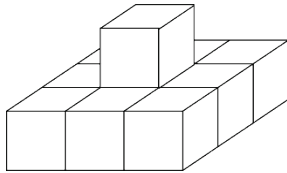


LEVELS 1 AND 2

SAMPLE QUESTION FOR 3 POINTS

The figure shown in the picture below is built out of identical wooden cubes. How many cubes were used to build it?



- A) 12      B) 8      C) 9      D) 10

SAMPLE QUESTION FOR 4 POINTS

Anna performed two operations. She put stickers over some of the numbers—the same stickers over the same numbers.

$$21 - 7 = \text{🌸}$$

$$2 \times \text{🌸} = \text{🌻} + 1$$

What number can be found under the 🌻 sticker?

- A) 15      B) 14      C) 25      D) 27

SAMPLE QUESTION FOR 5 POINTS

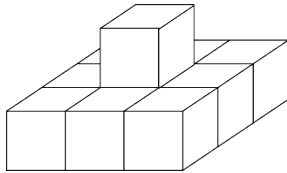
In a certain zoo, in the part that houses apes and monkeys, there were 19 animals. Among them were 4 chimpanzees and 3 baboons. The rest of the animals were gorillas, which were placed in three cages, the same number of gorillas in each cage. How many gorillas were in one of the cages?

- A) 5      B) 4      C) 3      D) 6

LEVELS 1 AND 2 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

The figure shown in the picture below is built out of identical wooden cubes. How many cubes were used to build it?



- A) 12      B) 8      C) 9      **D) 10**

SAMPLE QUESTION FOR 4 POINTS

Anna performed two operations. She put stickers over some of the numbers—the same stickers over the same numbers.

$$21 - 7 = \text{🌸}$$

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What number can be found under the 🌻 sticker?

- A) 15      B) 14      C) 25      **D) 27**

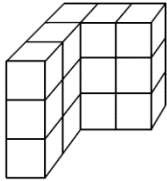
SAMPLE QUESTION FOR 5 POINTS

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- A) 5      **B) 4**      C) 3      D) 6

**LEVELS 3 AND 4****SAMPLE QUESTION FOR 3 POINTS**

The figure shown in the picture was made out of identical wooden cubes. How many wooden cubes were used?



- A) 6      B) 8      C) 10      D) 12      E) 15

**SAMPLE QUESTION FOR 4 POINTS**

A red kangaroo and a gray kangaroo together weigh 139 kg. The red kangaroo weighs 35 kg less than the gray kangaroo. How much does the gray kangaroo weigh?

- A) 104 kg      B) 52 kg      C) 87 kg      D) 96 kg      E) 53 kg

**SAMPLE QUESTION FOR 5 POINTS**

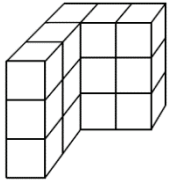
A certain vase contains four flowers: one red, one blue, one yellow, and one white. Kaya the Bee sat on every flower in the bouquet only once. She started with the red flower, and she did not fly directly from the yellow flower to the white flower. In how many ways could Kaya sit on all the flowers?

- A) 1      B) 2      C) 3      D) 4      E) 6

## LEVELS 3 AND 4 ANSWERS

## SAMPLE QUESTION FOR 3 POINTS

The figure shown in the picture was made out of identical wooden cubes. How many wooden cubes were used?



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

## SAMPLE QUESTION FOR 4 POINTS

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## SAMPLE QUESTION FOR 5 POINTS

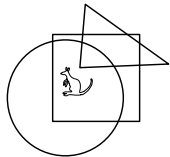
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Kaya the Bee sat on every flower in the bouquet only once. She started with the red flower, and she did not fly directly from the yellow flower to the white flower. In how many ways could Kaya sit on all the flowers?

- A) 1      B) 2      C) 3      **D) 4**      E) 6

**LEVELS 5 AND 6****SAMPLE QUESTION FOR 3 POINTS**

Where is the kangaroo?



- A) In the circle and in the triangle, but not in the square.
- B) In the circle and in the square, but not in the triangle.
- C) In the triangle and in the square, but not in the circle.
- D) In the circle, but not in the square and not in the triangle.
- E) In the square, but not in the circle and not in the triangle.

