First Name _____
Last Name _____
Grade _____
School _____
City _____
RSM Branch_____

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Please fold over on line. Write answers on back.

1 Find the smallest five-digit number with exactly three odd digits if all five digits are different.

2 A bag contains 18 small red, 19 small black, 13 large black, and 15 large red T-shirts, and nothing else. What is the least number of T-shirts Alpa must take out of the bag (without looking at them) to be absolutely sure of having at least one T-shirt of each color among them?

3 From a piece of paper Felix cut out some squares and pentagons. He cut out a total of five shapes with 23 sides altogether. How many pentagons were among these shapes?

4 Leah said on her birthday: "Today I am exactly three times as old as I was four years ago." And that was true. In how many years can Leah truthfully say on her birthday: "Today I am exactly twice as old as I was four years ago"?

5 Alexa wrote a two-digit number on a piece of paper. To that number she added five different one-digit numbers, and got a sum of 134. What two-digit number did Alexa start from?

6 Peter was standing in a line of RSM students. There were twice as many students in front of him as behind him. Several students (more than 3 but fewer than 9) left the line but Peter did not. Then twice as many students were behind Peter as in front of him. How many students left the line?
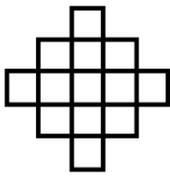
7 Winnie-the-Pooh brought a bunch of balloons. Some were green, and the rest were red. Pooh gave some of the balloons to Eeyore, and the rest he gave to Piglet. Piglet got three more balloons then Eeyore did, and Eeyore got two more red balloons than the number of green balloons Piglet got. How many more red balloons than green balloons did Pooh bring?
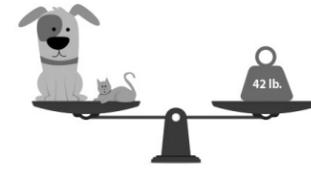
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8 How many rectangles of all sizes and positions are there in the diagram, including rectangles that are made up of more than one shape? (Remember that every square counts as a rectangle.)
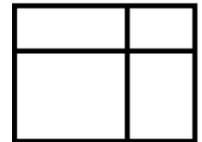
9 Two dogs weigh as much as five cats. A dog and a cat weigh 42 pounds altogether. A dog is heavier than a cat by how many pounds? Assume that all dogs weigh the same, and all cats weigh the same.

10 In Numberland there is a square, and all of the numbers live on its sides (some live on the corners). For each of the four sides, Olga calculated the sum of all of the numbers living on that side (including the corners), and she got the following results (in some order): 4, 8, 12, and 16. The sum of all of the numbers in Numberland equals 30. Find the sum of all of the numbers living on the corners of the square.

11 A rectangular shape is divided into four non-overlapping rectangular shapes as shown in the diagram. The perimeters of three of these four shapes are 20 feet, 18 feet, and 28 feet. What is the greatest possible perimeter (in feet) of the original rectangle? (The perimeter of a rectangle is the sum of the lengths of all of its sides.)

12 Rustam likes multiples of 5. For his RSM project he makes up numbers such that any two of the digits of any of his numbers, when put next to each other in some order, make a two-digit multiple of 5. His teacher calls such numbers Rustam's numbers. For example, the numbers 51 and 502 are Rustam's numbers, but the numbers 300 and 2018 are not. How many different three-digit Rustam's numbers with none of the digits greater than 5 are there?