

## **SPIRALS BY Mblock Based on Scratch**

**Teacher Norma Lisa Neiman (IT)**

### **SPIRALS BY Mblock Based on Scratch**

**LESSON PLAN:** 9<sup>th</sup> grade Students - 13-14 years old

**SUBJECT:** embedding coding triangles properties to art.

**LESSON IDEA** Equilateral triangle Art

<http://eisforexplore.blogspot.com/2013/04/spiral-triangles.html>

given by Monika **Monika Schwarze**

and past lesson plan spiral by construction

#### **AIMS:**

- Development Environment Mblock Based on Scratch cross curriculum with IT
- Coding by blocks
- Iteration
- Cartesian plane
- Reasoning on equilateral triangles
- Reasoning on the Pythagorean Theorem
- Using properties of equilateral triangles
- Investigating on the angles in rotation and motion
- Using properties of equilateral triangles to create an art outcome

#### **PROCESS:**

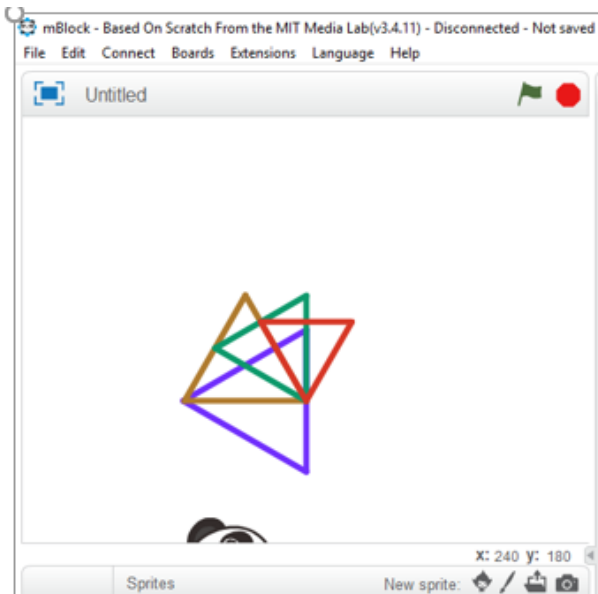
1. We investigated the Development Environment Mblock based on Scratch
2. We programmed coding by blocks and using scripts from Event, Motion, Pen and Control after reasoning on the cartesian plot, concept of angles and motion, segments and motion, properties of equilateral triangles, relation between height and side
3. We investigated on the iteration repeat
4. Coding by block and programming an avatar that moves and designs the equilateral spiral.
5. The students uploaded their work on easyclass at the end of their assignment

## Video Tutorial – Spiral mBlock Based on Scratch

<https://youtu.be/vnwerpXoav4>


### OUTCOMES

Alessandro Barriga



```
when green flag clicked
  go to x: 0 y: 0
  clear
  set pen color to purple
  set pen size to 5
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to green
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 103 steps
    turn 120 degrees
  set pen color to red
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 89 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to blue
  set pen size to 5
  pen down
  repeat 3
    move 77 steps
    turn 120 degrees
  pen up
  go to x: -31 y: -237
```