**SAMPLE QUESTION FOR 4 POINTS**

A certain dance group started out with 39 boys and 23 girls. Every week, 6 more boys and 8 more girls joined the dance group. After a few weeks, the number of boys and the number girls in the dance group was equal. How many participants were in the dance group at that time?

- A) 144      B) 154      C) 164      D) 174      E) 184

**SAMPLE QUESTION FOR 5 POINTS**

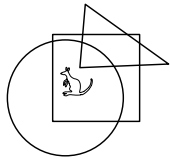
Jane multiplied the product of 18 factors, each equal to 8, by the product of 50 factors, each equal to 5. How many digits does her final product have?

- A) 13      B) 40      C) 52      D) 60      E) 100

## LEVELS 5 AND 6 ANSWERS

## SAMPLE QUESTION FOR 3 POINTS

Where is the kangaroo?



- A) In the circle and in the triangle, but not in the square.  
**B) In the circle and in the square, but not in the triangle.**  
C) In the triangle and in the square, but not in the circle.  
D) In the circle, but not in the square and not in the triangle.  
E) In the square, but not in the circle and not in the triangle.

## SAMPLE QUESTION FOR 4 POINTS

A certain dance group started out with 39 boys and 23 girls. Every week, 6 more boys and 8 more girls joined the dance group. After a few weeks, the number of boys and the number girls in the dance group was equal. How many participants were in the dance group at that time?

- A) 144                      B) 154                      C) 164                      **D) 174**                      E) 184

## SAMPLE QUESTION FOR 5 POINTS

Jane multiplied the product of 18 factors, each equal to 8, by the product of 50 factors, each equal to 5. How many digits does her final product have?

- A) 13                      B) 40                      **C) 52**                      D) 60                      E) 100

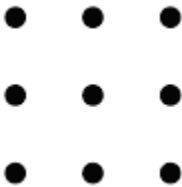
**LEVELS 7 AND 8****SAMPLE QUESTION FOR 3 POINTS**

Four boys and four girls attended Adam's party. The boys danced only with the girls and the girls danced only with the boys. Afterward, when asked the question, "With how many different people did you dance?" the four boys answered: 3, 1, 2, 2, while three of the girls answered: 2, 2, 2. With how many boys did the fourth girl dance?

- A) 0            B) 1            C) 2            D) 3            E) 4

**SAMPLE QUESTION FOR 4 POINTS**

What is the minimum number of dots that need to be removed from the given figure so that no three of the remaining dots are collinear?



- A) 3            B) 4            C) 2            D) 7            E) 1

**SAMPLE QUESTION FOR 5 POINTS**

An island is inhabited by two types of people: truth-tellers and liars. The truth-tellers always tell the truth and the liars always lie. 25 of the island's inhabitants stood in a line. Each of them with the exception of the first person said, "The person directly in front of me is a liar," while the person standing first in the line said, "Everyone standing behind me is a liar." How many liars stood in the line?

- A) 24            B) 13            C) 12            D) 0            E) It is impossible to determine.

## LEVELS 7 AND 8 ANSWERS

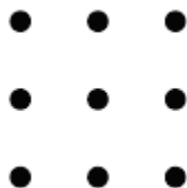
## SAMPLE QUESTION FOR 3 POINTS

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- A) 0      B) 1      C) 2      D) 3      E) 4

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## SAMPLE QUESTION FOR 5 POINTS

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- A) 24      B) 13      C) 12      D) 0      E) It is impossible to determine.



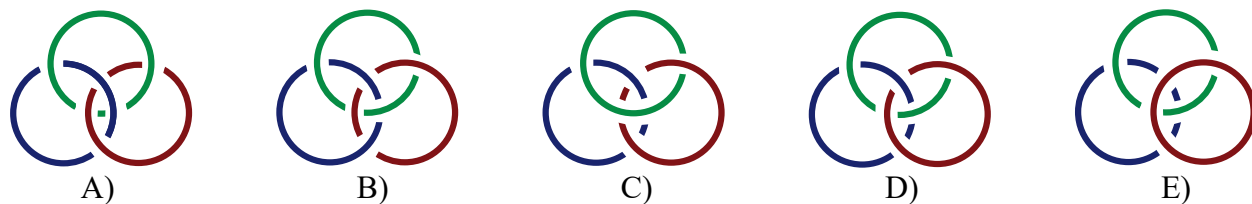
**LEVELS 9 AND 10****SAMPLE QUESTION FOR 3 POINTS**

Which of these is a multiple of 3?

