

Canguro Matemático



Benjamin Problems Sixth grade

Name: _____

Institution: _____ Grade: _____

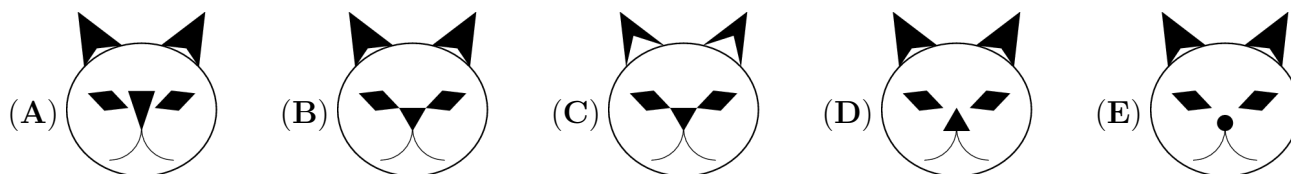
Kangourou Sans Frontières

Costa Rica 2019

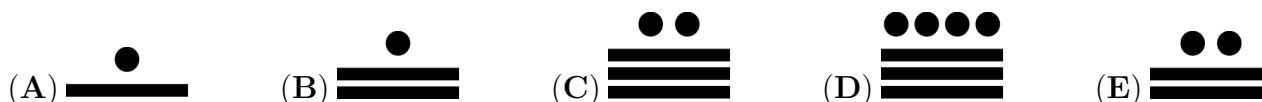
3 points

1. Carrie has started to draw a cat.  She finishes her drawing by adding more color.

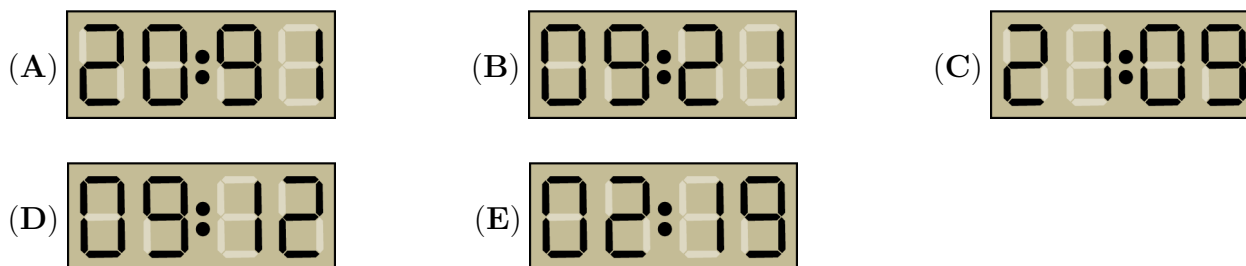
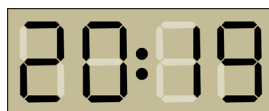
Which of the figures below can be her drawing?



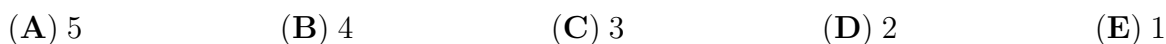
2. The Mayan people wrote numbers with dots and bars. A dot is written for 1 and a bar for 5. How did they write 17?



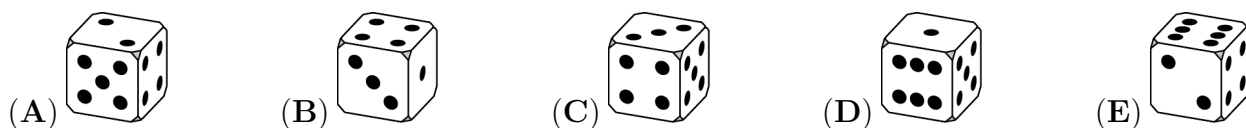
3. A digital clock shows the time 20:19. What will the clock show the next time it uses the same digits?

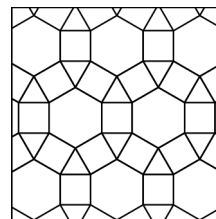


4. There are 14 girls and 12 boys in a kindergarten. If half of the children go for a walk, at least how many of them are girls?

