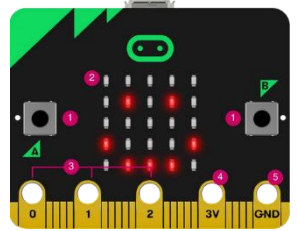# Year 7 Microbits - Rocket Ship Stability

Although you are not in school and we can't use the actual BBC microbits we can still do some coding using the web site simulator.
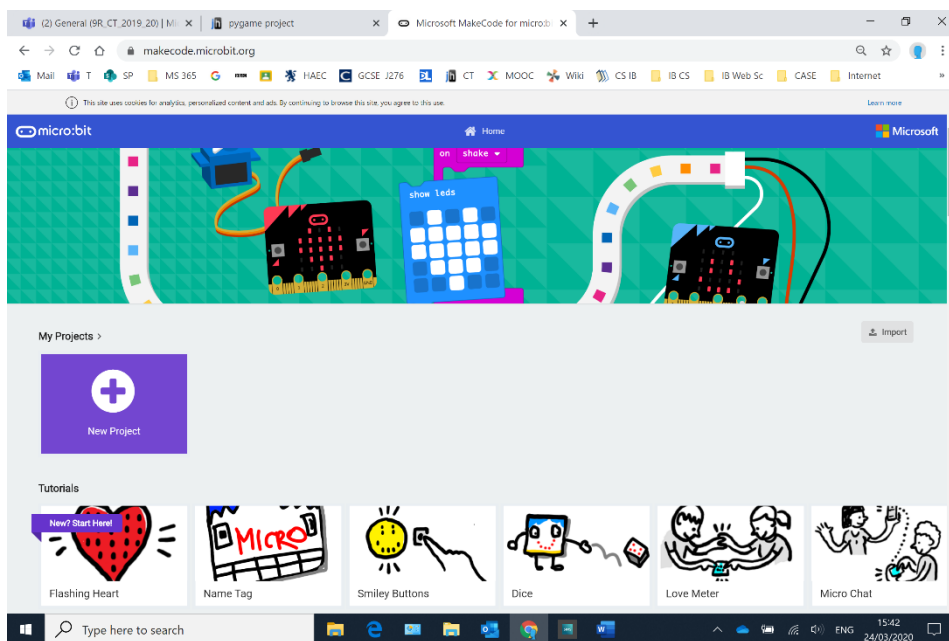
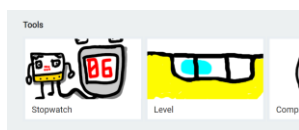## Getting started.

Go to the following website:

