

SCENARIO		
<b>Title</b>	<b>Drawing circles in Scratch</b>	
<b>Summary</b>	Students will be introduced to the rules of drawing circles. They will remind you what a circle is and what its properties are.	
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Didactic objectives		
<b>General objectives:</b> - reminder of general information about the circle, what is a full angle - drawing in Scratch <b>Detailed objectives:</b> - using a pen in Scratch - use the repeat function in Scratch		
Physics <input type="checkbox"/>	Mathematics <input checked="" type="checkbox"/>	Information Technology <input checked="" type="checkbox"/> Robotics <input type="checkbox"/> Programming <input checked="" type="checkbox"/>
Education Level:	10-12 years <input checked="" type="checkbox"/>	12-14 years <input type="checkbox"/>
Problem Statement		
What is a circle? How many degrees is a full angle and what is it? How do I use the repeat function in Scratch? How do I use the Pen tool in Scratch?		
BOM (Bill Of Materials needed)		
- computer for each student - Scratch environment installed - multimedia board with a projector for presentation - Internet access		
Activity description		
The scenario is planned for 3 lessons. <b>Course of classes:</b> <ol style="list-style-type: none"> <li>1. Organization in the classroom, assigning computer workstations to students, creating a folder on the computer disk for saving projects named student's name_class, for example Adam_IIA.</li> <li>2. Remind of information about the district. What is it, what are its properties. What is a full angle.</li> <li>3. Exercise 1 – Circle               <ol style="list-style-type: none"> <li>a. background select,</li> <li>b. sprite select,</li> <li>c. adding a pen extension to Scratch,</li> </ol> </li> </ol>		

- d. creating an algorithm using a pen of any color,
  - e. pay attention to the sprite rotation angle to make the drawing as accurate as possible..
  - f. project should be saved as project1.
4. Exercise 2 – Multiple circles. Rosette.
- a. background select,
  - b. sprite select,
  - c. adding a pen extension to Scratch,
  - d. reating an algorithm using a pen of any color with an indication of a color change after rotation,
  - e. pay attention to how many degrees the sprite should rotate on each successive circle to draw a rosette,
  - f. project should be saved as project2.
5. Summary of the classes. Self-evaluation of students.

### Resources

#### One circle – exercise 1


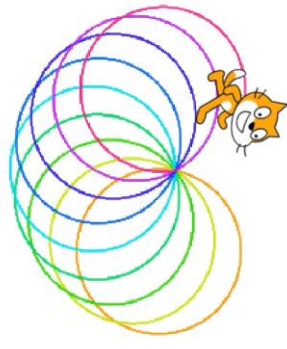
```

when green flag clicked
  show
  erase all
  set pen color to orange
  pen down
  repeat 360
    move 1 steps
    turn 1 degrees
  stop all
  
```

#### More circles – exercise 2

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when green flag clicked
  show
  erase all
  set pen color to orange
  pen down
  repeat 20
    repeat 360
      move 1 steps
      turn 1 degrees
    turn 20 degrees
    change pen color by 10
  stop all
  
```

 <p>Video – exercise 1</p>	 <p>Video – exercise 2</p>
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### Students' Evaluation

#### Evaluation tools:

- observation of students' work and their activities,
- students' self-assessment - what I have learned, what I can, what I would like to know, what algorithm I can create,
- program feasibility.

### Bibliography

<https://scratch.mit.edu/>

R. Kulesza, S. Langa, D. Leśniakiewicz, P. Pełka „Młodzi giganci programowania. Scratch” wyd. Helion

### Scalability

For students with a higher level of advancement, an exercise suggestion may be to load the radius length from the keyboard and draw a circle with a given radius.

### More information

Scenario was created as part of the project "InnoExperiment - Innovative Approach to Teaching through Experiment" carried out under Key Action 2. Erasmus +. The scenario will be made available on the project platform.

„InnoExperiment – Innovative Approach to Teaching through Experiment”

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