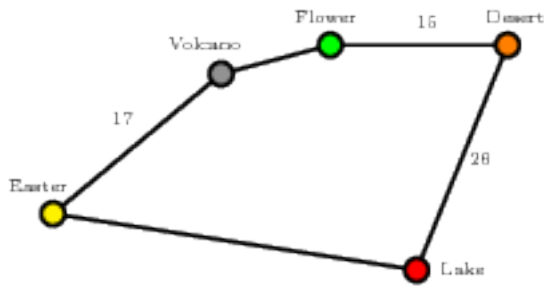
(**A**) 17 km   (**B**) 23 km   (**C**) 26 km   (**D**) 33 km   (**E**) 35 km

4 points

11. The diagram shows a rectangle of dimensions 7×11 containing two circles that each touch three of the sides of the rectangle. What is the distance between the centres of the two circles?
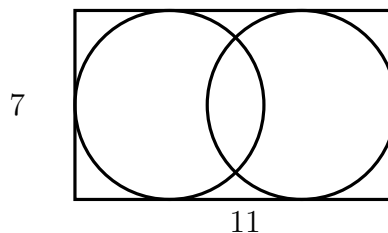
(**A**) 1   (**B**) 2   (**C**) 3   (**D**) 4   (**E**) 5

12. Square $ABCD$ has sides of length 3 cm. The points M and N lie on AD and AB so that CM and CN split the square into three pieces of the same area. What is the length of DM?
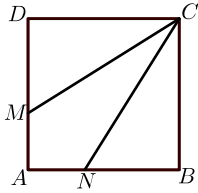
(**A**) 0.5 cm   (**B**) 1 cm   (**C**) 1.5 cm   (**D**) 2 cm   (**E**) 2.5 cm

13. Martha multiplied two 2-digit numbers correctly on a piece of paper. Then she scribbled out three digits as shown. What is the sum of the three digits she scribbled out?

$$■ 3 × 2 ■ = 3 ■ 2$$

(**A**) 5   (**B**) 6   (**C**) 9   (**D**) 12   (**E**) 14

14. A rectangle is divided into 40 identical squares. The rectangle contains more than one row of squares. Andrew found the middle row of squares and coloured it in. How many squares did he not colour?

(**A**) 20   (**B**) 30   (**C**) 32   (**D**) 35   (**E**) 39

15. Philip wants to know the weight of a book to within half a gram. His weighing scales only weigh to within 10 grammes. What is the smallest number of identical copies of this book that Philip should weigh together to be able to do this?

(**A**) 5   (**B**) 10   (**C**) 15   (**D**) 20   (**E**) 50

16. A lion is hidden in one of three rooms. A note on the door of room 1 reads "The lion is here". A note on the door of room 2 reads "The lion is not here". A note on the door of room 3 reads "$2 + 3 = 2 \times 3$". Only one of these sentences is true. In which room is the lion hidden?

(**A**) In room 1.   (**B**) In room 2.   (**C**) In room 3.
(**D**) It may be in any room.   (**E**) It may be in either room 1 or room 2.

17. Alice wants to write down a list of prime numbers less than 100, using each of the digits $1, 2, 3, 4$ and 5 exactly once and no other digits. Which prime number must be in her list?

(**A**) 2   (**B**) 5   (**C**) 31   (**D**) 41   (**E**) 53

18. A hotel on an island in the Caribbean advertises using the slogan "350 days of sun every year!". According to the advert, what is the smallest number of days Willi Burn has to stay at the hotel in 2018 to be certain of having two consecutive days of sun?
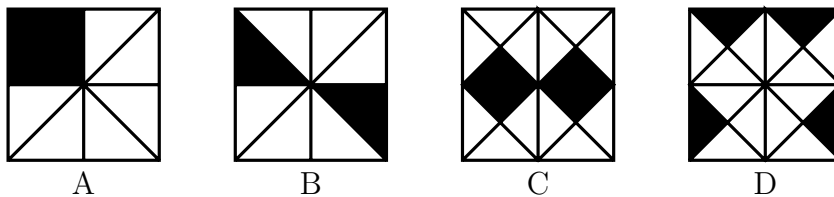
(**A**) 17   (**B**) 21   (**C**) 31   (**D**) 32   (**E**) 35

