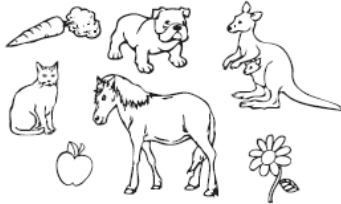# Math Kangaroo 2012 Sample Questions

LEVELS 1 AND 2

SAMPLE QUESTION FOR 3 POINTS

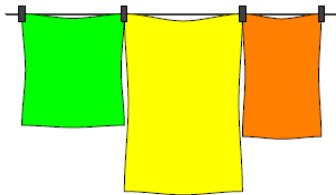How many animals are there in the picture below?

A) 3   B) 4   C) 5   D) 6   E) 7
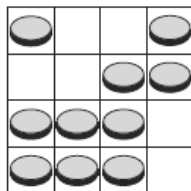
SAMPLE QUESTION FOR 4 POINTS

Father hangs the laundry outside on a clothesline. He wants to use as few pins as possible. For 3 towels he needs 4 pins, as shown. How many pins does he need for 9 towels?

A) 9   B) 10   C) 12   D) 16   E) 18

SAMPLE QUESTION FOR 5 POINTS

There are coins on the board. We want to have 2 coins in each column and 2 coins in each row. How many coins need to be removed?

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

Math Kangaroo 2012 Sample Questions

LEVELS 1 AND 2 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

How many animals are there in the picture below?

A) 3 B) 4 **C) 5** D) 6 E) 7

SAMPLE QUESTION FOR 4 POINTS

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A) 9 **B) 10** C) 12 D) 16 E) 18

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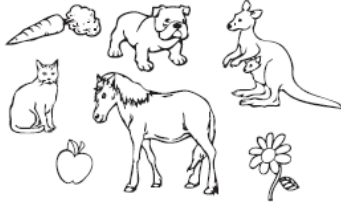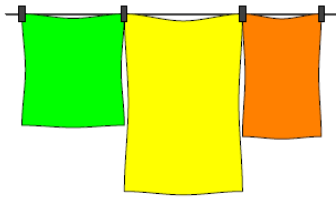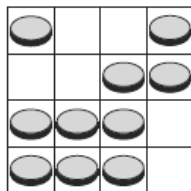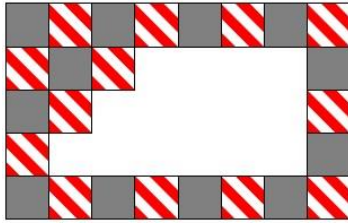
A) 0 B) 1 **C) 2** D) 3 E) 4

Math Kangaroo 2012 Sample Questions

LEVELS 3 AND 4

SAMPLE QUESTION FOR 3 POINTS

A regular rectangular pattern on a wall was created with 2 kinds of tiles: grey and striped. Some tiles have fallen off the wall (see the picture). How many grey tiles have fallen off?

A) 9　　　　B) 8　　　　C) 7　　　　D) 6　　　　E) 5

SAMPLE QUESTION FOR 4 POINTS

Among Nikolay's classmates there are twice as many girls as boys. Which of the following numbers can be equal to the number of all children in this class?

A) 30　　　　B) 20　　　　C) 24　　　　D) 25　　　　E) 29

SAMPLE QUESTION FOR 5 POINTS

Gregory forms two numbers with the digits 1, 2, 3, 4, 5 and 6. Both numbers have three digits, and each digit is used only once. He adds these two numbers. What is the greatest sum Gregory can get?

A) 975　　　　B) 999　　　　C) 1083　　　　D) 1173　　　　E) 1221

Math Kangaroo 2012 Sample Questions

LEVELS 3 AND 4 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

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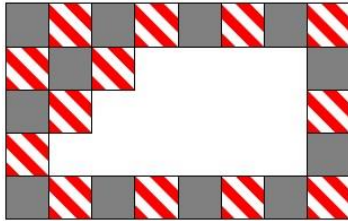
A) 975   B) 999   C) 1083   **D) 1173**   E) 1221

Math Kangaroo 2012 Sample Questions

LEVELS 5 AND 6
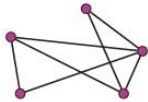
SAMPLE QUESTION FOR 3 POINTS

Sally can put 4 coins in a square made using 4 matches (see picture). At least how many matches will she need in order to make a square containing 16 coins that do not overlap?

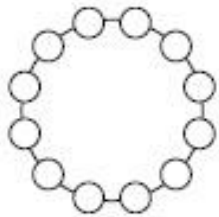A) 8　　　　B) 10　　　　C) 12　　　　D) 15　　　　E) 16

SAMPLE QUESTION FOR 4 POINTS

There are five cities in Wonderland. Each pair of cities is connected by one road, either visible or invisible. On the map of Wonderland, there are only seven visible roads, as shown. Alice has magical glasses: when she looks at the map through these glasses she only sees the roads that are otherwise invisible. How many invisible roads can she see?