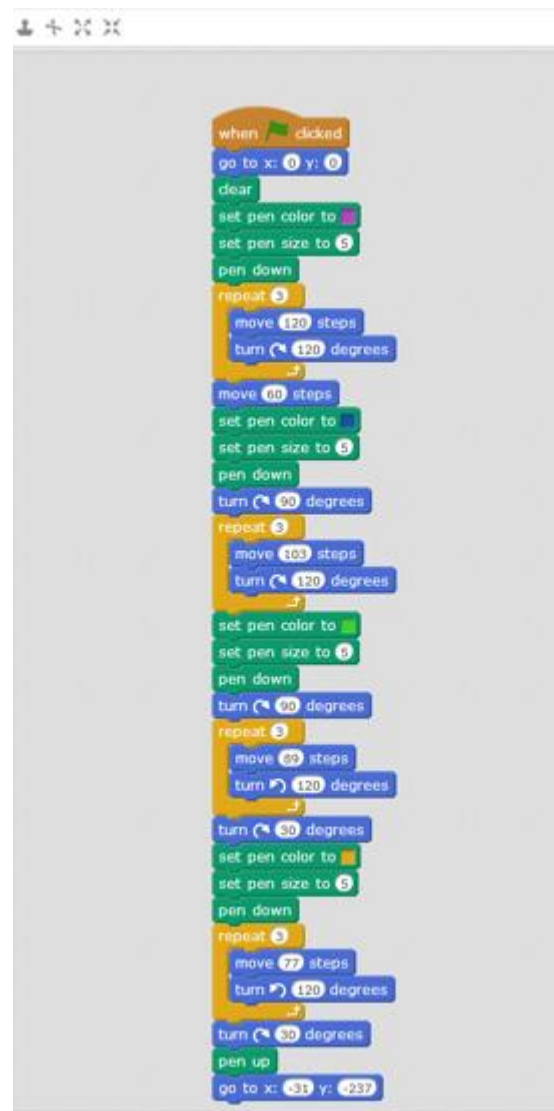
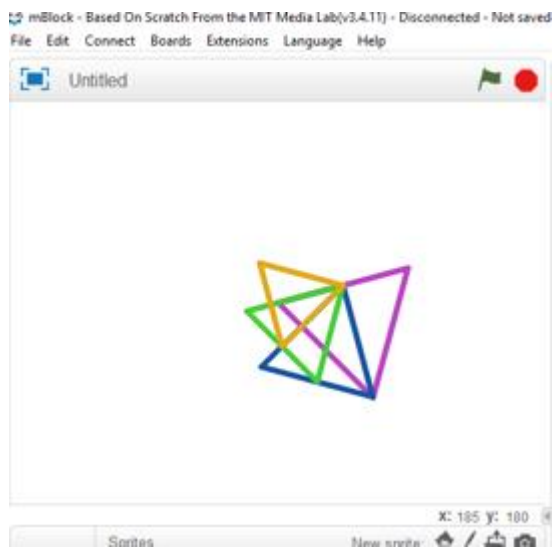
Alexandru Trifan



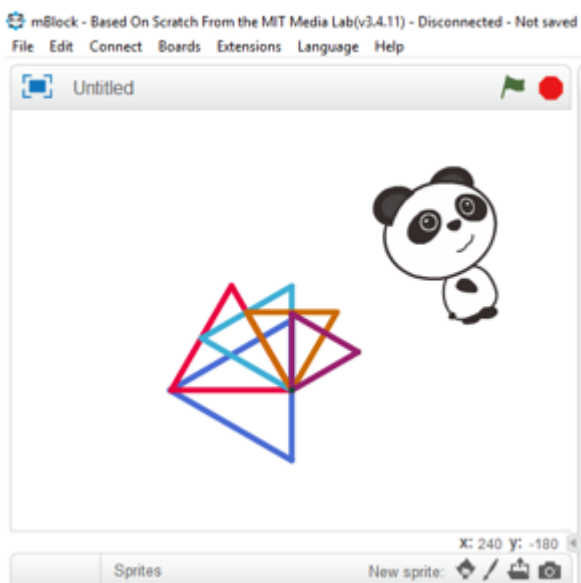
The screenshot shows a Scratch project window titled "Spiral by MBlock based on Scratch". The stage contains a panda character and a colorful spiral drawing composed of overlapping triangles in shades of green, yellow, and blue. The script editor on the right contains the following code:

```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to green
  set pen size to 5
  pen down
  repeat 6
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to yellow
  set pen size to 6
  pen down
  turn 90 degrees
  repeat 6
    move 100 steps
    turn 120 degrees
  set pen color to light green
  set pen size to 7
  pen down
  turn 90 degrees
  repeat 6
    move 80 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to blue
  set pen size to 8
  pen down
  repeat 6
    move 70 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to light blue
  set pen size to 9
  pen down
  repeat 6
    move 60 steps
    turn 120 degrees
```