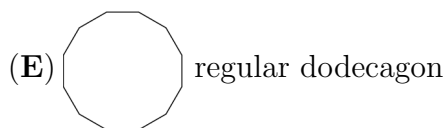
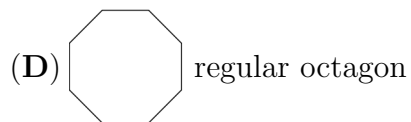
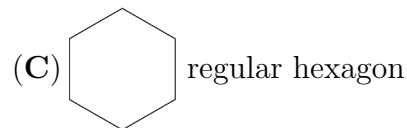



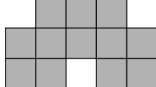
5. The sum of the dots on opposite faces of an ordinary dice is equal to 7. Which of the following shows the ordinary one?





6. Which of the following geometric figures is not in this design?



7. Laura wants to colour a 2×2 square  of this figure . How many possibilities are there?

(A) 5

(B) 6

(C) 7

(D) 8

(E) 9

8. The 6 smallest odd natural numbers are written on the faces of a dice. Toni throws it three times and adds the results. Which of the following numbers cannot be the sum?

(A) 21

(B) 3

(C) 20

(D) 19

(E) 29

9. The sum of the ages of a group of kangaroos is 36 years. In two years time the sum of their ages will be 60 years. How many kangaroos are in that group?

(A) 10

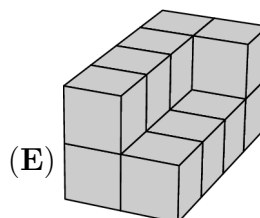
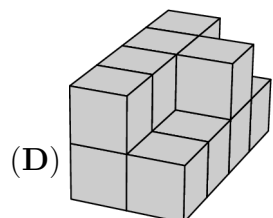
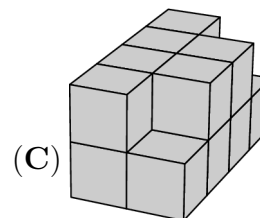
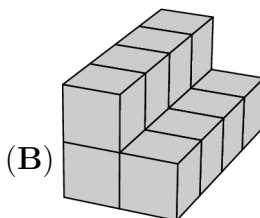
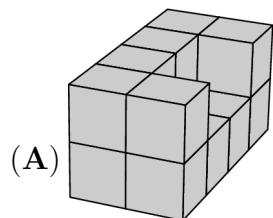
(B) 12

(C) 15

(D) 20

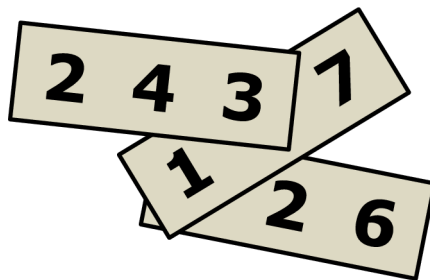
(E) 24

10. Michael paints the following buildings made up of identical cubes. Their bases are made of 8 cubes. Which building needs the most paint?



4 points

11. On each of three pieces of paper a three digit number is written. Two of the digits are covered. The sum of the three numbers is 826. What is the sum of the two covered digits?

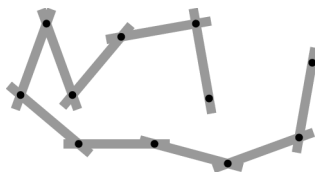


- (A) 7 (B) 8 (C) 9 (D) 10 (E) 11

12. Riri the frog usually eats 5 spiders a day. When Riri is very hungry, she eats 10 spiders a day. She ate 60 spiders in 9 days. How many days was she very hungry?

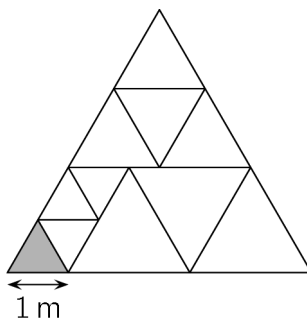
- (A) 1 (B) 2 (C) 3 (D) 6 (E) 9

13. Pia plays with a yardstick consisting of 10 sticks (see picture). Which of the following figures cannot be formed with this yardstick?