A) 9　　　　B) 8　　　　C) 7　　　　D) 3　　　　E) 2

SAMPLE QUESTION FOR 5 POINTS

Kanga wants to arrange the twelve numbers from 1 to 12 in a circle in such a way that any neighboring numbers always differ by either 1 or 2. Which of the following pairs of numbers have to be neighbors?

A) 5 and 6　　B) 10 and 9　　C) 6 and 7　　D) 8 and 10　　E) 4 and 3

Math Kangaroo 2012 Sample Questions

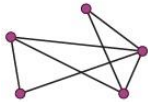# LEVELS 5 AND 6 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

Sally can put 4 coins in a square made using 4 matches (see picture). At least how many matches will she need in order to make a square containing 16 coins that do not overlap?

A) 8   B) 10   C) 12   D) 15   E) 16

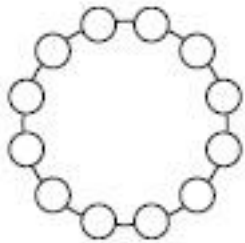**SAMPLE QUESTION FOR 4 POINTS**

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A) 9   B) 8   C) 7   **D) 3**   E) 2

SAMPLE QUESTION FOR 5 POINTS

Kanga wants to arrange the twelve numbers from 1 to 12 in a circle in such a way that any neighboring numbers always differ by either 1 or 2. Which of the following pairs of numbers have to be neighbors?

A) 5 and 6   B) 10 and 9   C) 6 and 7   **D) 8 and 10**   E) 4 and 3

Math Kangaroo 2012 Sample Questions
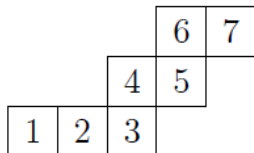
LEVELS 7 AND 8

SAMPLE QUESTION FOR 3 POINTS

Mary has a pair of scissors and five cardboard letters. She cuts each letter exactly once (along a straight line) so that it falls apart into as many pieces as possible. Which letter falls apart into the most pieces?

A) O   B) F   C) S   D) H   E) M

SAMPLE QUESTION FOR 4 POINTS

A cube is rolled on a plane so that it turns around its edges. It begins at position 1, and is rolled so that one of its faces touches the plane in positions 2, 3, 4, 5, 6, and 7, in that order, as shown. Which two of these positions were occupied by the same face of the cube?

A) 1 and 7   B) 1 and 6   C) 1 and 5   D) 2 and 7   E) 2 and 6

SAMPLE QUESTION FOR 5 POINTS

A rope is folded in half, then in half again, and then in half again. Finally the folded rope is cut through, forming several strands. The lengths of two of the strands are 4 m and 9 m. Which of the following could not have been the length of the whole rope?

A) 52 m   B) 68 m   C) 72 m   D) 88 m   E) All the previous are possible.

Math Kangaroo 2012 Sample Questions
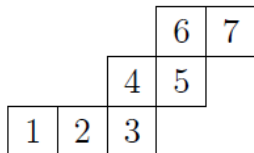
LEVELS 7 AND 8 ANSWERS

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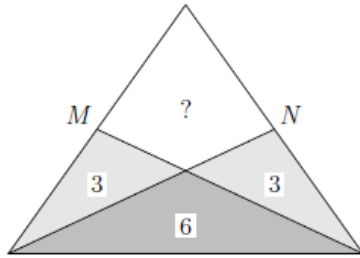
A) 52 m   B) 68 m   **C) 72 m**   D) 88 m   E) All the previous are possible.

Math Kangaroo 2012 Sample Questions

LEVELS 9 AND 10

SAMPLE QUESTION FOR 3 POINTS

The diagram shows an isosceles triangle; M and N are the midpoints of the equal sides. The triangle has been divided into four regions by two straight lines. Three of the regions have areas of 3, 3 and 6, as shown. What is the area of the fourth region?

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

SAMPLE QUESTION FOR 4 POINTS

If Adam stands on the table and Mike stands on the floor, then Adam is 80 cm taller than Mike. If Mike stands on the same table and Adam stands on the floor, then Mike is one meter taller than Adam. How high is the table?

