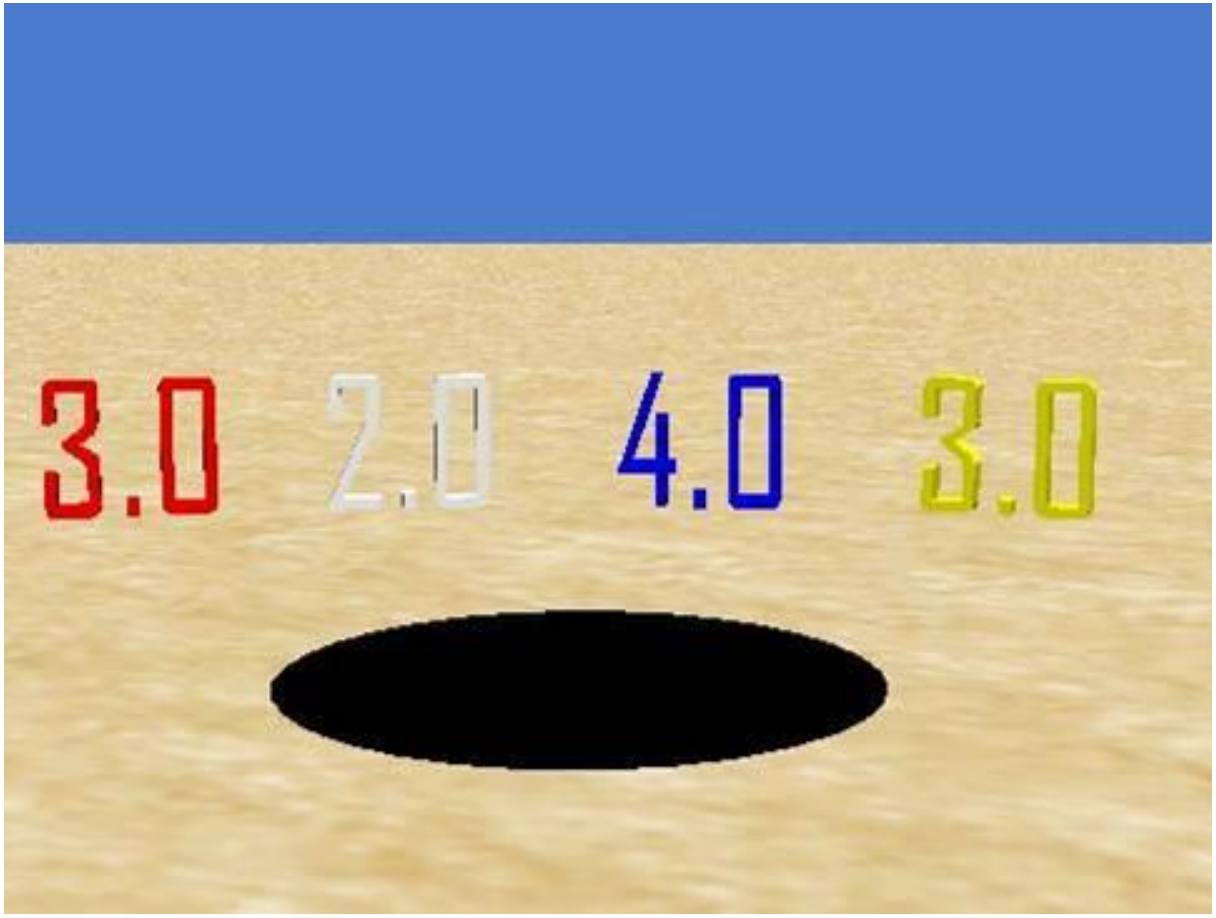
Alice Workshop 2013
Math Worlds

Chris Brown

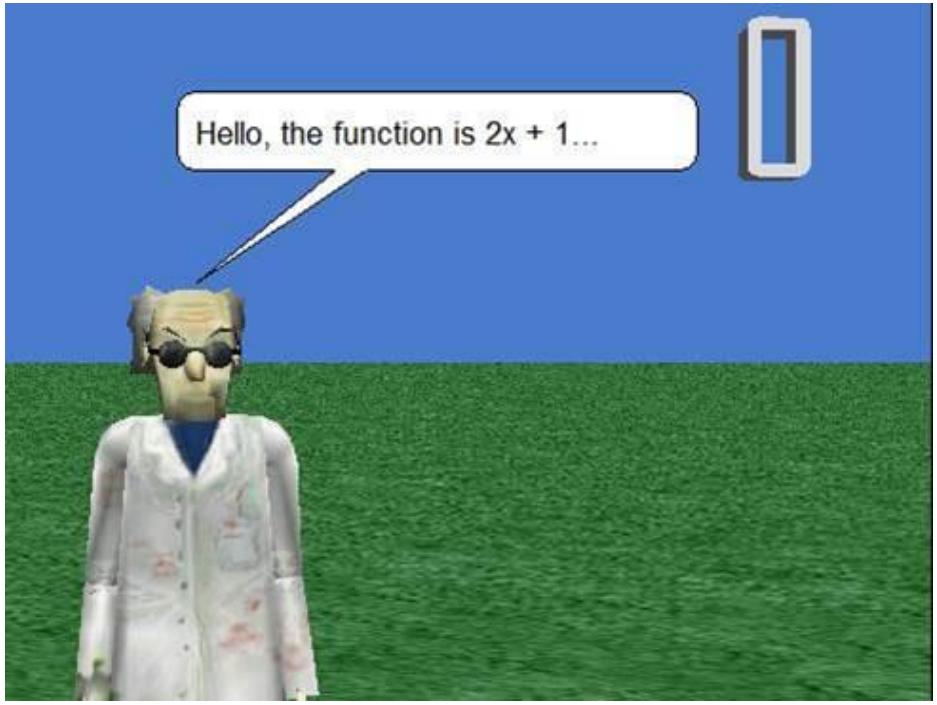
Probability World



Probability World

- This world acts as a probability game where students will have to give the probability of choosing a certain colored ball from a hole in the ground. They are provided with the total number of balls and the number of balls for each color, and will be asked to calculate the probabilities of choosing random balls out of the hole. After each attempt, an animation will play and the number of balls will update. This world will help students learn about probabilities and fractions.

