

Maze Map

Use LEGO bricks to complete some mathematical thinking!

ENGAGE

Have students give directions to a place located in the school, such as the cafeteria or the playground, from the classroom.

Note: If needed, you could simplify the task by asking students to give directions from one location in the classroom to another.

Ask students to describe how to get to the location you chose in the school from our classroom. Write the student-dictated directions.

Have students follow their directions to check for accuracy. Ask questions to help the students realize they may need to add additional details into their directions to get to the final destination.

Consider asking questions like:

- How do you know how far down the hall to go?
- How could you measure how far to go (in steps, in feet, in hops)?
- Did you describe which way to turn properly?

After a first attempt to follow directions, explain to students that a robot can only follow exact directions written in the code. The algorithm or step-by-step directions in the code must include a lot of detail for the robot. For example, you cannot just say to move forward. You have to tell the robot how far to move forward. You cannot just tell the robot to turn. You have to tell the robot which direction to turn as well.

Ask students to re-write the directions again with as much detail as possible.

- Are your directions correct?
- What do you need to add to the directions to make them better?

Have students follow their new directions to reach their destination using the additional details.

After they come back to the classroom ask them

- What was different about following the directions this time?
- What happens when you do not have the directions right? Or enough detail?
- Why are the details important?

EXPLORE

Distribute arrows to students. Have students cut out the arrows along the dotted lines. Then have students use their LEGO pieces to build a small character to use in their maze. Encourage students

to give their character a name. Ideas for a character could include an animal, a monster, a person, or a car/vehicle. Students will use the maze sheets and arrows to guide a character to safety. Have students use the maze sheet to create a path for their character to follow to get through the maze.

Give students **Maze 1** (see below) where they have to move the character from their house to the park (tree). Ask students to place the arrows on the sheet to show the best path to move through the maze. Then students can move the character according to the arrow while saying the movement out loud.

EXPLAIN

Allow several students to share the path they chose by explaining the directions.

Ask students

- What was difficult about this task?
- What directions are important to include for this task?
- Could you move the robot in more than one way to get to the park?
- Who can get the character to the maze in the fewest steps possible?

ELABORATE

Give students **Maze 2** (see below), which includes obstacles that the character will have to move around to get to the park. Ask students to use their arrows again to create their step-by-step directions to reach the park, but this time they have to move around the obstacles. Explain that any space that has a rock in it cannot be a space that the character can move into. Once students have placed their arrows, have them practice reading their directions out loud. Allow several students to share their directions with the rest of the class.

Ask students:

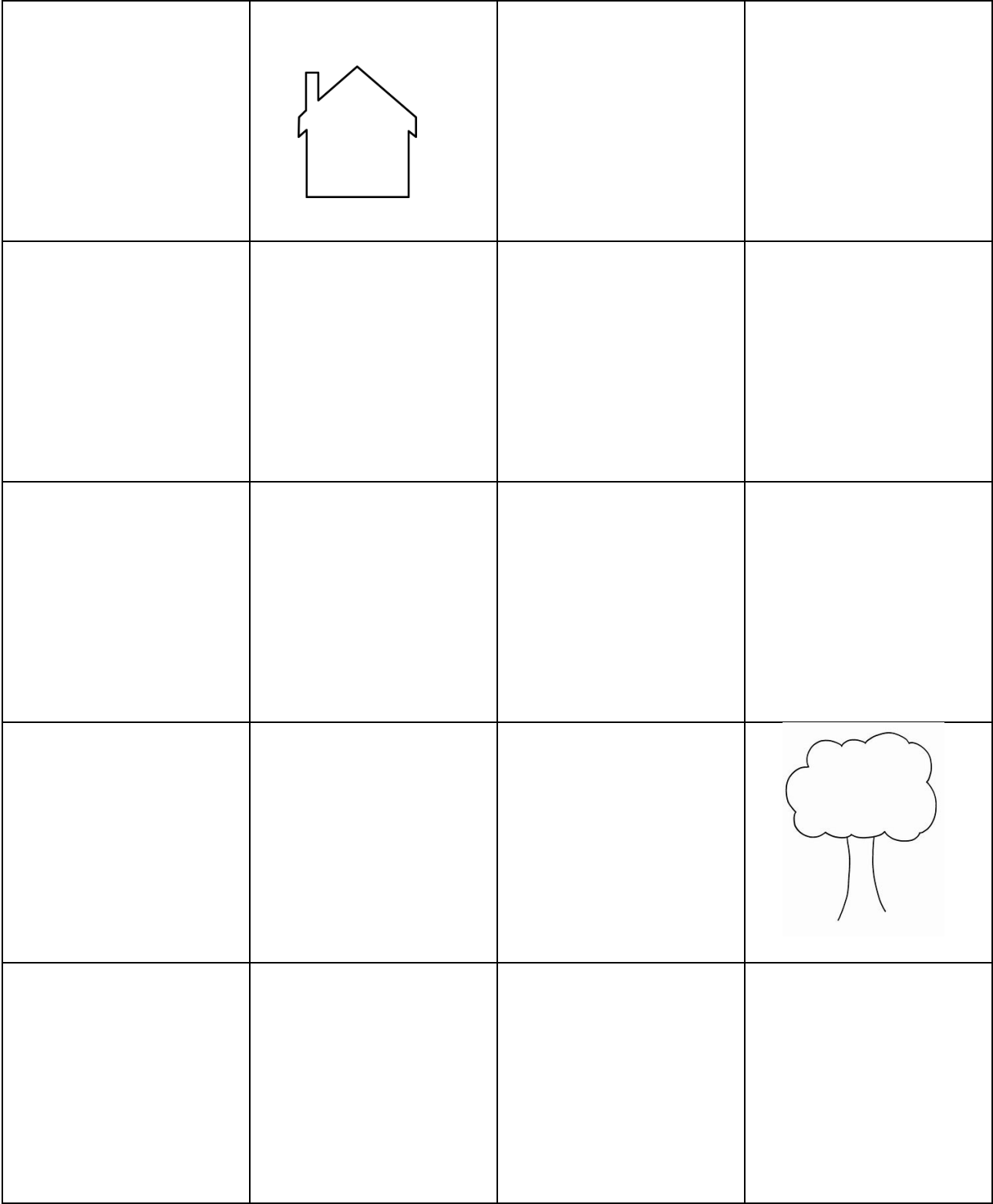
- What was difficult about this task?
- What was different about this maze than the last one?
- What directions are important to include for this task?
- Could you move the robot in more than one way to get to the park?
- Who can get the character to the maze in the fewest steps possible?