- A) 2009      B)  $2 + 0 + 0 + 9$       C)  $(2 + 0) \cdot (0 + 9)$       D)  $2^9$       E)  $200 - 9$

**SAMPLE QUESTION FOR 4 POINTS**

Borromean rings have the property that they cannot be separated without cutting, but when any one ring is removed the remaining two are no longer linked. Which figure represents the Borromean rings?

**SAMPLE QUESTION FOR 5 POINTS**

A student who had 2009 cubic blocks of side length 1 and 2009 square colored stickers of side length 1 built a rectangular prism and completely covered the surface with the stickers making sure that none of them overlapped. It turned out that some stickers were not used. How many stickers were left over?

- A) more than 1000  
B) 763  
C) 476  
D) 49  
E) This situation is impossible.

**LEVELS 9 AND 10 ANSWERS**

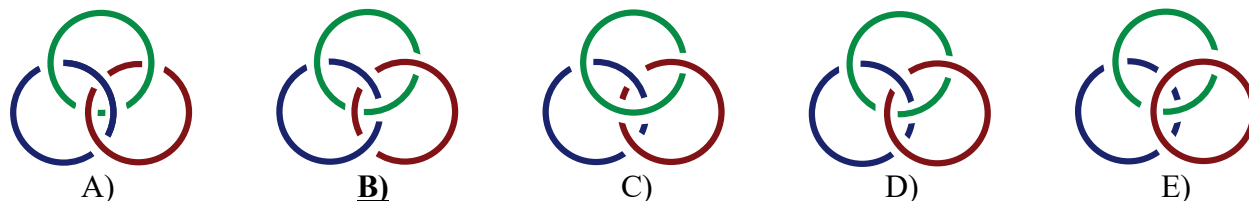
**SAMPLE QUESTION FOR 3 POINTS**

Which of these is a multiple of 3?

- A) 2009      B)  $2 + 0 + 0 + 9$       **C)  $(2 + 0) \times (0 + 9)$**       D)  $2^9$       E)  $200 - 9$

**SAMPLE QUESTION FOR 4 POINTS**

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**SAMPLE QUESTION FOR 5 POINTS**

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**B) 763**  
 C) 476  
 D) 49  
 E) This situation is impossible.

LEVELS 11 AND 12

SAMPLE QUESTION FOR 3 POINTS

For how many positive integers  $n$  is the number  $n^2 + n$  prime?

- A) 0    B) 1    C) 2    D) more than 2, but finitely many    E) infinitely many

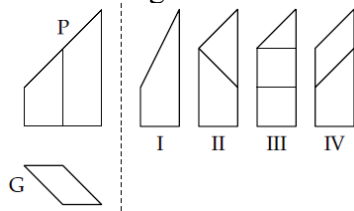
SAMPLE QUESTION FOR 4 POINTS

2009 kangaroos, each either of a pale or a dark hue, compared their height. Only one pale kangaroo was taller than exactly 8 dark kangaroos, only one pale kangaroo was taller than exactly 9 dark kangaroos, only one pale kangaroo was taller than exactly 10 dark kangaroos, and so forth. Finally, only one pale kangaroo was taller than all the dark kangaroos. How many pale kangaroos were there?

- A) 1000    B) 1001    C) 1002    D) 1003    E) This scenario is impossible.

SAMPLE QUESTION FOR 5 POINTS

On the left side of the dashed line are shown the view of a certain building from the south (P) and the top view of this building (G). Which of the figures labeled I, II, III, and IV is the view of this building from the west?



- A) Figure I    B) Figure II    C) Figure III    D) Figure IV    E) None of these.

LEVELS 11 AND 12 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

For how many positive integers  $n$  is the number  $n^2 + n$  prime?

- A) 0    **B) 1**    C) 2    D) more than 2, but finitely many    E) infinitely many

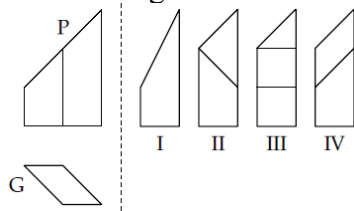
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- A) Figure I    B) Figure II    C) Figure III    **D) Figure IV**    E) None of these.