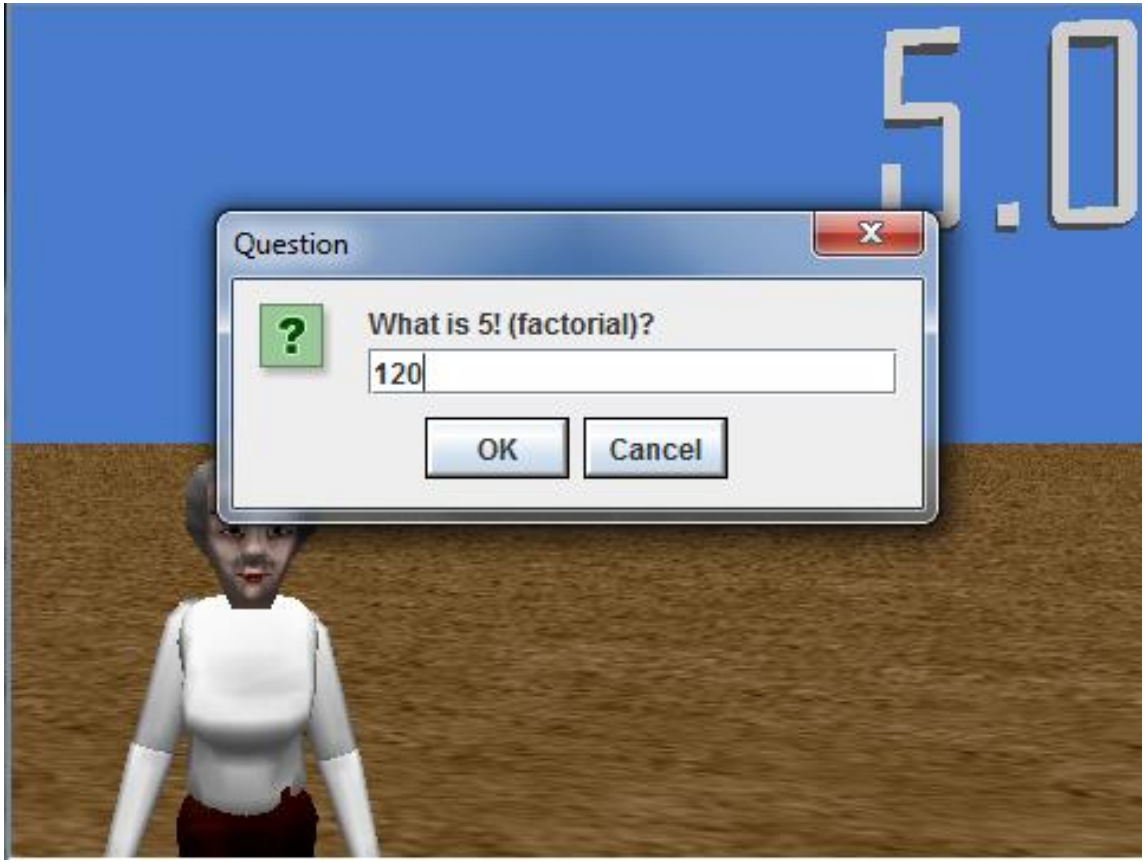
Nonvisual Arrays



Nonvisual Arrays

- This world helps students learn about arrays as data structures while practicing algebra skills. The user can pick any function to enter into Alice, and they will fill an array with the answers. Then, when the world plays, Alice will give a quiz and ask the user to solve the equation they provided for different values of x.

Nonvisual Arrays and Recursion



Nonvisual Arrays and Recursion

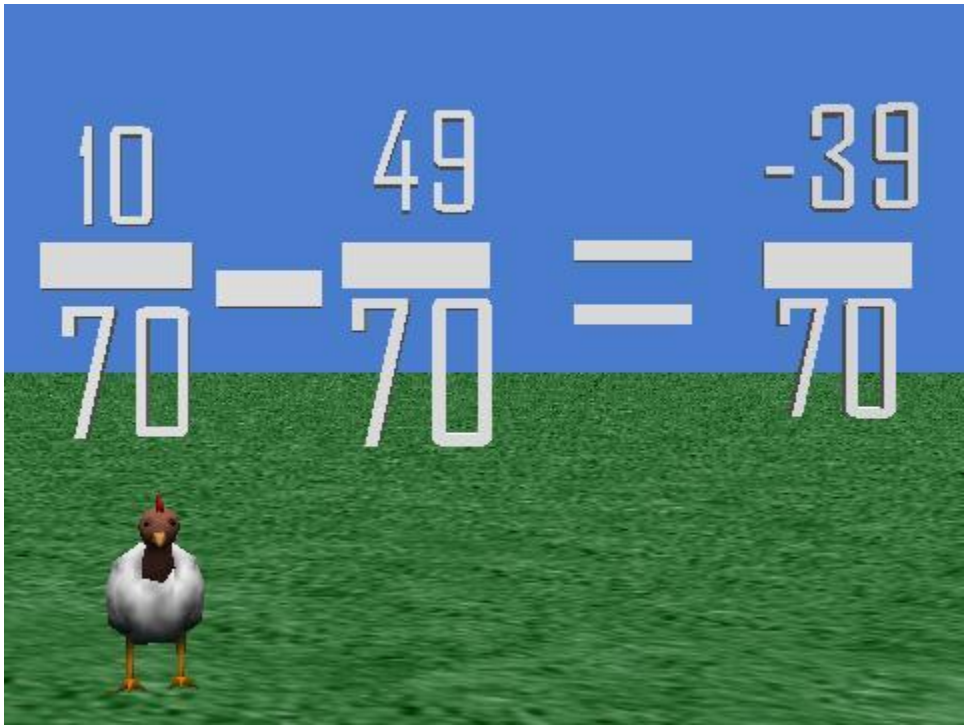
- This Alice world works with nonvisual arrays in Alice and also teaches the concept of recursion to the user. They are given a recursive function (factorials), and when the world runs, they are asked for the factorial calculations up to 10! which have been put into an array. There is also a version of this world for Fibonacci's Sequence.

