2   Chocolate Bar Games

10. **Break the Bar.** You have a rectangular chocolate bar that is 6 x 8 squares in size. At each step, a player takes one piece of the chocolate and breaks it in two along a single straight line bounded by the squares. For example, you can turn the original bar into a 6 x 2 piece and a 6 x 6 piece, and this latter piece can be turned into a 1 x 6 piece and a 5 x 6 piece. The player who cannot make any more breaks loses.

11. **Free a Square.** Two players take turns breaking a piece of chocolate consisting of 5×10 small squares. At each turn, they may break along the division lines of the squares. The player who first obtains a single square of chocolate wins.

3   Number Games

12. **Build a Number.**

    (a) Two players want to build a 5-digit number, writing one digit at a time from left to right. The first player wins if the number is divisible by 9; the second player wins if the number is not divisible by 9.

    (b) What happens if 9 is replaced by 11 in the previous game?

13. **Pluses and Minuses.**

    (a) There are 10 minuses written along a line. A player replaces either one minus by a plus or two adjacent minuses by two pluses. The player who replaces the last minus wins.

    (b) Same game as above, only the minuses are written around a circle.

14. **Subtract a Divisor.** At the start of the game, there is a number 60 written on the board. On each turn, a player can reduce the number that is currently on the board by any of its positive divisors. If the resulting number is 0, the player loses.

15. **Addition to 1000.** The game begins with the number 2. In one turn, a player can add to the current number any natural number smaller than it. The player who reaches the number 1000 wins.