A) 20 cm   B) 80 cm   C) 90 cm   D) 100 cm   E) 120 cm

SAMPLE QUESTION FOR 5 POINTS

The last non-zero digit of the number $K = 2^{59} \times 3^4 \times 5^{53}$ is
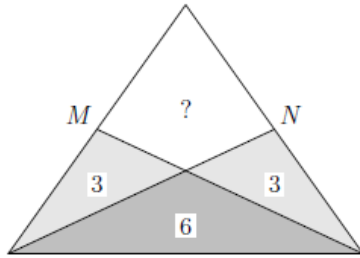
A) 1   B) 2   C) 4   D) 6   E) 9

Math Kangaroo 2012 Sample Questions

LEVELS 9 AND 10 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

The diagram shows an isosceles triangle; M and N are the midpoints of the equal sides. The triangle has been divided into four regions by two straight lines. Three of the regions have areas of 3, 3 and 6, as shown. What is the area of the fourth region?

A) 3   B) 4   C) 5   **D) 6**   E) 7

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A) 20 cm   B) 80 cm   **C) 90 cm**   D) 100 cm   E) 120 cm

SAMPLE QUESTION FOR 5 POINTS

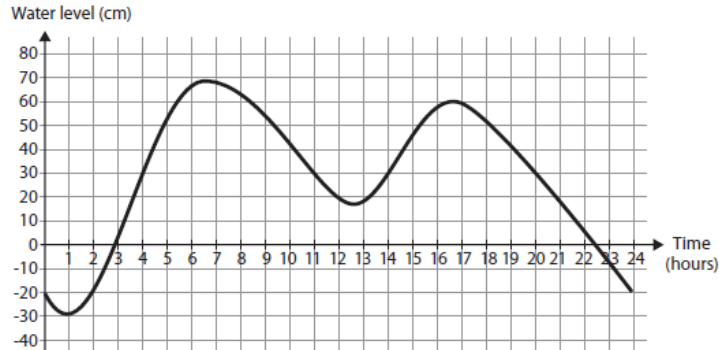The last non-zero digit of the number $K = 2^{59} \times 3^4 \times 5^{53}$ is

A) 1   B) 2   **C) 4**   D) 6   E) 9

Math Kangaroo 2012 Sample Questions

LEVELS 11 AND 12

SAMPLE QUESTION FOR 3 POINTS

The water level in a port city rose and fell on a certain day as shown in the figure. For how many hours was the water level above 30 cm on that day?
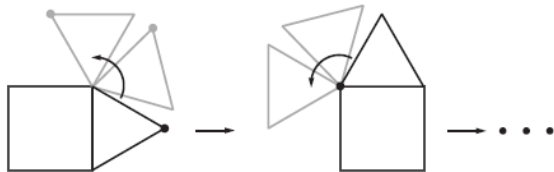

A) 5   B) 6   C) 7   D) 9   E) 13

SAMPLE QUESTION FOR 4 POINTS

My age is a two-digit integer which is a power of 5, and my cousin's age is a two-digit integer which is a power of 2. The sum of the digits of our ages is an odd number. What is the product of the digits of our ages?

A) 240   B) 2010   C) 60   D) 50   E) 300

SAMPLE QUESTION FOR 5 POINTS

An equilateral triangle rolls without slipping around a square with side length of 1 (see picture). What is the length of the path that the marked point covers until the triangle and the point reach their starting positions the next time?
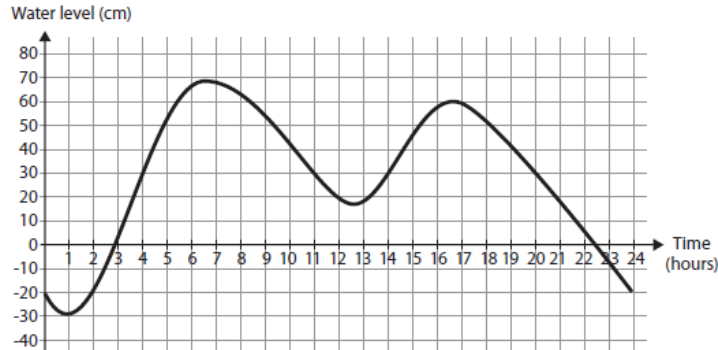

A) 4 π   B) 28/3 π   C) 8 π   D) 14/3 π   E) 21/2 π

Math Kangaroo 2012 Sample Questions

LEVELS 11 AND 12 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

The water level in a port city rose and fell on a certain day as shown in the figure. For how many hours was the water level above 30 cm on that day?

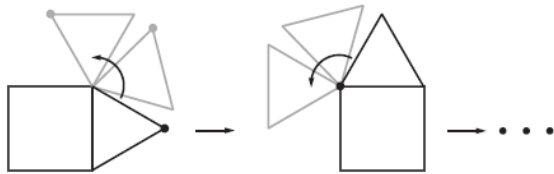A) 5   B) 6   C) 7   D) 9   **E) 13**

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