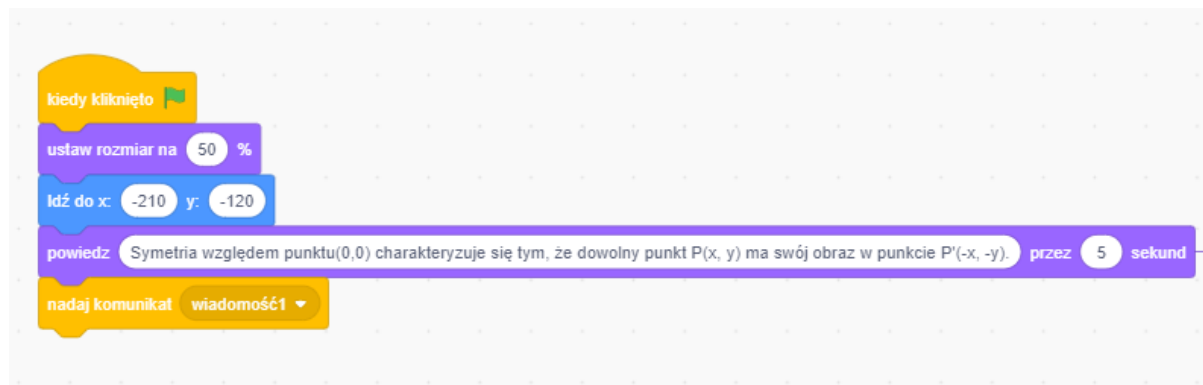


SCENARIO		
<b>Title</b>	Symmetry relative to the point (0,0)	
<b>Summary</b>	Recognition of symmetrical figures relative to point (0,0) Recognition of mid-symmetric figures	
<b>Author/s</b>	Renata Jasińska, Alicja Radziwon	Date: 07/12/2019

Didactic objectives		
Pupil: <ul style="list-style-type: none"> <li>• recognizes symmetrical shapes;</li> <li>• draws a figure (point, segment, circle) symmetrical to a given one with respect to the point;</li> <li>• indicates the center of symmetry of center-symmetric figures;</li> <li>• draws a figure (eg a triangle, trapezoid) symmetrical to a given point;</li> <li>• determines the coordinates of points symmetrical to the data in relation to the origin of the coordinate system.</li> </ul> recognizes center-symmetric shapes and indicates their centers of symmetry.		
Physics <input type="checkbox"/> Mathematics <input checked="" type="checkbox"/> Information <input type="checkbox"/> Technology <input type="checkbox"/> Robotics <input type="checkbox"/> Programming <input type="checkbox"/>		
Education Level:                      10-12years <input type="checkbox"/> 12-14years <input checked="" type="checkbox"/>		
Problem Statement		
What is the center of symmetry? Where is? Which figures have a center of symmetry? How are the figures symmetrical about the point?		
BOM (Bill Of Materials needed)		
Computer workstations, scratch software  Posters with figures symmetrical about point (0,0)		
Activity description		
<ol style="list-style-type: none"> <li>1. Organizational activities</li> <li>2. We shape the concept of figures symmetrical in relation to a point and organize classes so that students notice the properties of points symmetrical in relation to a point.</li> <li>3. we discuss examples of symmetrical figures relative to a point - various examples can be used</li> <li>4. We develop the ability to recognize figures symmetrical about a point and draw such figures.</li> <li>5. We try to guide students to discover the relationship between the coordinates of symmetrical points relative to the origin of the coordinate system and to apply this relationship in tasks</li> <li>6. Work with the scratch program - figures symmetrical to the point (0,0) and kaleidoscope.</li> <li>7. Summary</li> </ol>		