Basketball Math

Basketball Math

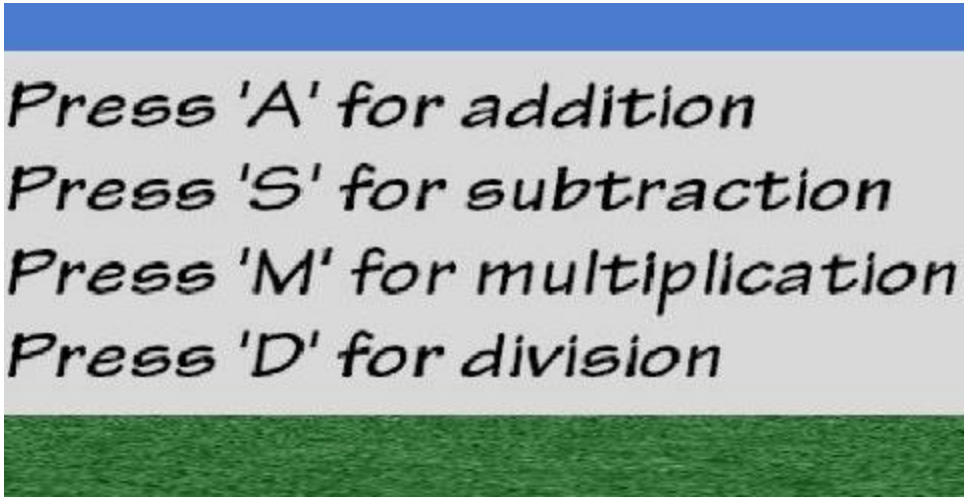
- This Alice world is a basketball game that helps students practice multiplying decimals and whole numbers. The game is timed, and they receive points for each answer that they get right until the time runs out!

Fractions

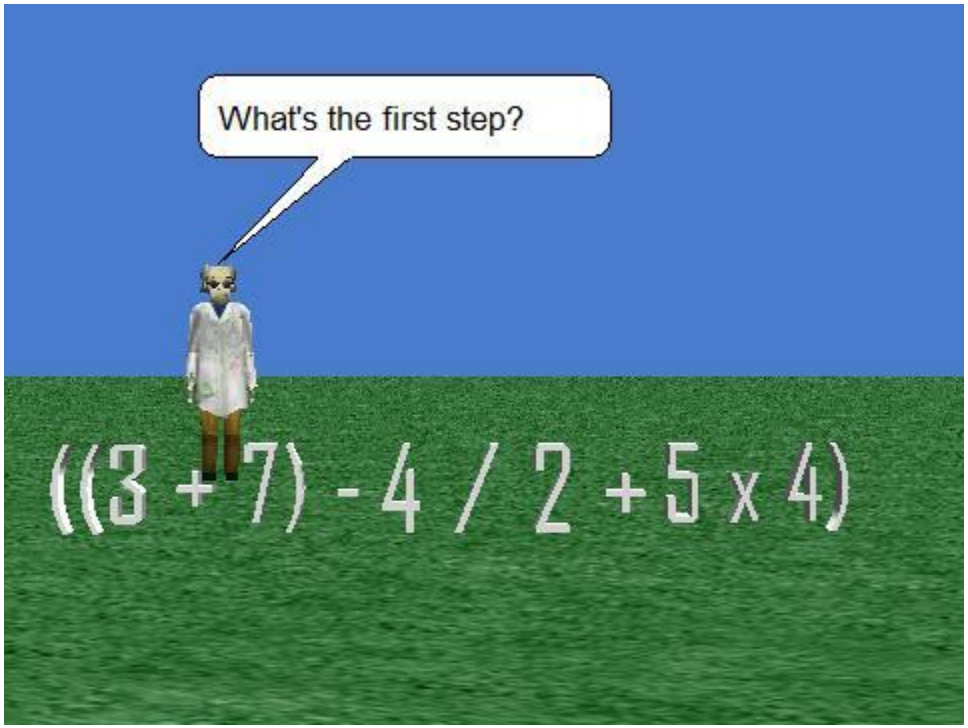


Fractions

- This is an interactive Alice world that allows students to practice fraction arithmetic. Students can choose whether they want to add, subtract, multiply, or divide fractions and the problems are created randomly.



