

SCENARIO	
<b>Title</b>	<b>Light reflection and dispersion</b>
<b>Summary</b>	During the course, students will be introduced with information on the phenomenon of light reflection and scattering. They will know the rule of reflection.
<b>Author/s</b>	Jarosław Szczęsny <span style="float: right;">Date: 15/12/2019</span>

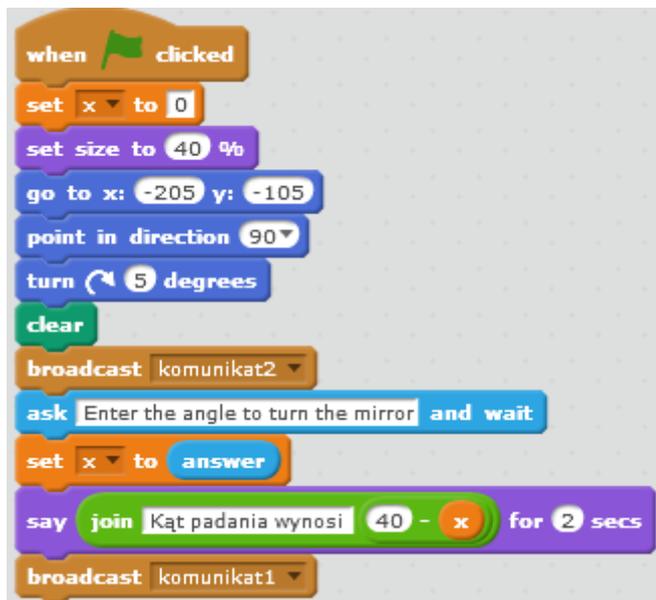
Didactic objectives	
<p><b>General goals:</b></p> <ul style="list-style-type: none"> <li>- introducing the concepts of reflection and dispersion of light.</li> <li>- indication of reflection and dispersion of light in everyday life.</li> </ul> <p><b>Specific lesson goals:</b></p> <ul style="list-style-type: none"> <li>- formulating the rule of reflection,</li> <li>- describing the course and a result of the experiment using the concepts of angle of incidence and reflection angle, explaining the role of used tools and making a diagram of the experimental system,</li> <li>- describing the phenomena of reflection and dispersion of light, giving examples of their occurrence and use.</li> </ul>	
Physics <input checked="" type="checkbox"/> Mathematics <input type="checkbox"/> Information Technology <input type="checkbox"/> Robotics <input type="checkbox"/> Programming <input type="checkbox"/>	
Education Level:            10-12 years <input type="checkbox"/> 12-14 years <input checked="" type="checkbox"/>	
Problem Statement	
What effect does the reflection surface have? What is the relationship between the angle of incidence and reflection?	
BOM (Bill Of Materials needed)	
<ul style="list-style-type: none"> <li>- laser pointer,</li> <li>- mirror,</li> <li>- Screen,</li> <li>- protractor,</li> </ul>	

- computer
- SCRATCH environment installed or internet access

### Activity description

Lesson course:

1. Organizational activities
2. Introduction to the topic - a reminder of the light news.
  - The lecture about when and where to observe the reflection of light.
3. Discussion: What does it mean that we see through the Ligot
4. A demonstration of experience checking how light is reflected.
  - Students will formulate a conclusion about the experience.
  - Slideshow "Reflection and dispersion of light"
5. Introduction of concepts describing the phenomenon of light reflection
  - Introduction of reflection rule.
6. Performing an experiment showing the difference between reflection and light scattering.
  - Introduction of the concept of light scattering.
  - Explain the difference between reflection and light scattering.
7. Brainstorming - students give examples of reflection and dispersion of light from everyday life
8. Simulation in the SCRATCH environment of the reflection phenomenon from the mirror



```
when green flag clicked
  set x to 0
  set size to 40 %
  go to x: -205 y: -105
  point in direction 90
  turn 5 degrees
  clear
  broadcast komunikat2
  ask Enter the angle to turn the mirror and wait
  set x to answer
  say join Kąt padania wynosi 40 - x for 2 secs
  broadcast komunikat1
```



```
when I receive komunikat2
  go to x: 0 y: 140
  point in direction 90

when I receive komunikat1
  turn x degrees
```

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Erasmus+



InnoExperiment

INNOVATIVE APPROACH TO TEACHING THROUGH EXPERIMENT

```

when I receive komunikat1
  go to front
  set size to 20 %
  point in direction 90
  clear
  pen down
  set pen color to yellow
  set pen size to 2
  turn 50 degrees
  wait 1 secs
  forever
    move 10 steps
    if touching color black ? then
      turn 100 + 2 * x degrees
    if touching edge ? then
      pen up
      go to x: -174 y: -71
      say join The reflection angle is 40 - x for 2 secs
      stop all
  
```

9. Solving tasks.

10. Summary of the lesson.

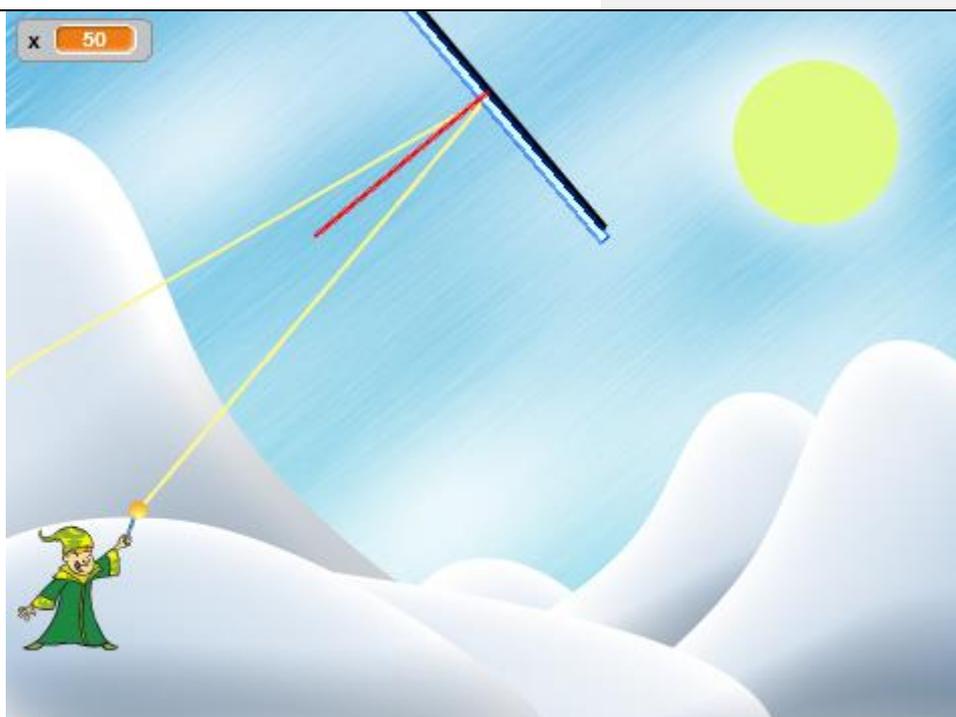
### Resources

- computer stadion
- SCRATCH environment installed or Internet Access

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### Students' Evaluation

The student will be marked for his commitment and the proper performance of the experiments.

### Bibliography

Spotkania z fizyką - Podręcznik do fizyki dla klasy ósmej szkoły podstawowej  
Authors: Grażyna Francuz-Ornat, Teresa Kulawik, Maria Nowotny-Różańska

<https://scratch.mit.edu>

### Scalability

Script modification and improvement.

### More information

Solving tasks using the program.

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