

# Math Kangaroo 2019 Sample Questions

## LEVELS 1 AND 2

### SAMPLE QUESTION FOR 3 POINTS

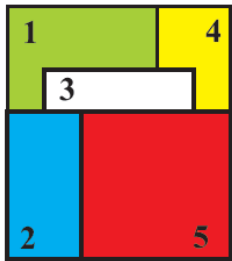
5. At the entrance of the zoo there are 12 children in line. Lucy is the 7th from the front and Sam is the second from the back. How many children are there between Lucy and Sam in the line?



- (A) 2      (B) 3      (C) 4      (D) 5      (E) 6

### SAMPLE QUESTION FOR 4 POINTS

11. Five square cards are stacked on a table, as shown. The cards are removed one by one from the top of the stack. In what order are the cards removed?



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

### SAMPLE QUESTION FOR 5 POINTS

23. Peter chose a square of four cells in the table so that the sum of the four numbers inside the square is greater than 63. Which of the following numbers must be in the chosen square?

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

- (A) 14      (B) 15      (C) 17      (D) 18      (E) 20

# Math Kangaroo 2019 Sample Questions

## LEVELS 1 AND 2 ANSWERS

### SAMPLE QUESTION FOR 3 POINTS

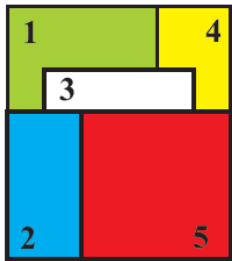
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11. Five square cards are stacked on a table, as shown. The cards are removed one by one from the top of the stack. In what order are the cards removed?



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

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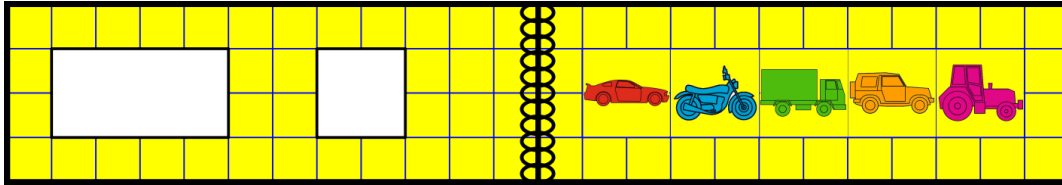
- (A) 14      (B) 15      (C) 17      (D) 18      (E) 20

# Math Kangaroo 2019 Sample Questions

## LEVELS 3 AND 4

### SAMPLE QUESTION FOR 3 POINTS

4. There are two holes in the cover of a book. When the book is open, it looks like this:

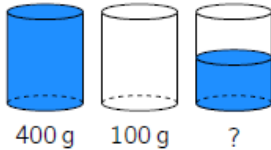


Which pictures does Olaf see through the holes when he closes the book?

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

### SAMPLE QUESTION FOR 4 POINTS

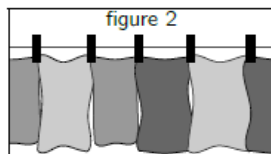
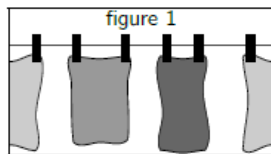
15. A glass full of water weighs 400 grams. An empty glass weighs 100 grams. How many grams does a glass half-full with water weigh?



- (A) 150 (B) 200 (C) 225 (D) 250 (E) 300

### SAMPLE QUESTION FOR 5 POINTS

24. Emil started to hang up towels using two pegs for each towel as shown in figure 1. He realized that he would have not enough pegs and began to hang up the towels as shown in figure 2. Altogether, he hung up 35 towels and used 58 pegs. How many towels did Emil hang up in the way shown in figure 1?



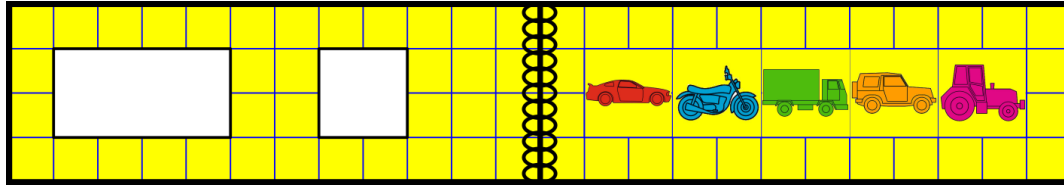
- (A) 12 (B) 13 (C) 21 (D) 22 (E) 23

# Math Kangaroo 2019 Sample Questions

## LEVELS 3 AND 4 ANSWERS

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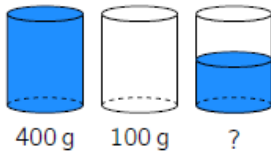


Which pictures does Olaf see through the holes when he closes the book?