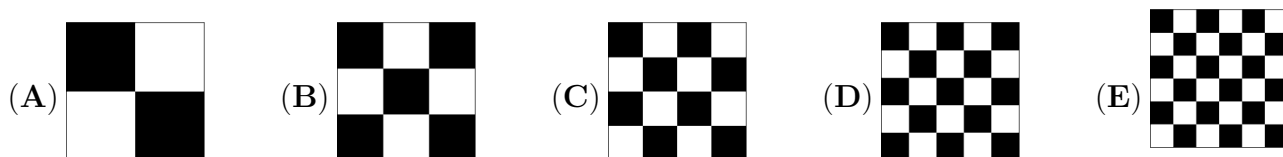
- (A) (B) (C) (D) (E)

14. A big triangle is divided into equilateral triangles as in the figure. The side of the small gray triangle is 1 m. What is the perimeter of the big triangle?



- (A) 15 m (B) 17 m (C) 18 m (D) 20 m (E) 21 m

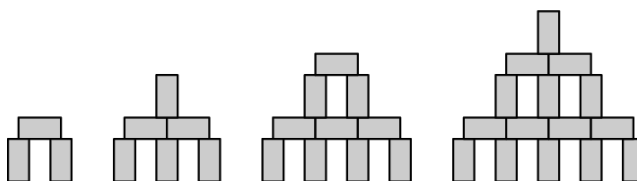
15. Five equal squares are divided into smaller squares. Which square has the largest black area?



16. In the garden of a witch there are 30 animals: dogs, cats and mice. The witch turns 6 dogs into cats. Then she turns 5 cats into mice. Now her garden has the same number of dogs, cats and mice. How many cats were there at the beginning?

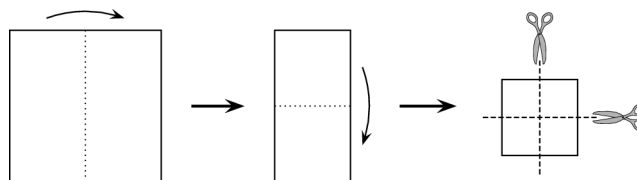
- (A) 4 (B) 5 (C) 9 (D) 10 (E) 11

17. With blocks of dimension $1\text{cm} \times 1\text{cm} \times 2\text{cm}$, you can build towers as shown in the picture. How high is a tower that is built in the same way with 28 blocks?



- (A) 9cm (B) 11cm (C) 12cm (D) 14cm (E) 17cm

18. Bridget folded a square sheet of paper twice, and then cut it twice as shown in the figure. How many pieces of paper will she get?

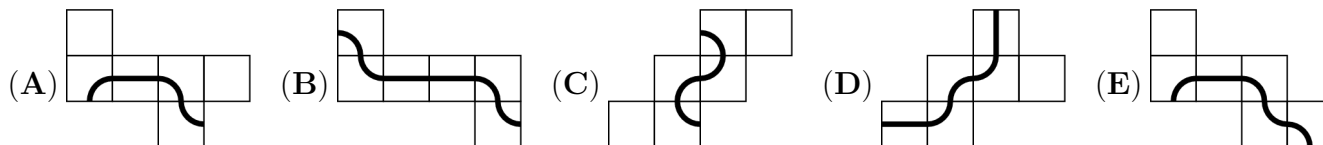


- (A) 6 (B) 8 (C) 9 (D) 12 (E) 16

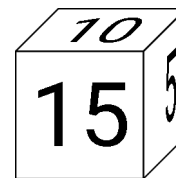
19. Alex, Bob and Carl go for a walk every day. If Alex doesn't wear a hat, then Bob wears a hat. If Bob doesn't wear a hat, then Carl wears a hat. Today Bob is not wearing a hat. Who is wearing a hat?

- (A) Both Alex and Carl (B) Only Alex
 (C) Only Carl (D) Neither Alex, nor Carl
 (E) It is not possible to determine.

20. Each of the following pictures shows the net of a cube. Only one of the resulting cubes has a closed line on it. Which one?



5 points

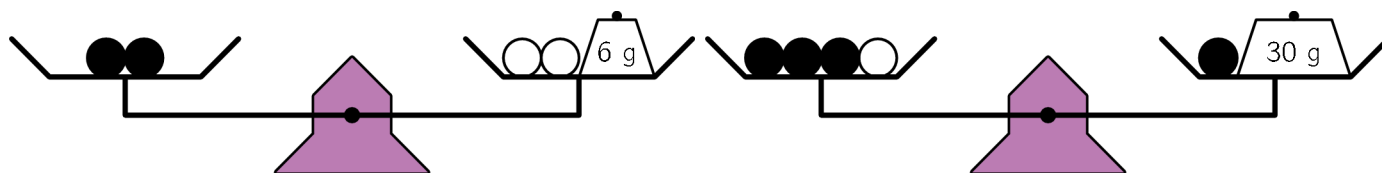


21. The cube shown in the figure has a positive integer written on each face.

The products of the two numbers on opposite faces are the same. What is the smallest possible sum of the six numbers on the cube?