19. Valeriu draws a zig-zag line inside a rectangle, creating angles of 10°, 14°, 33°, and 26° as shown. What is the size of angle θ?
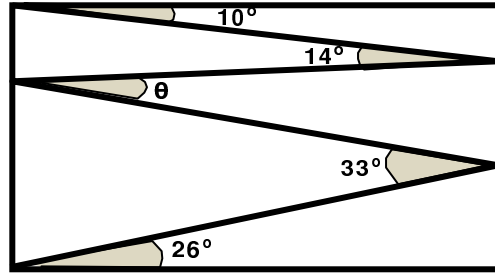
(**A**) 11°   (**B**) 12°   (**C**) 16°   (**D**) 17°   (**E**) 33°

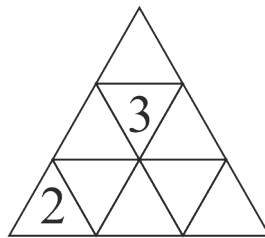**20.** In which of the four squares is the ratio of the black area the largest?

A   B   C   D

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

(**E**) they are all the same

5 points

21. Emily wants to enter a number into each cell of the triangular table. The sum of the numbers in any two cells with a common edge must be the same. She has already entered two numbers. What is

the sum of all the numbers in the table?

(**A**) 18   (**B**) 20   (**C**) 21   (**D**) 22

(**E**) impossible to determine

22. Eleven points are marked from left to right on a straight line. The sum of all the distances between the first point and the other points is 2018. The sum of all the distances between the second point and the other points, including the first one, is 2000. What is the distance between the first and second points?

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

23. There are three candidates for one position as class monitor and 130 students are voting. Suhaimi has 24 votes so far, while Khairul has 29 and Akmal has 37. How many more votes does Akmal need in order to be elected?

(**A**) 13   (**B**) 14   (**C**) 15   (**D**) 16   (**E**) 17

24. The distance from the top of the sleeping cat on the floor to the top of the cat sitting on the table is 150 cm. The distance from the top the cat sitting on the floor to the top on the cat sleeping on the table is 110 cm. What is the height of the table?
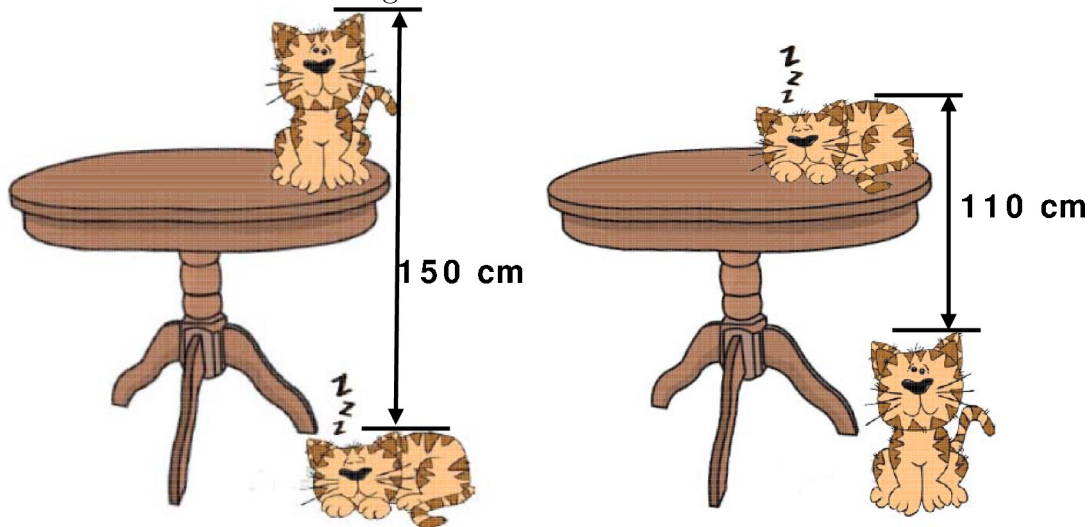
(**A**) 110 cm   (**B**) 120 cm   (**C**) 130 cm   (**D**) 140 cm   (**E**) 150 cm