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

### SAMPLE QUESTION FOR 4 POINTS

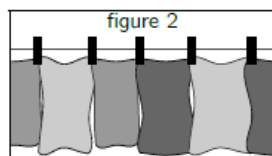
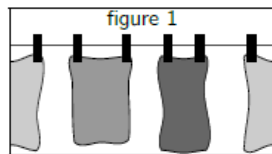
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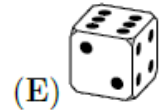
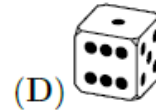
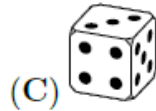
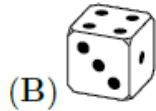
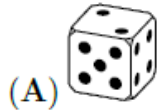
- (A) 12 (B) 13 (C) 21 (D) 22 (E) 23

# Math Kangaroo 2019 Sample Questions

## LEVELS 5 AND 6

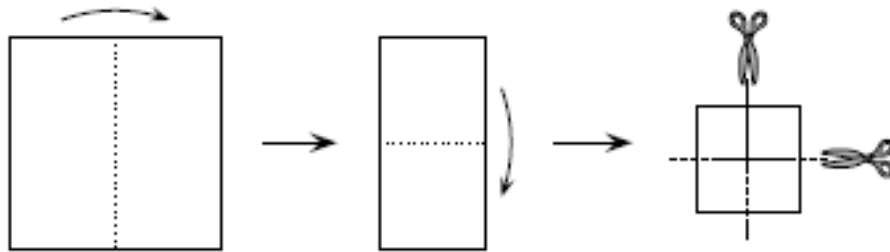
### SAMPLE QUESTION FOR 3 POINTS

5. The sum of the dots on opposite faces of an ordinary die is equal to 7. Which of the following could be an ordinary die?



### SAMPLE QUESTION FOR 4 POINTS

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



(A) 6

(B) 8

(C) 9

(D) 12

(E) 16

### SAMPLE QUESTION FOR 5 POINTS

23. Robert made 5 statements (A) to (E). Exactly one of these statements 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.

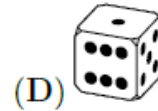
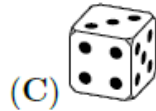
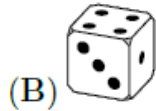
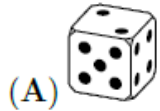
(E) I have 5 children.

# Math Kangaroo 2019 Sample Questions

## LEVELS 5 AND 6 ANSWERS

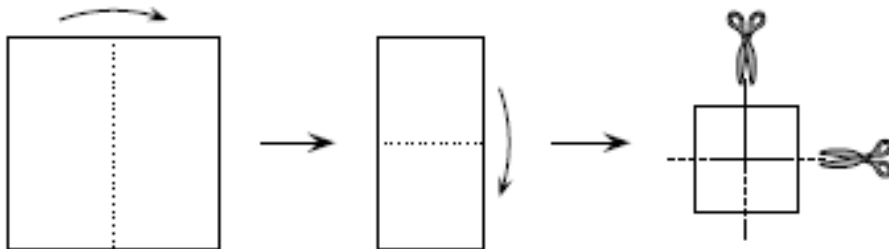
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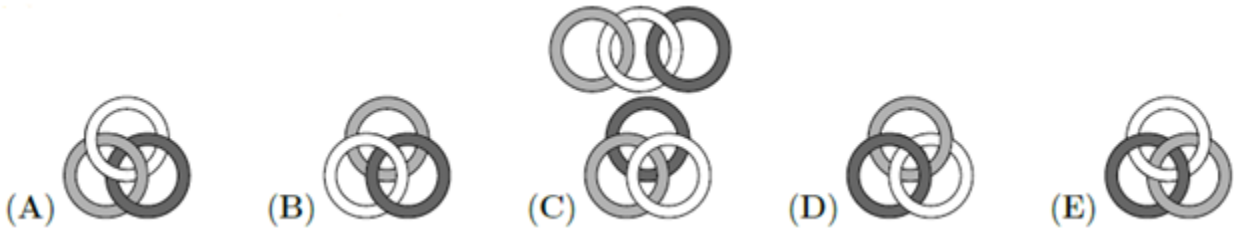
(E) I have 5 children.

# Math Kangaroo 2019 Sample Questions

## LEVELS 7 AND 8

### SAMPLE QUESTION FOR 3 POINTS

4. Three rings are linked as shown in the diagram. Which of the following diagrams also shows the three rings linked in the same way?



