

## Nim-7

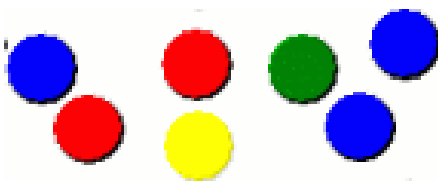
This is a basic form of the ancient game of Nim.

You will need seven objects, such as counters or blocks. It is a game for two players.

Place the 7 counters in a pile and decide who will go first. (In the next game, the other player will have the first turn.)

Each player takes turns to take away either one or two counters.

The player who takes the last counter wins.



Keep playing until you work out a winning strategy.

Does it matter who has the first turn?

What happens when you start the game with more counters?

Remember to think about the questions at the bottom.

On the next page, I have included some ways on how to win this game. I wonder if you worked the same ways before checking them.

Have fun playing Nim-7 😊

## Ways to win Nim-7

### Way 1:

The first player can always win:

- on the first turn she should take one counter
- on the next turn she should take enough counters to reduce the pile to three
- the other player will be unable to stop her taking the last counter.

### Way 2:

Subtract counters to make 3 on your opponent's last go because then if they take 2, you take 1 and win and if they take 1 you take 2 and win!

The first person needs to take one counter to win. Also, if you are playing a good opponent, you need to go first and take 1. Then if they take 1, you take 2 leaving 3 and you win, but if they take 2 on their first go, you take 1 leaving 3 again and you can win.

### Way 3:

The winning strategy is always to reduce the remaining pile to a multiple of three (3, 6, 9, etc.).