SCENARIO		
Title	Symmetry in a coordinate system	
Summary	Students recognize the properties of symmetrical points relative to a straight line and can mark such points and figures, determine the coordinates of symmetrical points to data relative to the axis of the coordinate system.	
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Didactic objectives
Lesson objectives Pupil: • recognizes axisymmetric figures; • draws a figure (point, segment, circle) symmetrical to the given relative to the straight; • indicates the axes of symmetry of the axisymmetric figures; • draws a figure (eg triangle, trapezoid) symmetrical to the given relative to the straight; • determines the coordinates of points symmetrical to the data relative to the coordinate system axis.
Physics☐　　Mathematics☒　　Information☐　　Technology☐　　Robotics☐　　Programming☐
Education Level:　　　　10-12years☐　　　　12-14years☒
Problem Statement
Where is the point, the figure symmetrical in relation to the straight line? What is the relationship of symmetrical points with respect to the axis of the coordinate system?
BOM (Bill Of Materials needed)
Computer workstations, scratch software
Activity description
1. Organizational activities 2. Shaping the concept of symmetrical figures: we organize classes so that students notice the properties of symmetrical points relative to a straight line and can mark such points (we show relevant boards, photos) 3. Drawing figures symmetrical in relation to the straight line - independent work 4. Work in the scratch program - inserting different sprites - observing their transformations. 5.Summary **Sample script and the appearance of the scene** First sprite script

```
kiedy kliknięto ⚑
ustaw rozmiar na 50 %
Idź do x: -210 y: -120
powiedz Symetria względem osi Ox charakteryzuje się tym, że dowolny punkt P(x, y) ma swój obraz w punkcie P'(x, -y). przez 5 sekund
nadaj komunikat wiadomość1 ▾
```
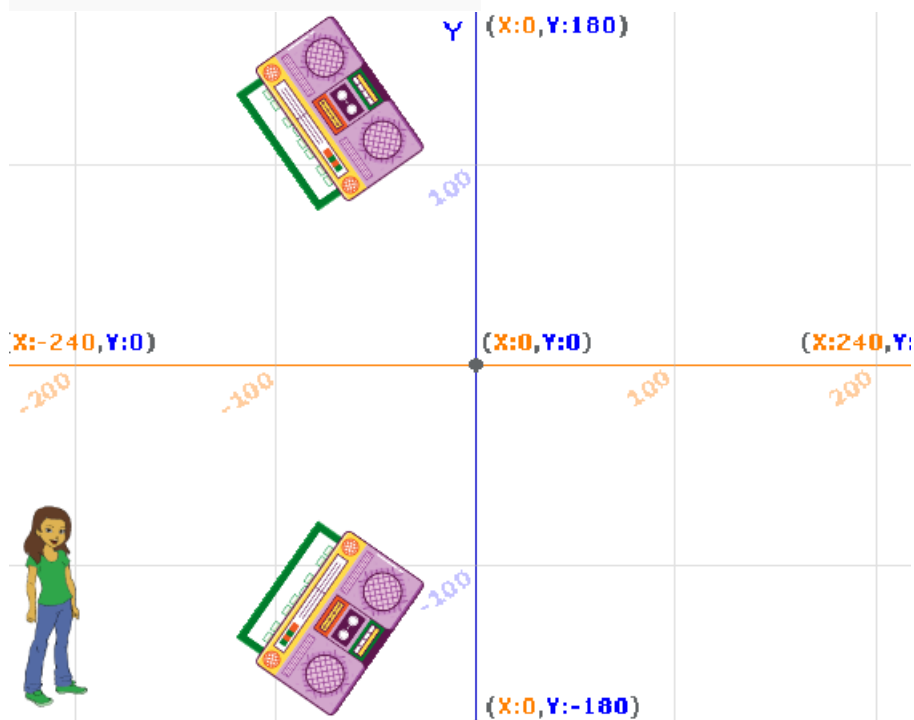
Second sprite script

```
kiedy kliknięto ⚑
ukryj
```

```
kiedy otrzymam wiadomość1 ▾
ustaw kierunek na 90
ustaw w ▾ na losuj liczbę od 50 do 100
ustaw rozmiar na w %
ustaw r ▾ na losuj liczbę od 0 do 360
obróć ↻ o r stopni
ustaw x ▾ na losuj liczbę od -180 do 180
ustaw y ▾ na losuj liczbę od 80 do 130
Idź do x: x y: y
pokaż
czekaj 2 sekund
utwórz klona z siebie ▾
```

Resources
Coordinate system, cards, ruler, pencil, compass, pictures of symmetrical figures in relation to the straight line.

Students' Evaluation
Correct task performance, drawing accuracy. activity during classes

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

Scalability

Describing the position of objects relative to each other. Reading point coordinates.

More information

Extending the scratch program by adding more sprites. Extension of the scratch program with other polygons. Writing program symmetry about the Y axis.