### SAMPLE QUESTION FOR 4 POINTS

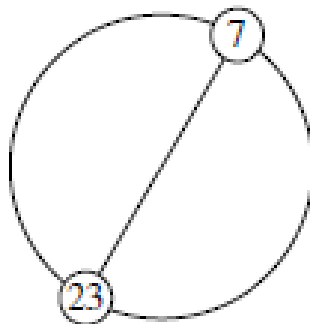
19. Julio has two cylindrical candles with different heights and diameters. The first candle lasts 6 hours, while the second candle lasts 8 hours. He lit both candles at the same time and three hours later both candles were the same height. What was the ratio of their original heights?

- (A) 4 : 3      (B) 8 : 5      (C) 5 : 4      (D) 3 : 5      (E) 7 : 3

### SAMPLE QUESTION FOR 5 POINTS

21. The integers from 1 to  $n$ , inclusive, are equally spaced in order round a circle. The diameter through the position of the integer 7 also goes through the position of 23, as shown. What is the value of  $n$ ?

- (A) 30      (B) 32      (C) 34      (D) 36      (E) 38

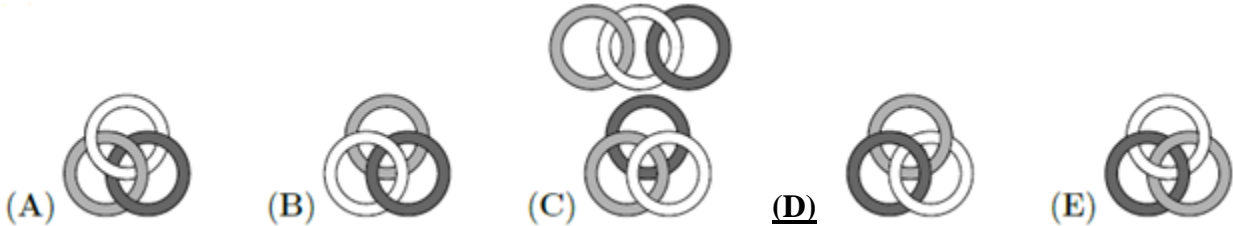


# Math Kangaroo 2019 Sample Questions

## LEVELS 7 AND 8 ANSWERS

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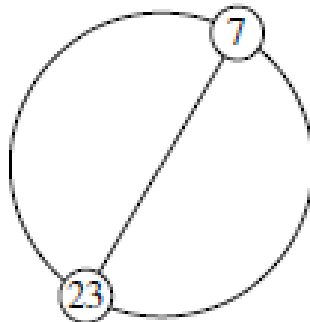
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# Math Kangaroo 2019 Sample Questions

## LEVELS 9 AND 10

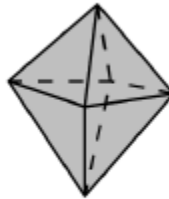
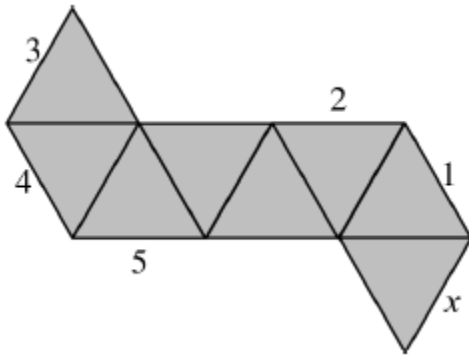
### SAMPLE QUESTION FOR 3 POINTS

2. A model train takes exactly 1 minute and 11 seconds for each round on a course. How long does it take for six rounds?

- (A) 6 minutes 56 seconds      (B) 7 minutes 6 seconds      (C) 7 minutes 16 seconds  
 (D) 7 minutes 26 seconds      (E) 7 minutes 36 seconds

### SAMPLE QUESTION FOR 4 POINTS

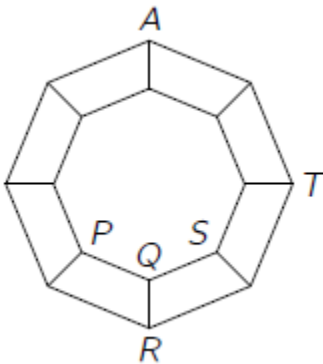
20. The diagram shows a net of an octahedron. When this net is folded to form the octahedron, which of the labeled line segments will coincide with the line segment marked with the  $x$ ?



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

### SAMPLE QUESTION FOR 5 POINTS

25. A graph consists of 16 vertices and some edges that connect them, as shown in the picture. An ant is now at the vertex labeled A. In each move, it can walk from one vertex to any neighboring vertex crawling along a connecting edge. At which of the vertices labeled P, Q, R, S, T can the ant be after 2019 moves?