## Gabriel Zapata

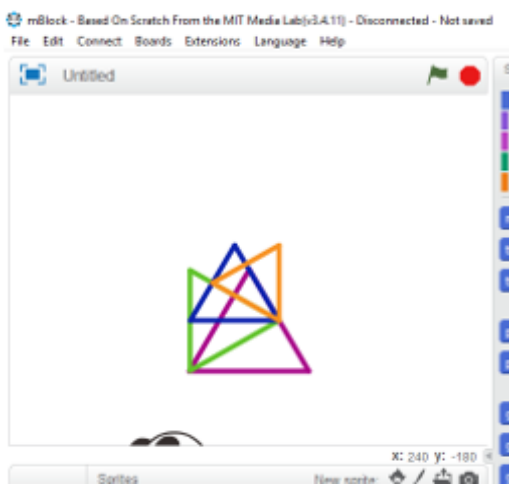


## Accolla Edoardo Nervi



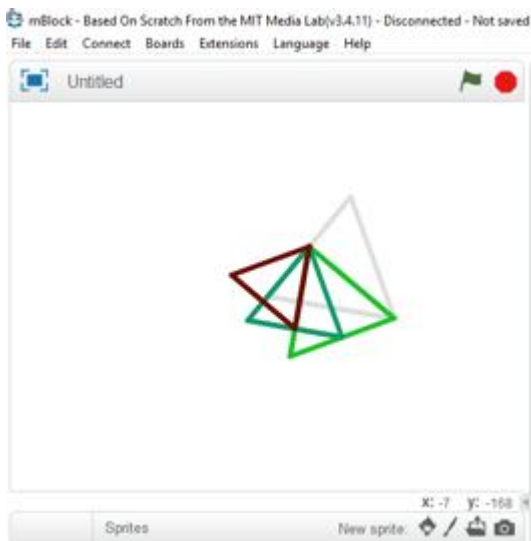
```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to blue
  set pen size to 2
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to red
  set pen size to 2
  pen down
  turn 60 degrees
  repeat 3
    move 120 steps
    turn 120 degrees
  set pen color to green
  set pen size to 2
  pen down
  turn 60 degrees
  repeat 3
    move 60 steps
    turn 120 degrees
  turn 60 degrees
  set pen color to orange
  set pen size to 2
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to purple
  set pen size to 2
  pen down
  repeat 3
    move 65.45 steps
    turn 120 degrees
  turn 75 degrees
  set pen color to blue
  set pen size to 2
  pen down
  repeat 3
```

Francesco Civita



```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to red
  set pen size to 5
  pen down
  repeat 1
    move 120 steps
    turn 60 degrees
  move 60 steps
  set pen color to green
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 100 steps
    turn 120 degrees
  set pen color to blue
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 1
    move 60 steps
    turn 120 degrees
  turn 60 degrees
  set pen color to orange
  set pen size to 5
  pen down
  repeat 3
    move 77 steps
    turn 120 degrees
  pen up
  go to x: 211 y: 227
```

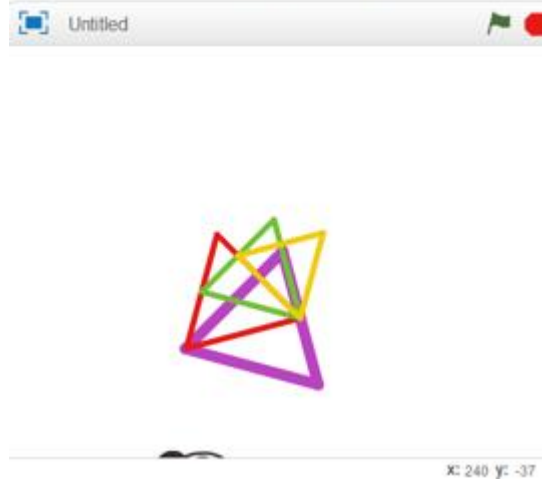
## Frank Angeles



```
when green flag clicked
  go to x: 0 y: 0
  clear
  set pen color to white
  set pen size to 5
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to green
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 103 steps
    turn 120 degrees
  set pen color to red
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 89 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to white
  set pen size to 5
  pen down
  repeat 3
```

