

# ROCK, PAPER, SCISSOES

## TAKE COMPETITION WITH YOUR FRIENDS



In this lesson, we will program a micro: bit so we can play Stone, paper, scissors.

### Material requirements:

BBC micro:bit, USB cable, battery for micro:bit, computer with an access to Internet

We are going to work in an online environment [makecode.microbit.org](http://makecode.microbit.org)

### Random numbers on micro:bit

The basis of the electronic tool for the game Rock, paper, scissors is chance – specifically a random selection between rock, paper and scissors. In one of the previous lessons, we have already worked with the generation of random numbers (specifically in the Motion Sensor lesson).

#### GENERATION OF RANDOM NUMBERS

Random numbers on the micro:bit are obtained by the command `pick random 0 to 10` from category `Math`. The range from which the micro:bit selects random numbers can be modified ( for example to select random numbers from 1 to 3).

Since we have 3 different symbols in the game Rock, paper, scissors, our code will randomly generate a number from 1 to 3 when shaken and display the appropriate symbol accordingly. First we will try to generate a random number, store it in the variable `arm` and write it on the micro:bit display (code below). Remember to first create a variable `arm` in the category `Variables`.

```
on shake
  set arm on pick random 1 to 3
  Show number arm
```

Edit and download: <http://makecode.microbit.org/CbUcyz5osWEF>

### Symbols instead of numbers

Although the previous code randomly generates numbers, we would like to display symbols on micro:bit instead. TO do this we will use the command `if then` from the category `Logic`, which will turn the numbers into images, specifically: Display paper at number 1. Display a stone at number 2. Display scissors at number 3.

- Display paper at number 1
- Display rock at number 2
- Display scissors at number 3

```
on shake
  set arm on pick random 1 to 3
  if arm = 1 then
    Show leds
  else if arm = 2 then
    Show leds
  else
    Show leds
```

Edit and download: <http://makecode.microbit.org/bWMKT2TKR1Tz>

## ADDING A COUNTER

We have already micro:bit programmed, but there is a way to improve the program – by adding a win counter. We could use it in a competition with classmates or friends. How does such a counter work? At the beginning micro:bit sets the **wins** variable to zero. Each time we win a Rock, paper, scissors game we press the button A, which will give us a point. If we would like to display the current number of points, press the B button. On the right you will find the completed program.

How to reset the counter? Press the RESET button on the back of the device.

### YOU CAN PLAY THE COMPETITION IN SEVERAL WAYS

- Players will find an opponent and play a game. The player who loses drops out. The player who wins adds the win to the micro:bit by pressing the A button and finds another opponent who has not yet dropped out for the next game. The game ends when only the last player remains, but the winner must have the highest number of wins.
- Players in a given time interval (for example 1 minute) have the task to win as many games with as many teammates as possible. In this game you cannot drop out, but you cannot play with the same teammate more than one time. The winner is a player who has the most wins.

Since we are all fair in the competition, we only add points if we really win.

```
On start
  Set wins on 0

When button A pressed
  change wins by 1

When button B pressed
  on shake
  set arm on pick random 1 to 3
  if arm = 1 then
    Show leds
  Else if arm = 2 then
    Show leds
  else
    Show leds
```

Edit and download: <http://makecode.microbit.org/h5AXtUieqWwq>