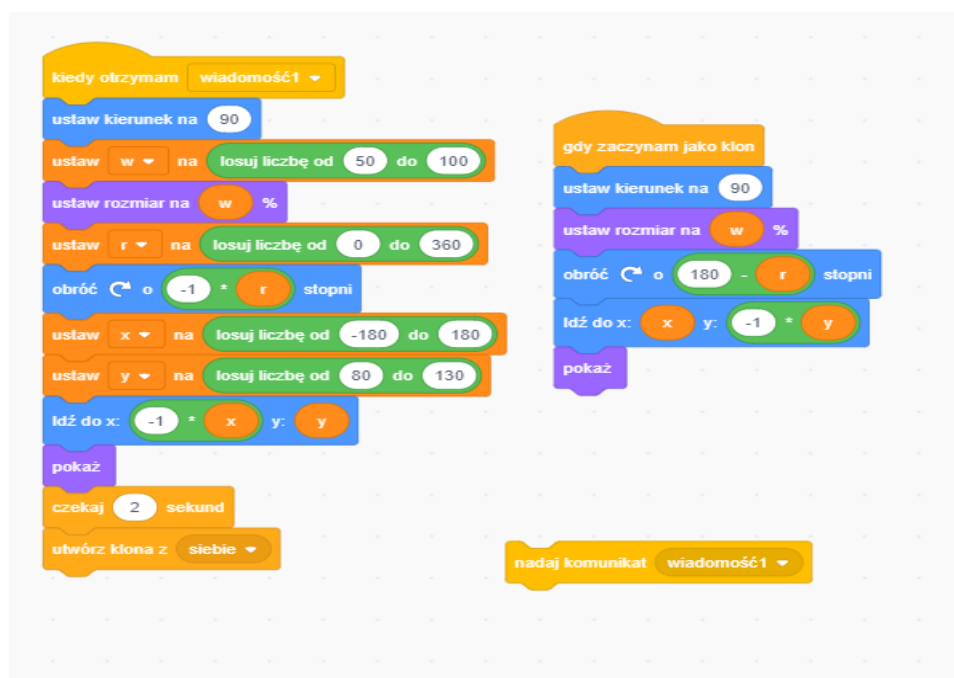
## Sample script and the appearance of the scene