- (A) 36 (B) 37 (C) 41 (D) 44 (E) 60

22. Six identical black beads and three identical white beads are arranged on weighing scales as shown in the picture. What is the total weight of these nine beads?

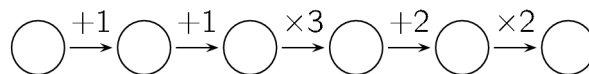


- (A) 100 g (B) 99 g (C) 96 g (D) 94 g (E) 90 g

23. Robert made 5 statements (A) - (E), exactly one of which is false. Which one?

- (A) My son Basil has 3 sisters. (B) My daughter Ann has 2 brothers.
 (C) My daughter Ann has 2 sisters. (D) My son Basil has 2 brothers.
 (E) I have 5 children.

24. Benjamin writes an integer in the first circle and then fills the other five circles by following the instructions.



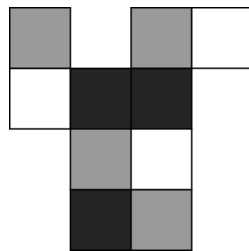
How many of the six numbers in the circles are divisible by 3?

- (A) 1 (B) both 1 and 2 are possible (C) 2
 (D) both 2 and 3 are possible (E) both 3 and 4 are possible

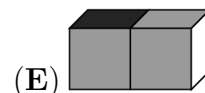
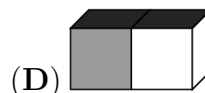
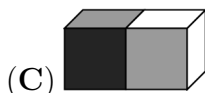
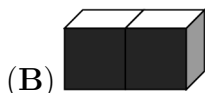
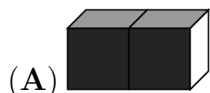
25. Emily took selfies with her 8 cousins. Each of the 8 cousins is in two or three pictures. In each picture there are exactly 5 cousins. How many selfies did Emily take?

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

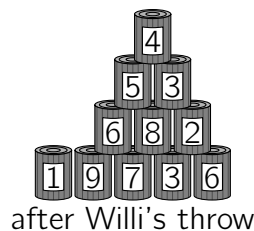
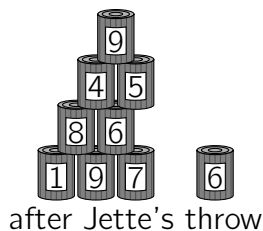
26. The cardboard is folded into a $2 \times 1 \times 1$ box.



Which picture does NOT show this box?



27. Jette and Willi are throwing balls at two identical pyramids of 15 cans. Jette knocks down 6 cans with a total of 25 points. Willi knocks down 4 cans. How many points does Willi score?



(A) 22

(B) 23

(C) 25

(D) 26

(E) 28

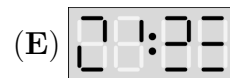
28. Every digit on my digital clock is composed of at most 7 segments, as follows:



But, unfortunately, in every set of 7 segments the same 2 segments don't work. At this moment my clock shows



What will it show after 3 hours and 45 minutes?



29. Linas builds a $4 \times 4 \times 4$ cube using 32 white and 32 black $1 \times 1 \times 1$ cubes. He arranges the cubes so that as much of the surface of his large cube is white. What fraction of the surface of his cube is white?

(A) $\frac{1}{4}$

(B) $\frac{1}{2}$

(C) $\frac{2}{3}$

(D) $\frac{3}{4}$

(E) $\frac{3}{8}$

30. Zev has two machines: one exchanges 1 white token into 4 red tokens, while the other exchanges 1 red token into 3 white ones. Zev has 4 white tokens. After exactly 11 exchanges, he has 31 tokens. How many of those are red?

(A) 21

(B) 17

(C) 14

(D) 27

(E) 11



Answers

Name: _____

Institution: _____

Grade: _____

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