2019
INTERNATIONAL
MATH CONTEST

ID _____

Name _____

Grade _____

RSM Affiliation _____

Test Location _____

1

In the puzzle below, each card hides a digit. What digit is hidden under the card with the question mark?

$$20 + �(?�)◯ + 19 = 100$$

2

Gary has 20 more candies than Mary. If Gary gives Mary 19 of his candies, Mary would have how many more candies than Gary?

3

Numbers were written in the twelve boxes shown, one number per box. For every four boxes in a row, the sum of their numbers was 12. Most of the numbers got erased over time, but three of them remain. What number was written in the last box on the right?

	0				1	2			

4

Four cats – Astro, Buttons, Calico, and Duchess – bought 20 mice altogether. Each of the four cats bought an odd number of mice, but none of them bought exactly 13 mice. Buttons bought more mice than Astro, fewer mice than Duchess, and as many mice as Calico. How many mice did Calico buy?
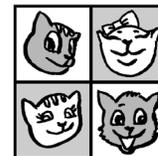
5

Natasha drew five straight lines (from border to border) on a triangular piece of paper. Then she cut the paper along all these lines and got several shapes. What is the largest number of sides one of Natasha's shapes could have?

6

A family has many children – brothers and sisters. Each of them wrote a statement about the family. Five of these statements are as follows:

- I have more brothers than sisters;
- I have more sisters than brothers;
- I have as many brothers as sisters;
- I have fewer sisters than brothers;
- I have fewer brothers than sisters.

What is the greatest possible number of these statements that can be true at the same time?

Please fold over on line. Write answers on back.

FINAL ROUND

Grades 3-4

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7 Dubbles the monster has twice as many ears as eyes, twice as many legs as arms, and twice as many tongues as noses. Overall he has 39 ears, eyes, legs, arms, tongues, and noses. How many ears, legs, and tongues does Dubbles the monster have altogether?
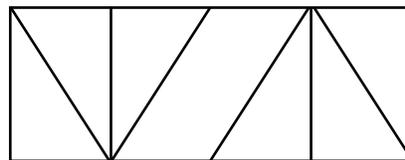
8 How many different counting numbers are there containing only odd digits such that for each of these numbers, the sum of all of its digits equals seven?

9 A square shape is divided into two non-overlapping rectangular shapes. Each of these two rectangular shapes is divided into three non-overlapping square shapes. Compute the sum of the perimeters of these six squares (in feet) if the perimeter of the original square is 60 feet. (The perimeter of a square is the sum of the lengths of all of its sides.)

10 In 2017, a long row of trees was planted in the empty RSM Garden. In 2018, a tree was planted between every two adjacent (next to each other) trees planted in the previous year. In 2019, a tree was planted between every two adjacent trees planted in the previous years, bringing the total number of trees in RSM Garden to 877. How many trees were planted in RSM Garden in 2018?

11 How many quadrilaterals of all sizes and positions are there in the diagram, including quadrilaterals that are made up of more than one shape? (A quadrilateral is a shape with four sides.)

12 Say that a counting number is "five-important" if it is a multiple of 5 and contains the digit 5. For instance, the numbers 125, 55, and 550 are five-important, but the numbers 59, 2019, and 2020 are not. How many different five-important numbers are there between 1 and 2019?

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