Robot Perimeter

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| **Subject:** Math | | | **Instructor: Kelsey Morgan and Reeves Turner** |
| **Grade Level:** 4th Grade | | |  |
| **Title of Lesson:** Robot Perimeter | | | |
| **Date:** April 15, 2015 | | | |
| **Time Period:** 2 hours | | | |
| **GA Standards:** MCC4.MD.3  Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. | | | |
| Objectives:   * Students will learn how to apply the perimeter formulas for rectangles in real world scenarios presented by the robot’s movement. Students will be able to program the robot’s movement to create a shape that meets the requirements of the given perimeter. | | | |
| Materials:   * Robot * Robot programming equipment * Computer * Ruler * Pencil and paper (as needed) * Handout | | | |
| Time | Topical Outline Sequence of Activities | Instructional Aids/Strategies | |
| 10 min | Introduction | * Begin this lesson by gathering students and engaging them in a discussion about perimeter. Ask students to share what they know about perimeter, how to calculate the perimeter of different shapes, and how calculating perimeter can be useful in the real world. * To ensure that students are well informed of how to calculate perimeter, provide perimeter formula handouts or have the formula written on the whiteboard. Encourage students to ask questions throughout the lesson. | |
| 10 min | Handout | * You will then give the students a worksheet with images of different shapes. They will then have to calculate the perimeter of all of the shapes using the given information on the worksheet. This will help them visualize shapes they might want to use when programming later on in the activity. | |
| 1 Hour | Activity | * Students should be placed in small groups for this activity. (groups of 3-4) * Explain the lesson in terms of how they will program the robot to move in a path that creates a shape. (Programming should not need to be explained, students will have prior knowledge of how to program the robot). * Tell the students that they will be given a perimeter (in inches). This number is what they will use to determine the length of the sides of the shapes that they program the robot to make. Assign each group with different perimeters so they do not all create the same shapes. (To increase the difficulty of this assignment, the instructor could assign a perimeter as well as a shape for each group- ex: Triangle with a perimeter of 60 inches) * Encourage students to plan out the shape they want to create using the given perimeters. This will help students visualize the movements they need to program for the robot. Give students the option to draw and decorate the shape on a piece of paper that the robot is going to move on. Students can also decorate the robot if they want to. * Remind students to save their programs once they have created them on the computer. | |
| 40 min | Demonstration / Evaluation | * Have each group present their programmed robot and the shape that it makes with its movements and given perimeter. * The evaluation of students’ understanding can be determined through their demonstrations and also the success of their programming in meeting the given perimeter requirements. | |