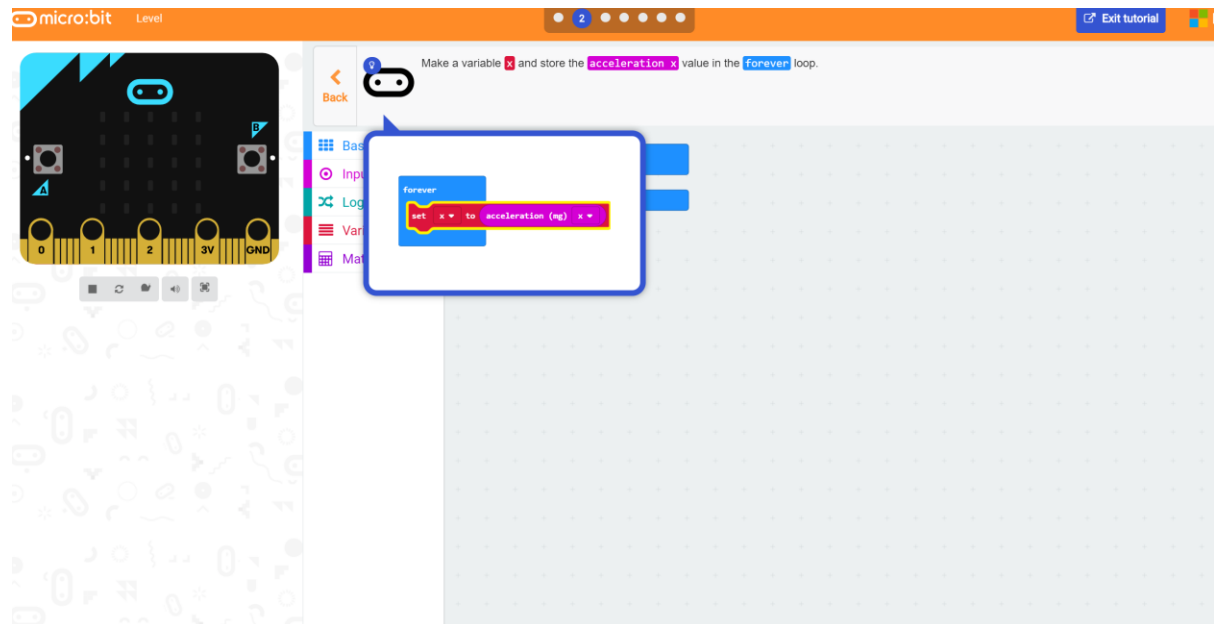https://microbit.org/code/

Click on the MakeCode editor button.

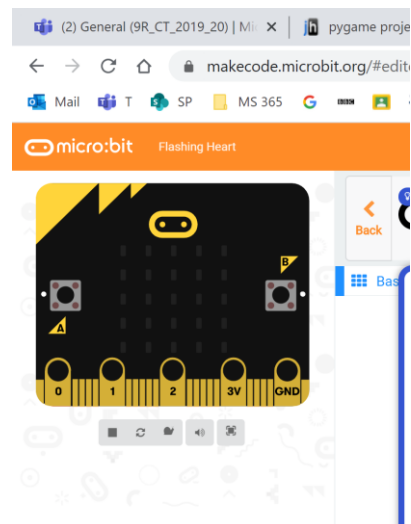You should see this ….

Start by scrolling down and clicking the 'Level 'tutorial.

You should see this

Follow the instructions to create the program.

The simulator (above) allows you to run the program as though you had a microbit with you.

Rocket ship stability.

The idea here is to create a program for the microbit that shows whether the rocket is level or not using pitch and roll.
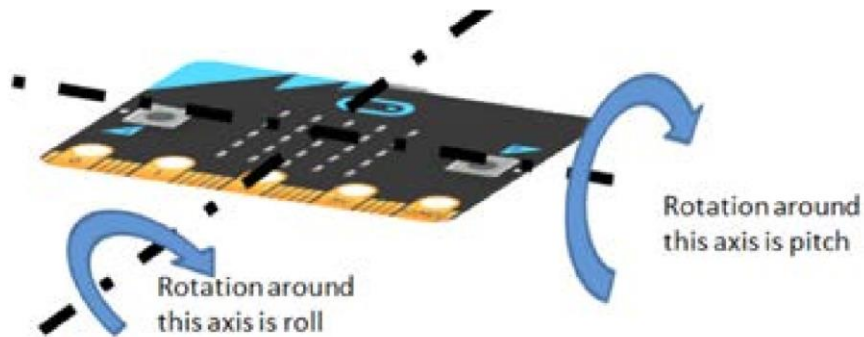
Create a new program and add the following code.

You will need to create a variable for PITCH and ROLL.

Full code is on the following page. (Be careful with the '-' values).

