

1. Two children take turns breaking up a 6 square by 8 square rectangular chocolate bar. They break the bar only at the divisions between the squares. If the bar breaks into several pieces, they keep breaking one piece at a time until only the squares remain. The first player who cannot make a break is the loser. Who will win?
2. There are three piles of stones, one with 10 stones, one with 15 stones and one with 20 stones. At each stage, a player can choose a pile and divide it into two smaller piles. The loser is the first player who cannot do this. Who wins and why?
3. Two players take turns putting castles (rooks) on a chess board so they cannot capture each other. The winner is the last to put down a castle. Who will win and how?
4. Ten 1's and ten 2's are written on a board. In one turn, a player may erase any two digits. If they are identical, they are replaced by the single digit 2 and if they are different, they are replaced by the single digit 1. The first player wins if a 1 is left at the end and the second wins if a 2 is left. Who wins and why?
5. The numbers 26 and 36 are written on the blackboard. At any stage, a player writes on the board the positive difference between two numbers on the board if this number does not already appear on the board. The loser is the first player who cannot write a number. Who wins and why? What if the numbers are 27 and 36? What about 87 and 117?
6. There are two piles each with 7 counters. At each turn, a player may take any number of counters from **either** (but not both) pile. The player who takes the last counter wins. Do you want to play first or second. Who wins and how?