

Ozobot and Transformations

Created by

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Topics

Computer Science

Programming

Mathematics

Ages

Grade 8 but can be
modified for other grades.

Duration

60-80 minutes

Transformations with Ozobots

Essential Question/Summary

In this activity, students will identify the correct static code that simulated the appropriate transformation movement. They had to color the code into the blocks on the worksheet, then copy the codes on the pre-made boards, observe and test their boards, and reflect on their findings.

Prerequisites

Students will have prior knowledge of the transformation mathematical concepts. Also an introduction presentation to the Ozobots would be beneficial.

Grouping

Independently or Small Groups of two students

Materials

- Ozobot Bit or Evo
- Markers – blue, black, green, red
- Pre-made boards
- Static code sheet (OzoCodes)

Age/Grade Level

Middle School math - 8th grade

Duration

80 minutes

Topics

Math, Computer Science

Academic Standards

NJ Student Learning Standards for Mathematics

Geometry 8.G A. Understand congruence and similarity using physical models, transparencies, or geometry software

NJ Student Learning Standards for Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge

- 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.
- 8.1.8.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming

- 8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system
- 8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts.

Vocabulary

Calibration
Test
Run
Debug
Transformation
Rotations
Translations
Reflections

Overview

Students will need to have prior knowledge of transformations. Once this is completed, they can use Ozobots to replicate the movement by using the static codes. They can complete the worksheet by selecting the corresponding static code with the transformation. Once all of the codes are completed on the worksheet, they can copy the codes to their boards to test, witness, and reflect on their code.

Students can reflect on this activity by making connections to the math concepts, and how they can improve any technical difficulties with Ozobot and the coding process.

Lesson Plan

The learning goal for this lesson is for students to be able simulate transformations using Ozobot and static codes.

A short introduction presentation was explained to the students on using Ozobots and static codes. Students were given all the materials; worksheet, markers, and the boards to complete the activity.

This activity can be completed independently or within small groups. I would recommend no more than two students per group.

During the activity, students may have to create the same board multiple times because their static codes were incorrect. They learned a process that is seen in computer science which is test, run and debug. This simple repetitive process allowed students to comprehend that the smallest details are important for a process to be correct. Remind students to have patience, not give up and that failing is how we learn.

Transformations with Ozobots

First trial:

Two of the Ozocodes are rotations. Which two are they? Write the title of the static code and the color code sequence to each rotation type below. You can use the fill tool to color the boxes of the Ozocode, or you can type the name of the colors in order from left to right.

1.



2.



Choose three Ozocodes that are translations. Write how they could be considered translations. Write the title of the static code and the color code sequence to each translation. You can use the fill tool to color the boxes of the Ozocode, or you can type the name of the colors in order from left to right.

3.



4.



5.



Choose one Ozocode that are represents speed. Write the title of the static code and the color code sequence to each translation. You can use the fill tool to color the boxes of the Ozocode, or you can type the name of the colors in order from left to right.

6.



Outcome:

Record your Ozobot's results. Did Ozobot do the transformations correctly? If not, why do you think?

Second trial:

You may use any of the Ozocodes listed on the paper with the map in any order. Fill in the six codes. Record them below along with the title of the code. You can use the fill tool to color the boxes of the Ozocode, or you can type the name of the colors in order from left to right.

1.



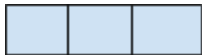
3.



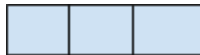
5.



2.



4.



6.



Fill in the map. Place your Ozobot on the starting point. Write the move and type of transformation under each code on the map.

Trace the route of your ozobot on the map. Did it follow the directions that you assigned?

What could you have done to improve Ozobot's journey? Change anything?

Third Trial:

On the map, write in the title of the static codes under each code. Trace Ozobot's path. Did ozobot do as it was told?

Could you get Ozobot to do a different set of instructions without changing any of your colored codes?



USE TO CALIBRATE