Look at the 'Rocket Ship Stability' video to see how it should work when complete.

```
forever
  set PITCH ▼ to rotation (°) pitch ▼
  set ROLL ▼ to rotation (°) roll ▼
  if  PITCH ▼  = ▼  0  then
    show leds
    [. . . . .]
    [. . . . .]
    [■ ■ ■ ■ ■]
    [■ ■ ■ ■ ■]
    [■ ■ ■ ■ ■]
  ⊕
  if  PITCH ▼ ≥ ▼ 20  and ▼  PITCH ▼ < ▼ 40  then
    show leds
    [. . . . .]
    [. . . . .]
    [■ ■ ■ ■ ■]
    [. . ■ . .]
    [. . ■ . .]
  ⊕
  if  PITCH ▼ ≥ ▼ 40  and ▼  PITCH ▼ < ▼ 60  then
    show leds
    [. . . . .]
    [. . . . .]
    [. . . . .]
    [■ ■ ■ ■ .]
    [. ■ ■ . .]
  ⊕
  if  PITCH ▼ ≥ ▼ 60  and ▼  PITCH ▼ < ▼ 90  then
    show leds
    [. . . . .]
    [. . . . .]
    [. . . . .]
    [. . . . .]
    [■ ■ ■ ■ .]
  ⊕
  if  PITCH ▼ < ▼ 0  and ▼  PITCH ▼ > ▼ -40  then
    show leds
    [. ■ . . .]
    [. ■ ■ . .]
    [■ ■ ■ . .]
    [. . . . .]
    [. . . . .]
  ⊕
  if  PITCH ▼ ≤ ▼ -40  and ▼  PITCH ▼ > ▼ -60  then
    show leds
    [. ■ ■ ■ .]
    [. . ■ . .]
    [. . . . .]
    [. . . . .]
    [. . . . .]
  ⊕
  if  PITCH ▼ ≤ ▼ -60  and ▼  PITCH ▼ > ▼ -90  then
    show leds
    [■ ■ ■ ■ .]
    [. . . . .]
    [. . . . .]
    [. . . . .]
    [. . . . .]
  ⊕
```
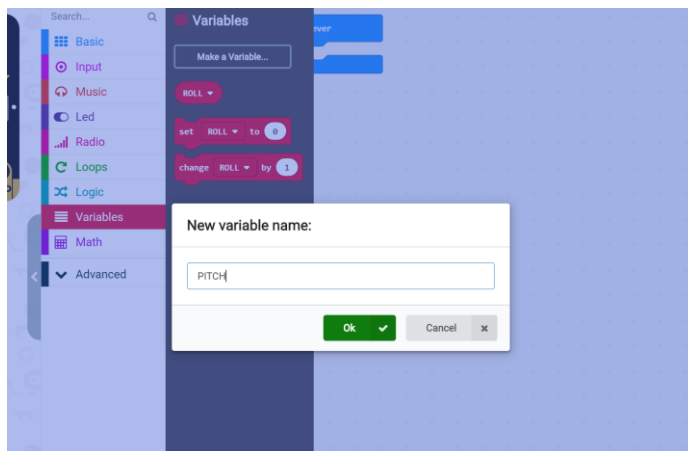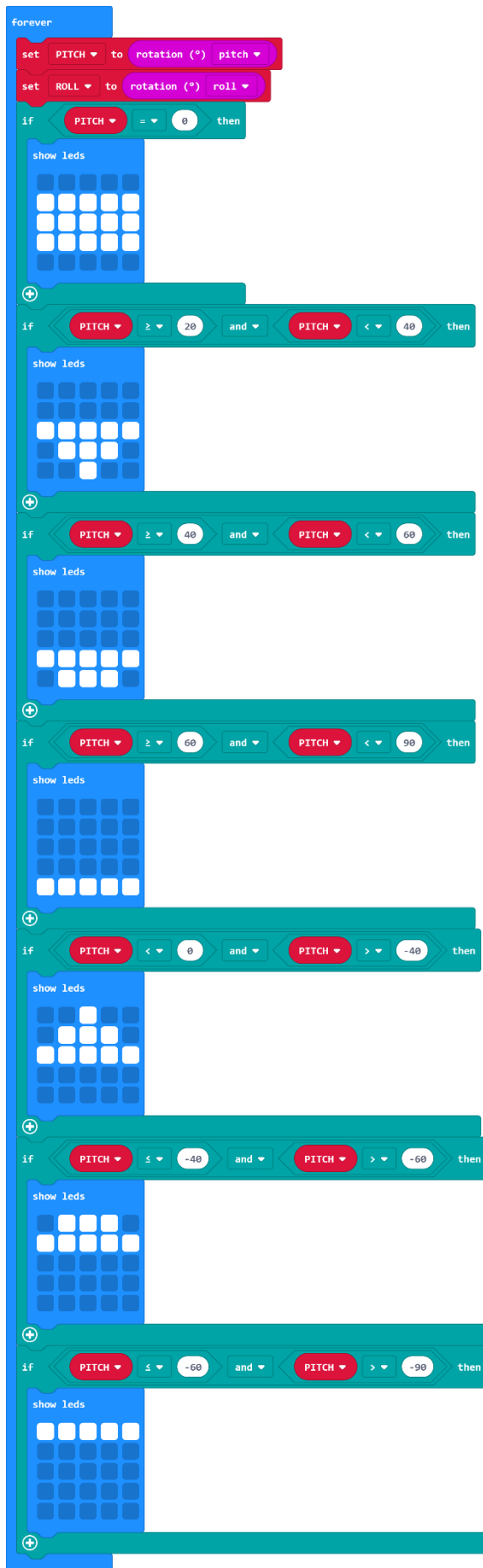
Extension task.

Now try to do the same for PITCH.