KU Mathematics and Statistics Competition  
Department of Mathematics  
University of Kansas  

Competition for 3rd-5th Grades  
April 10, 2021  

INSTRUCTIONS:  

• You have 40 minutes for the five problems.  
• Show all of the necessary work and provide a complete justification for each answer.  
• Solve each problem on a separate sheet of paper.  
• Enclose each final answer in a box.  
• You are allowed to use a calculator.
Problem 1. Find the sum

\[ 2 - 4 + 6 - 8 + 10 - 12 + \ldots \ldots 2022 \]

You should first figure out if there is a plus or minus sign before 2022.

Problem 2. In three years, I will be half as old as John, and John will be three times my present age. How old is John now?

Problem 3. How many triangles are in this drawing?

![Diagram of a pentagon with several lines connecting its vertices, forming multiple triangles.](image)

Problem 4. Two friends out of four, represented by A, B, C and D, will attend an event. The rules are the following.

- If A goes, then B also needs to go.
- If C does not go, then B also does not go.
- If C goes, then D cannot go.

Who will finally go to the event?

Problem 5. Ten exactly the same pencils are given to three children. Every child will receive at least one pencil. In how many ways can you distribute these ten pencils?