

# Outdoor Classroom Renovation Lesson Plan

## Overview

**Skills and connections:** number line, weight and heaviness, waterproof materials (material properties), simple linear equations, units of measurements, engineering design process

**Age:** 2<sup>nd</sup> grade

**Community problem:** Students from an urban school became aware that the school's outdoor classroom space was almost never used in its current state.

**Student design goals:** The students wanted to build a large, three-dimensional, interactive, number line in the outdoor space that could be used for math learning. This number line needed to be neat, strong, waterproof, and roughly the length of ten students standing close to each other, as well as suitable for teaching lower grades and 2<sup>nd</sup> grade students. It also needed to be constructible without a handyman and within a fixed budget.

## Details

The students worked in small groups. Each of the small groups built different components that were at the end assembled together to make a 3-D, interactive, portable number line. A few jobs involving drilling holes in PVC pipes were done by the classroom teacher while taking care of safety of the students around.

Materials used by the students included PVC pipes and connectors, Velcro (to hang the pipes to supports, making it portable), hooks, pipe cleaners, plastic Dixie cups and sand (make weight line, strings of different lengths (represent increase and decrease of length) plastic card holders (for number display), a hook, Velcro and cardboard (to make a slider) and stickers (make the display look fun and colorful).