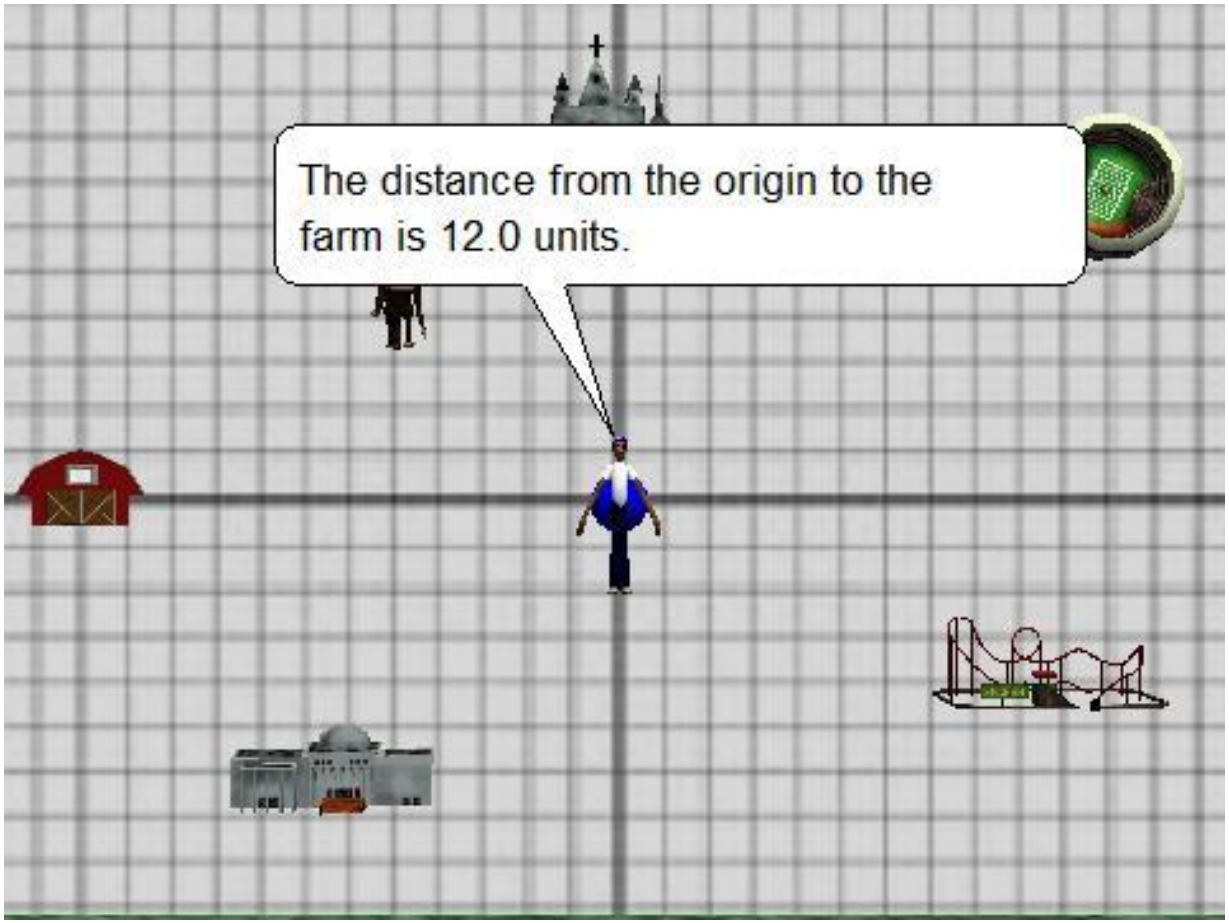
Order of Operations



Order of Operations

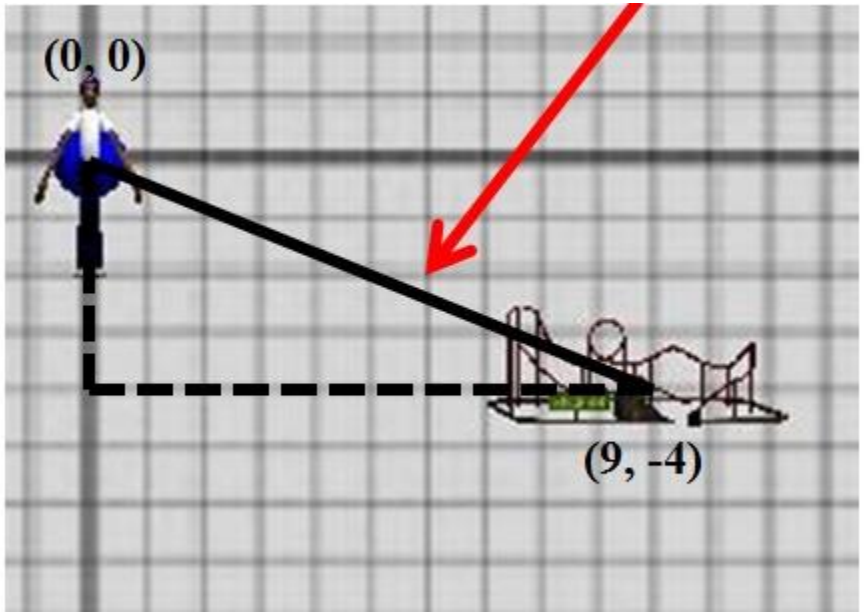
- This world allows students to interactively practice the order of operations by clicking on the expressions in an equation that should be done in a certain order. The equations used in this world are all numeric and the students will be able to solve them.