- (A) only P, R, or S; not Q and T      (B) only P, R, S, or T; not Q      (C) only Q  
 (D) only T      (E) All of the vertices are possible.

# Math Kangaroo 2019 Sample Questions

## LEVELS 9 AND 10 ANSWERS

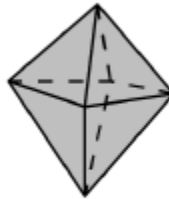
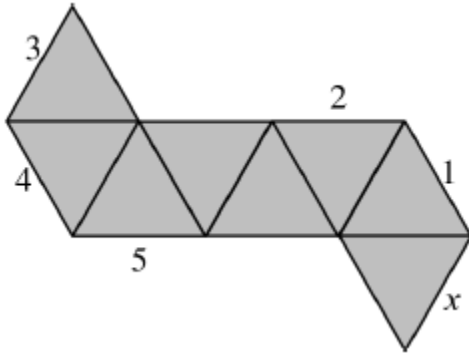
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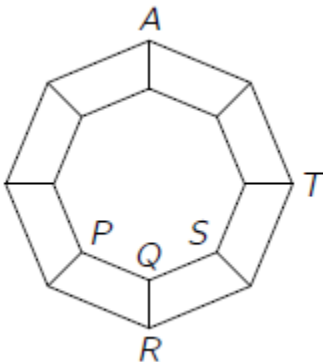
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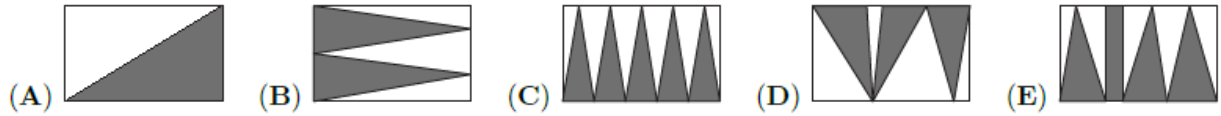
- (A) only P, R, or S; not Q and T      (B) only P, R, S, or T; not Q      **(C)** only Q  
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# Math Kangaroo 2019 Sample Questions

## LEVELS 11 AND 12

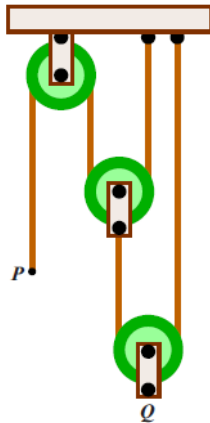
### SAMPLE QUESTION FOR 3 POINTS

3. A rectangle has been shaded in five different ways as shown. In which diagram does the shaded part have the largest area?



### SAMPLE QUESTION FOR 4 POINTS

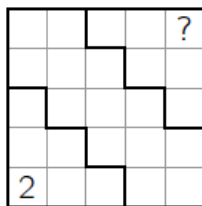
15. The system shown consists of three pulleys with vertical sections of rope between them. The end P is moved down 24 centimeters. How many centimeters does point Q move up?



- (A) 24      (B) 12      (C) 8      (D) 6      (E) 24/5

### SAMPLE QUESTION FOR 5 POINTS

30. The square shown is filled with numbers in such a way that each row and each column contains the numbers 1; 2; 3; 4, and 5 exactly once. Moreover, the sum of the numbers in each of the three regions within bold borders is equal. What number is in the upper-right corner on the square with the question mark?



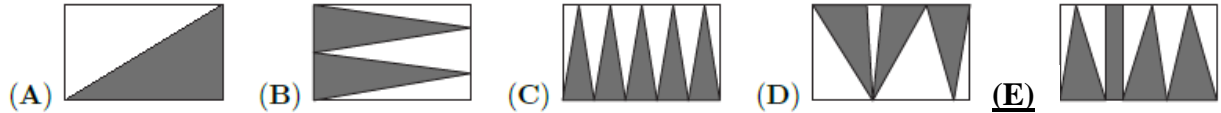
- (A) 1      (B) 2      (C) 3      (D) 4      (E) 5

# Math Kangaroo 2019 Sample Questions

## LEVELS 11 AND 12 ANSWERS

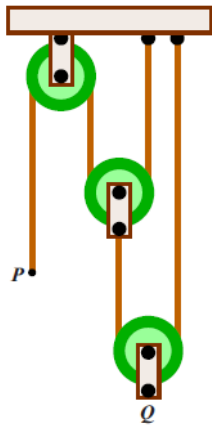
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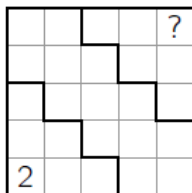
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- (B) 1      (B) 2      **(C) 3**      (D) 4      (E) 5