

# Problem solving through Programming

**Question:** How can I use robots to solve problems?

## Core Content/National Standards

PL-M-4.4.1 Certain academic skills (e.g., communications, math, science) are important to specific jobs or careers.”

## Objectives

Students will be able to

1. Write simple programs that control the robot.

## Materials

Per each group

- 1 pre-built LEGO Mindstorm Robot
- 1 of each: light sensor, touch sensor, and connectors for the touch sensors
- 1 computer with “Robotics Invention System 2.0” loaded

## Procedure/Time:

1. Provide the students with a general introduction to “Robotics Invention System 2.0” programming using Handout 1.
2. Use the examples given in Handout 2 to illustrate steps required for the robot to perform the given task.
3. Use the exercise problems in Handout 3 to enhance programming skill.

## Assessment:

The fellow will interact with the students while they are performing the projects. By observing how well the students complete their tasks, the fellow will be able to assess the activity. The fellow may also ask the students to turn in their work stored on a disk and grade the programs.

## **Handout 1**

Run through “Robotics Invention System 2.0” training missions then write programs to complete the following tasks.

Write programs for the problems:

1. The robot will run between two black lines. It should go forward until it sees one of the lines and then go backwards until it sees the other black line. It should then start the process again.
2. The robot will run between two black lines. You are not to use a light sensor. You are to use a touch sensor to control the robot. When the robot gets to a line, you should be able to push in the touch sensor and the robot turn until you release.
3. The robot will parallel park between two books. You should not use a sensor.