25. Peter saw an 8 cm wide wooden shelf into 9 parts. One piece was a square, the rest were rectangles. Then he put all the pieces together as shown in the picture. How long was the shelf?
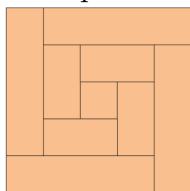

(**A**) 150 cm   (**B**) 168 cm   (**C**) 196 cm   (**D**) 200 cm   (**E**) 232 cm

26. Write 0 or 1 in each cell of the 5x5 table such that each 2x2 square of the 5x5 table contains exactly

3 equal numbers. What is the largest possible sum of all the numbers in the table?

(**A**) 22   (**B**) 21   (**C**) 20   (**D**) 19   (**E**) 18

27. Freda's flying club designed a flag of a flying dove on a square grid as shown. The area of the dove is 192 cm². All parts of the perimeter of the dove are either parts of a circle or straight lines. What
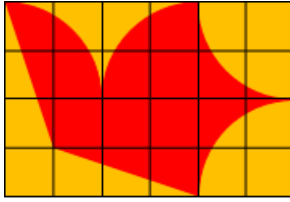
are the dimensions of the flag?

(**A**) 6 cm×4 cm (**B**) 12 cm×8 cm (**C**) 20 cm×12 cm (**D**) 24 cm×16 cm (**E**) 30 cm×20 cm

28. Domino tiles are said to be arranged correctly if the number of spots at the ends that touch for any two adjacent dominoes are the same. Paulius laid six dominoes in a line as shown in the diagram. He can make a move by either swapping the position of any two dominoes or by rotating one dominoe. What is the smallest number of moves he needs to make to arrange all the tiles correctly?
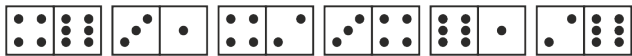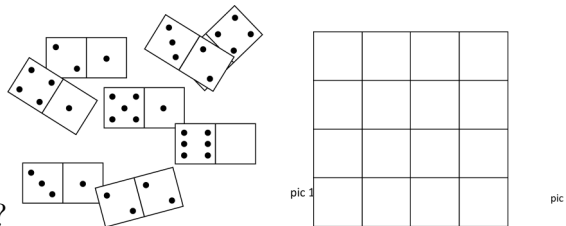

(**A**) 1 (**B**) 2 (**C**) 3 (**D**) 4

(**E**) it is impossible to do

29. Viola is practising the long jump. The average distance she has jumped so far today is 3.80 m. On her next jump, she jumped 3.99 m and her average increased to 3.81 m. What distance must she jump with her next jump to increase her average to 3.82 m?
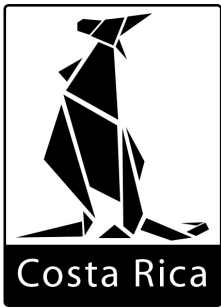
(**A**) 3.97 m (**B**) 4.00 m (**C**) 4.01 m (**D**) 4.03 m (**E**) 4.04 m

30. There are eight domino tiles on the table (pic 1). One half of one tile is covered. The 8 tiles can be arranged into a 4x4 square (pic 2), so that the number of dots in each row and column is the same.

How many dots are on the covered part ?

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

Costa Rica

Hoja de Respuestas

Nombre:

Institución: Nivel:

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