Distance

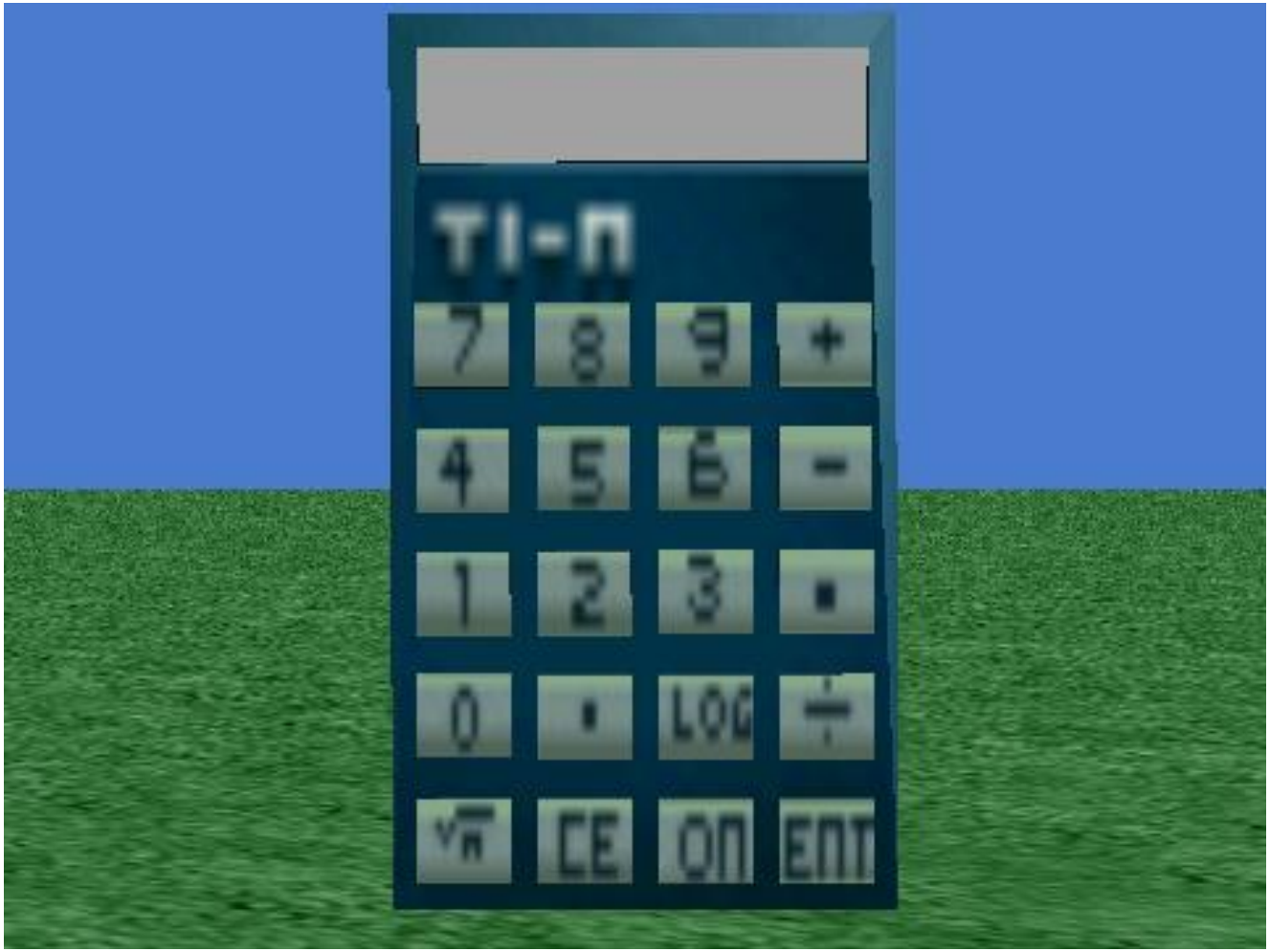


Distance

- In this Alice world, it is Jimmy's first time in a new city and he must find out where to go. It is the students' job to fill in the *distance* function with the distance formula so that Jimmy will know how far he will have to travel to reach different places in the city.



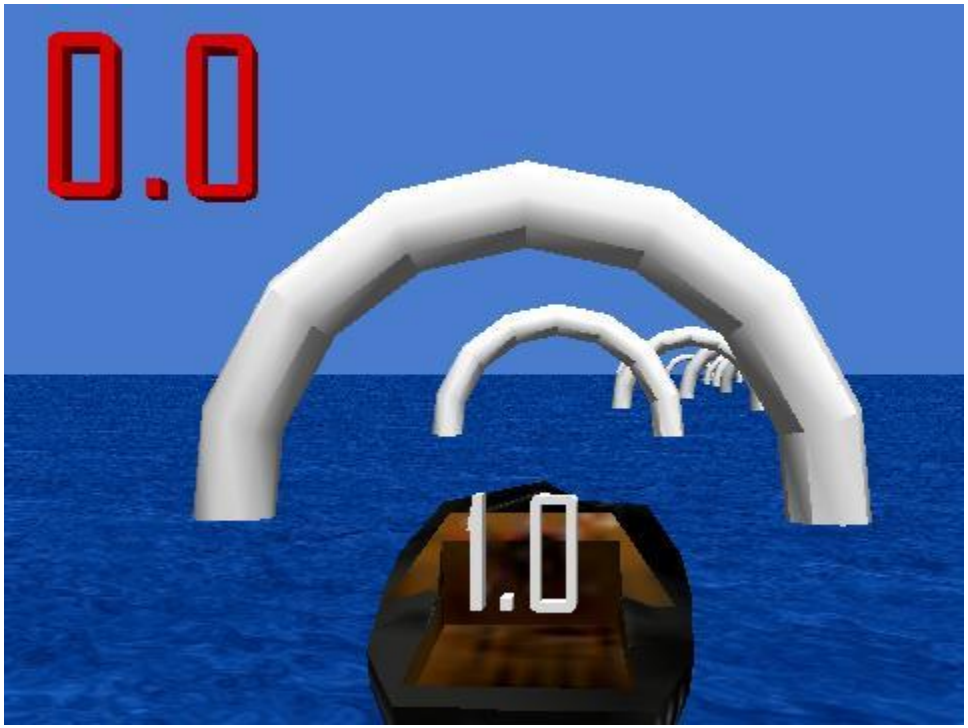
Calculator



Calculator

- This calculator challenge requires students to fill in all of the functions to create a fully-functional calculator in Alice. Once they fill in the basic arithmetic expressions and get them to work on the calculator, they are able to create their own buttons with more advanced math topics to add on their calculator.

Boat Race Challenges



Boat Race Challenges

- This Alice world is a boat game where the player must drive a boat through 10 arches and it presents several challenges to the user:

1. Fill in the *average* function to find the average time the boat travelled between each arch.
2. Fill in the *average* function to calculate the total speed of the boat (distance over time).
3. Complete the *average* function to calculate the average distance between each arch, since they arches are randomly placed each game.
4. And finally, fill in the *win* method so that after each game, Alice prompts the user if they want to play again. Then, the *average* function should be completed to return the average time it took the player to race through the course per game.