ABBY Script- the first sprite

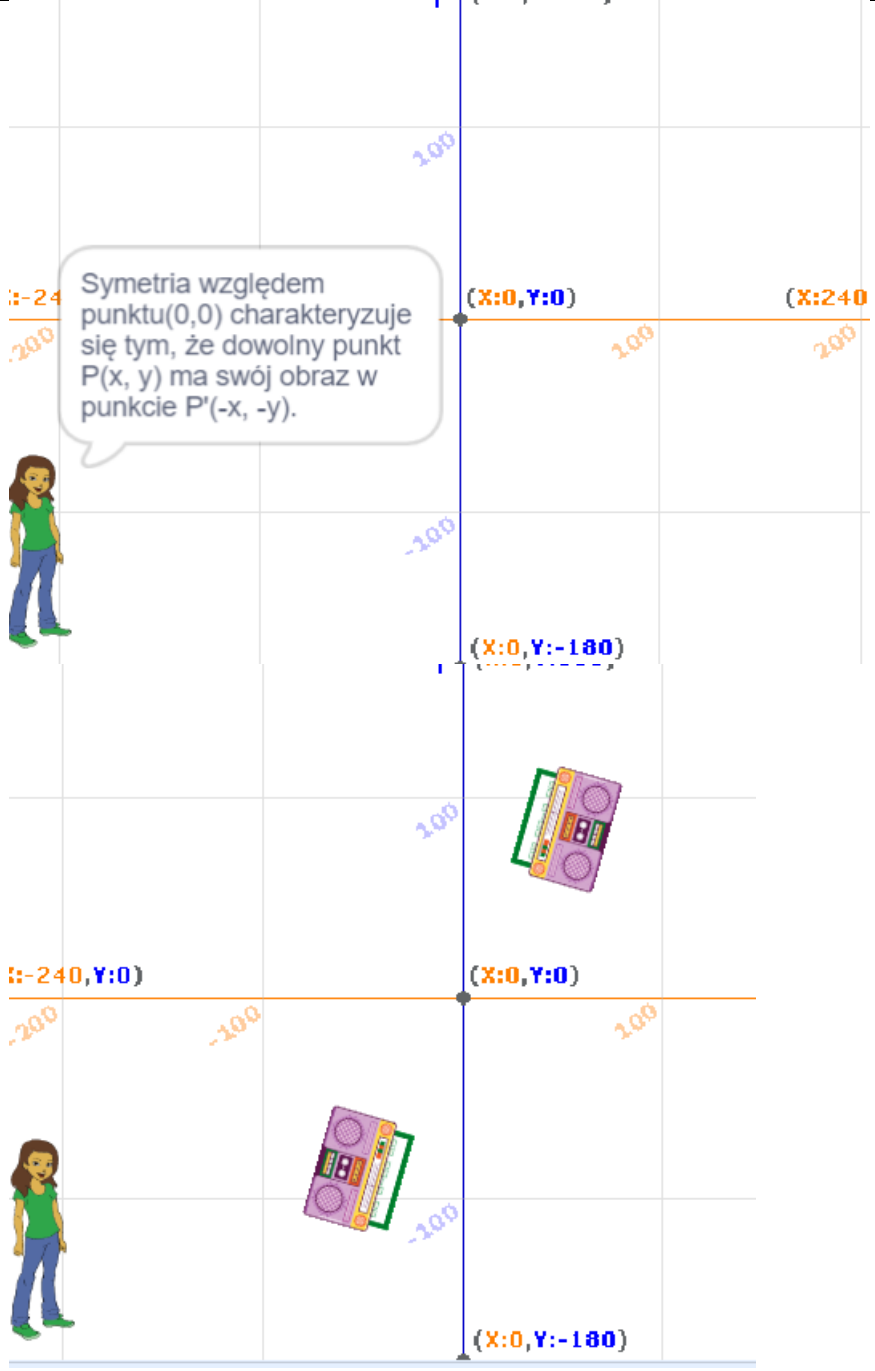


A Scratch script for the first sprite. It starts with a yellow 'kiedy kliknięto' block, followed by a purple 'ustaw rozmiar na 50 %' block, a blue 'Idź do x: -210 y: -120' block, a purple 'powiedz Symetria względem punktu(0,0) charakteryzuje się tym, że dowolny punkt P(x, y) ma swój obraz w punkcie P'(-x, -y). przez 5 sekund' block, and finally a yellow 'nadaj komunikat wiadomość1' block.

The second sprite radio script



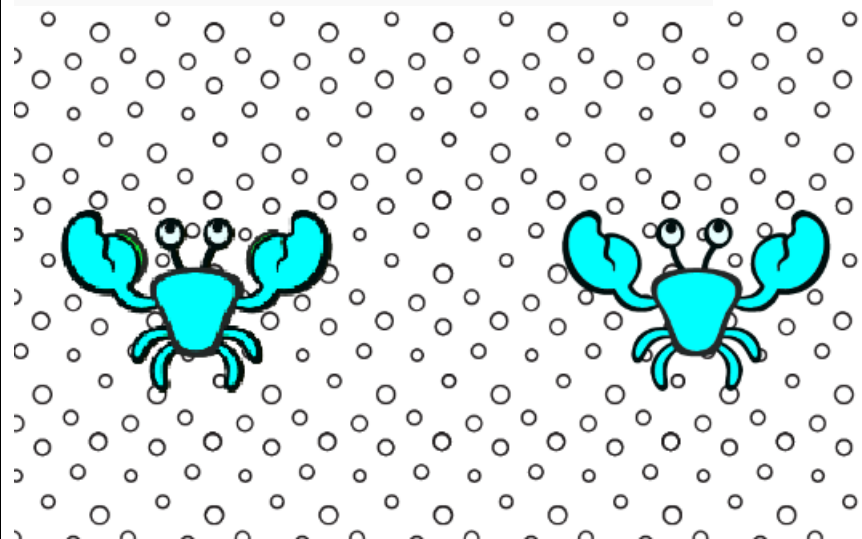
A Scratch script for the second sprite, consisting of two separate scripts. The first script starts with a yellow 'kiedy otrzymam wiadomość1' block, followed by a blue 'ustaw kierunek na 90' block, an orange 'ustaw w na losuj liczbę od 50 do 100' block, a purple 'ustaw rozmiar na w %' block, an orange 'ustaw r na losuj liczbę od 0 do 360' block, a blue 'obróć o -1 \* r stopni' block, an orange 'ustaw x na losuj liczbę od -180 do 180' block, an orange 'ustaw y na losuj liczbę od 80 do 130' block, a blue 'Idź do x: -1 \* x y: y' block, a purple 'pokaż' block, an orange 'czekaj 2 sekund' block, and an orange 'utwórz kłona z siebie' block. The second script starts with a yellow 'gdy zaczynam jako kłona' block, followed by a blue 'ustaw kierunek na 90' block, a purple 'ustaw rozmiar na w %' block, a blue 'obróć o 180 - r stopni' block, a blue 'Idź do x: x y: -1 \* y' block, a purple 'pokaż' block, and finally a yellow 'nadaj komunikat wiadomość1' block.



or some other script

```

kiedy kliknięto
  Idź do x: 0 y: 0
  wyczyść wszystko
  zawsze
    czekaj aż kliknięto myszką?
    zmień efekt color o 15
    Idź do x: x myszy y: y myszy
    Stempluj
    Idź do x: -1 * x myszy y: y myszy
    Stempluj
    Idź do x: x myszy y: -1 * y myszy
    Stempluj
    Idź do x: -1 * x myszy y: -1 * y myszy
    Stempluj
  
```



### Resources

Posters, photos, various paintings, patterns - nature, architecture, art

### Students' Evaluation

Commitment to work, activity, accuracy of work performed.

### Bibliography

Available mathematics school textbooks, workbooks, task sets. Just those with whom the class works

### **Scalability**

Describing the position of objects in relation to each other. Reading the coordinates of points.

### **More information**

You can extend the scratch program by determining the surface area of the solid or counting the volume.