Ion Cristian Sutescu

mBlock - Based On Scratch From the MIT Media Lab(v3.4.11) - Disconnected - Not sa  
File Edit Connect Boards Extensions Language Help



```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to #
  change pen size by 5
  pen down
  repeat 4
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to #
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 100 steps
    turn 120 degrees
  set pen color to #
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 60 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to #
  set pen size to 5
  pen down
  repeat 3
    move 27 steps
    turn 120 degrees
  pen up
  go to x: -31 y: -237
```



Gabriele Lazzari

Spiral My block based on Scratch GABRIELE LAZ



x: -124 y: 180

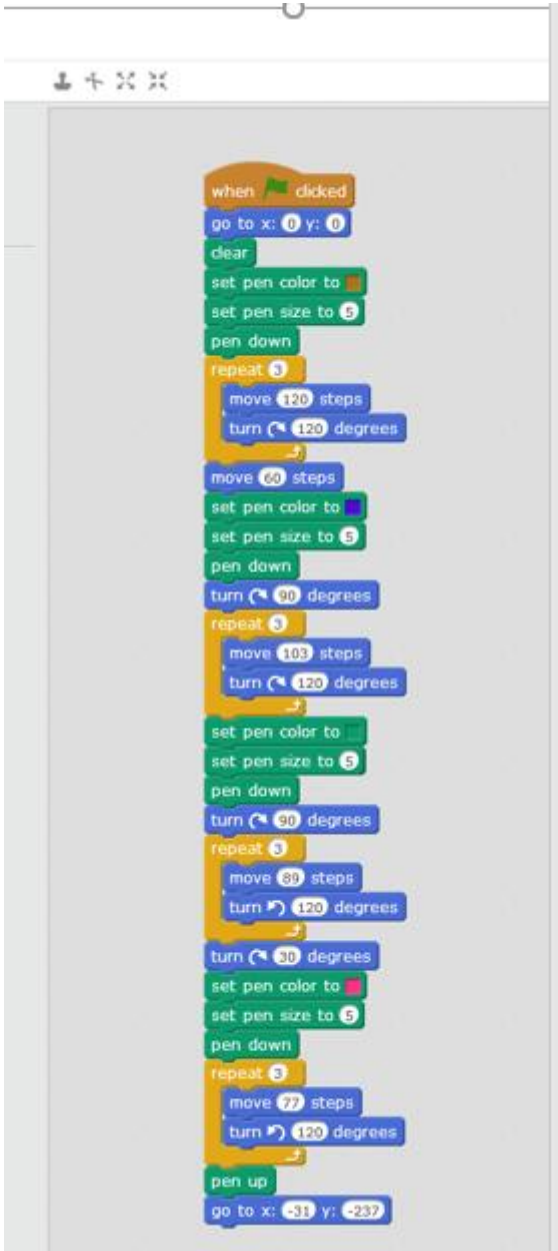
```
when green flag clicked
  go to x: 0 y: 0
  clear
  set pen color to purple
  set pen size to 5
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to blue
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 103 steps
    turn 120 degrees
  set pen color to green
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 89 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to cyan
  set pen size to 5
  pen down
  repeat 3
    move 77 steps
    turn 120 degrees
  turn 15 degrees
  set pen color to light blue
  set pen size to 5
  pen down
  repeat 3
    move 65.45 steps
    turn 120 degrees
  turn 7.5 degrees
  set pen color to pink
  set pen size to 5
  pen down
  repeat 3
```

# Jacopo Bove

mBlock - Based On Scratch From the MIT Media Lab(v3.4.11) - Disconnected - Not saved  
File Edit Connect Boards Extensions Language Help



```
when clicked
go to x: 0 y: 0
clear
set pen color to blue
set pen size to 5
pen down
repeat 3
  move 120 steps
  turn 120 degrees
move 60 steps
set pen color to red
set pen size to 5
pen down
turn 90 degrees
repeat 3
  move 103 steps
  turn 120 degrees
set pen color to green
set pen size to 5
pen down
turn 90 degrees
repeat 3
  move 89 steps
  turn 120 degrees
turn 90 degrees
set pen color to yellow
set pen size to 5
pen down
repeat 3
  move 77 steps
  turn 120 degrees
pen up
go to x: -31 y: -237
```



```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to blue
  set pen size to 5
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 50 steps
  set pen color to purple
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 103 steps
    turn 120 degrees
  set pen color to green
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 89 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to red
  set pen size to 5
  pen down
  repeat 3
    move 77 steps
    turn 120 degrees
  pen up
  go to x: -31 y: -237
```

