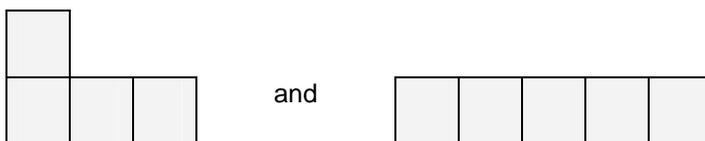


MidMichigan Olympiad 2015

Grades 7-9

1. Thirty players participate in a chess tournament. Every player plays one game with every other player. What maximal number of players can get exactly 5 points? (any game adds 1 point to the winner's score, 0 points to a loser's score, in the case of a draw each player obtains 1/2 point.)
2. A father and his son returned from a fishing trip. To make their catches equal the father gave to his son some of his fish. If, instead, the son had given his father the same number of fish, then father would have had twice as many fish as his son. What percent more is the father's catch more than his son's?
3. What is the maximal number of pieces of two shapes



- that can be used to tile a 7x7 square?
4. Six shooters participate in a shooting competition. Every participant has 5 shots. Each shot adds from 1 to 10 points to shooter's score. Every person can score totally for all five shots from 5 to 50 points. Each participant gets 7 points for at least one of his shots. The scores of all participants are different. We enumerate the shooters 1 to 6 according to their scores, the person with maximal score obtains number 1, the next one obtains number 2, the person with minimal score obtains number 6. What score does obtain the participant number 3? The total number of all obtained points is 264.
 5. There are 2014 stones in a pile. Two players play the following game. First, player A takes some number of stones (from 1 to 30) from the pile, then player B takes 1 or 2 stones, then player A takes 2 or 3 stones, then player B takes 3 or 4 stones, then player A takes 4 or 5 stones, etc. The player who gets the last stone is the winner. If no player gets the last stone (there is at least one stone in the pile but the next move is not allowed) then the game results in a draw. Who wins the game using the right strategy?