EXTEND

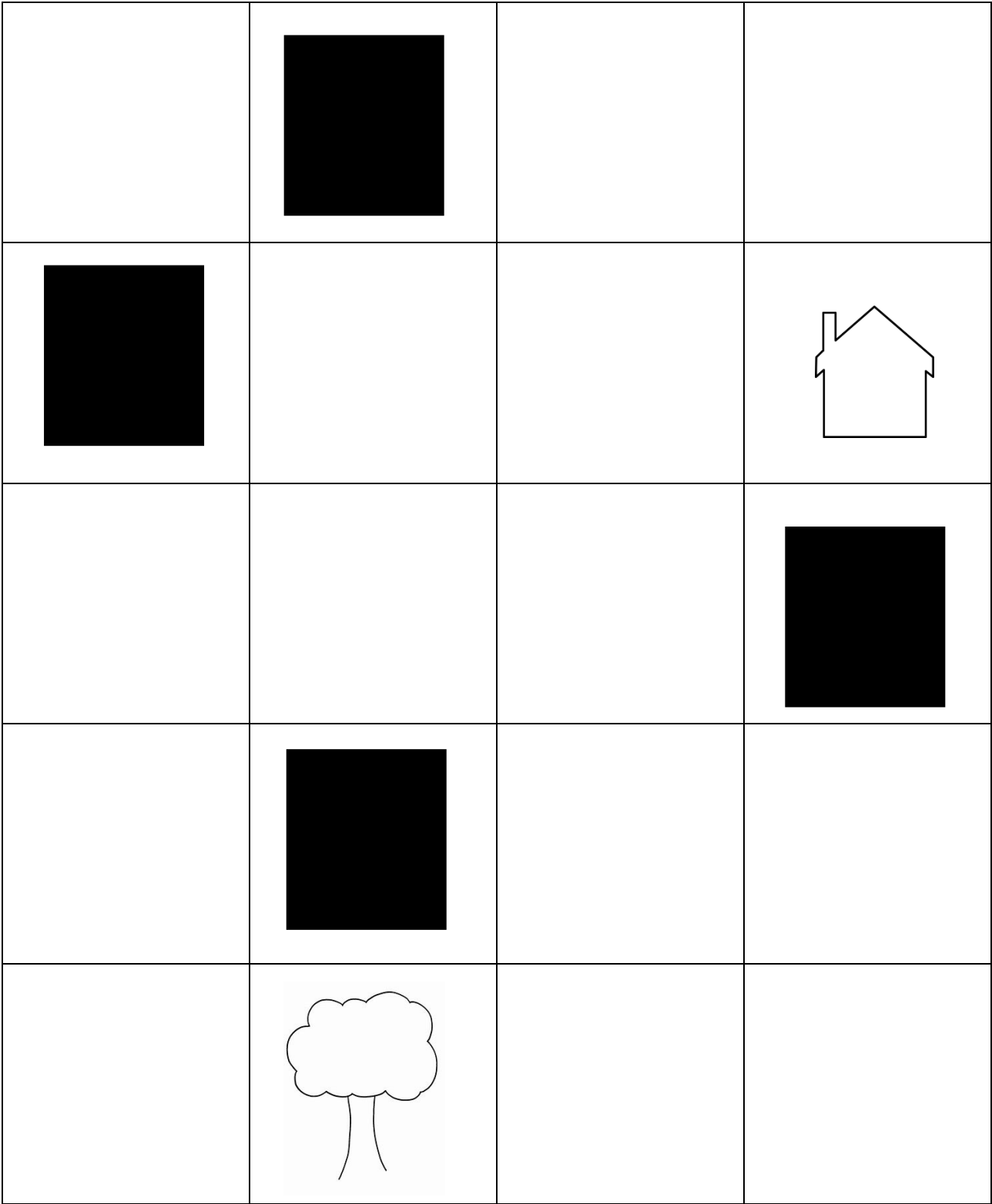
Provide students with the opportunity to design their own mazes.

MAZE MAP TEMPLATES

Maze 1



Maze 2



Arrows