The image shows a Scratch script for drawing a star-like shape with four arms. The script starts with a 'when clicked' event, followed by 'go to x: 0 y: 0', 'clear', 'set pen color to blue', 'set pen size to 5', and 'pen down'. It then enters a loop of three 'move 120 steps' and 'turn 120 degrees' blocks. After the loop, it moves 50 steps, sets the pen color to purple, pen size to 5, and pen down. It then turns 90 degrees and enters another loop of three 'move 103 steps' and 'turn 120 degrees' blocks. Next, it sets the pen color to green, pen size to 5, and pen down, turns 90 degrees, and enters a loop of three 'move 89 steps' and 'turn 120 degrees' blocks. It then turns 30 degrees, sets the pen color to red, pen size to 5, and pen down, and enters a final loop of three 'move 77 steps' and 'turn 120 degrees' blocks. The script ends with 'pen up' and 'go to x: -31 y: -237'.

# Matteo Minella

mBlock - Based On Scratch From the MIT Media Lab(v3.4.11) - Disconnected - Not sav  
File Edit Connect Boards Extensions Language Help

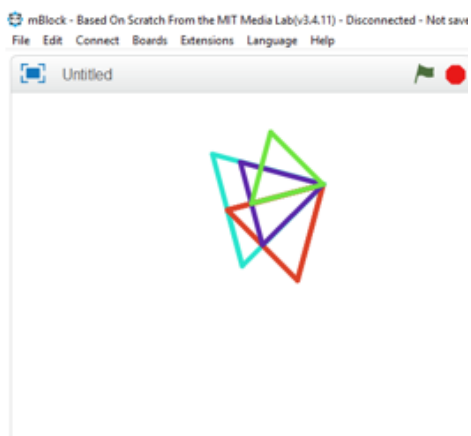
spiral by Mblock based on scratch



x: -140 y: 72  
Sprites New sprite

```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to yellow
  set pen size to 2
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 50 steps
  set pen color to green
  set pen size to 2
  pen down
  turn 90 degrees
  repeat 3
    move 100 steps
    turn 120 degrees
  set pen color to blue
  set pen size to 2
  pen down
  turn 90 degrees
  repeat 2
    move 80 steps
    turn 120 degrees
  turn 90 degrees
  set pen color to purple
  set pen size to 2
  pen down
  repeat 2
    move 70 steps
    turn 120 degrees
  turn 90 degrees
  set pen color to yellow
  set pen size to 2
  pen down
  repeat 2
    move 65.45 steps
    turn 120 degrees
```

De Los Reyes Rhenz Zedrick



```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to cyan
  set pen size to 3
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to purple
  set pen size to 3
  pen down
  turn 90 degrees
  repeat 10
    move 103 steps
    turn 120 degrees
  set pen color to green
  set pen size to 3
  pen down
  turn 90 degrees
  repeat 3
    move 89 steps
    turn 120 degrees
  turn 30 degrees
  set pen color to red
  set pen size to 3
  pen down
  repeat 3
    move 77 steps
    turn 120 degrees
  pen up
  go to x: -31 y: -237
```

Sebastiano Coco



```
when clicked
  go to x: 0 y: 0
  clear
  set pen color to blue
  set pen size to 5
  pen down
  repeat 3
    move 120 steps
    turn 120 degrees
  move 60 steps
  set pen color to red
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 103 steps
    turn 120 degrees
  set pen color to green
  set pen size to 5
  pen down
  turn 90 degrees
  repeat 3
    move 80 steps
    turn 120 degrees
  turn 90 degrees
  set pen color to purple
  set pen size to 5
  pen down
  repeat 3
    move 77 steps
    turn 120 degrees
  pen up
  go to x: -31 y: -237
```

