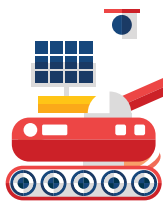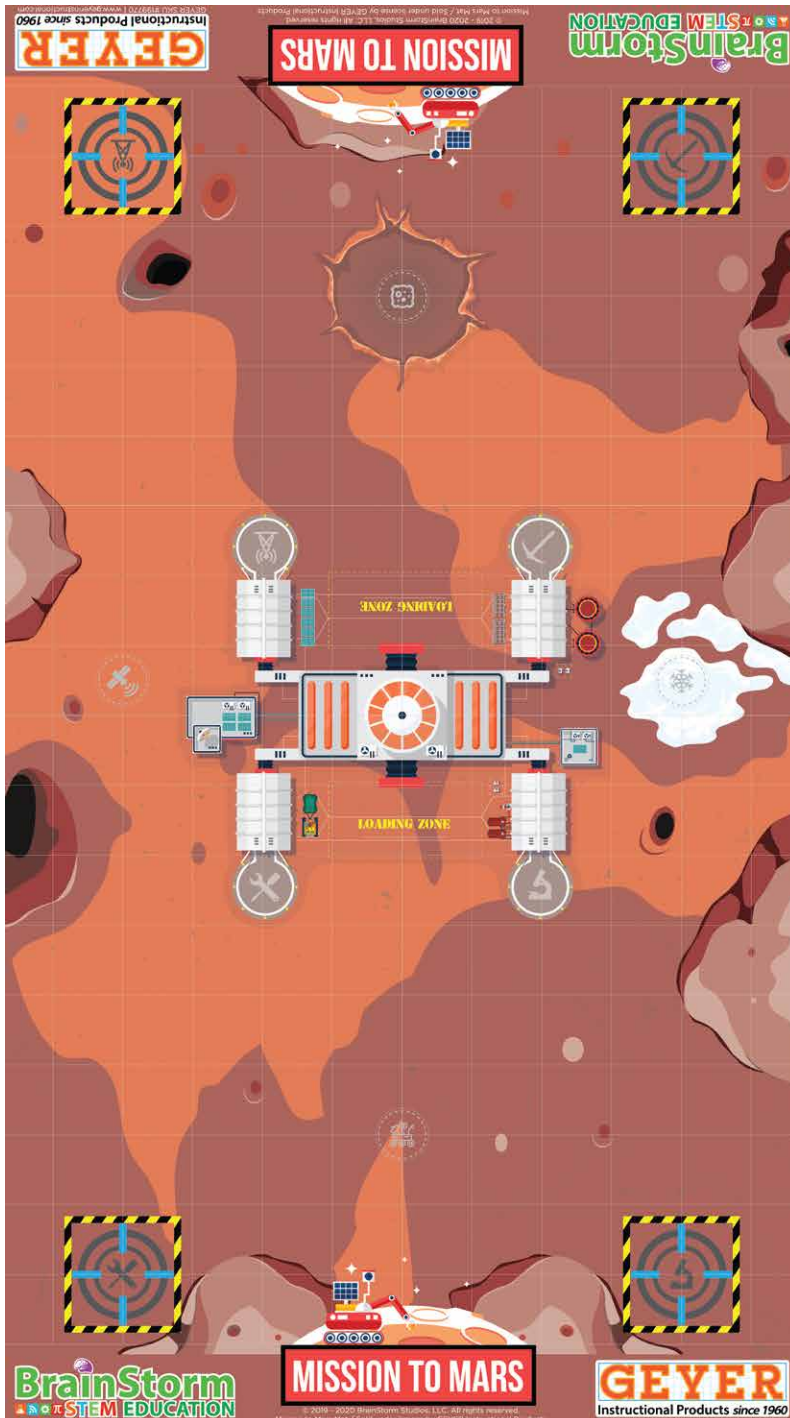## ROBOTIC ACTIVITY MAT

MISSION TO MARS

Summary: Mars holds exciting new possibilities but navigating the planet is too hard for humans. Help deliver equipment to the Mars base so they can start their research and get working on learning all the important things about the planet. Can you succeed on this mission to Mars?

Features:
- Fits up to 8 students
- 5 Awesome activities!

Objective: Each team needs necessary supplies before they can start their work and begin preforming research on the red planet and what it can help us learn.

Skills taught: Students will learn programming, problem solving, basic navigation, and critical thinking.
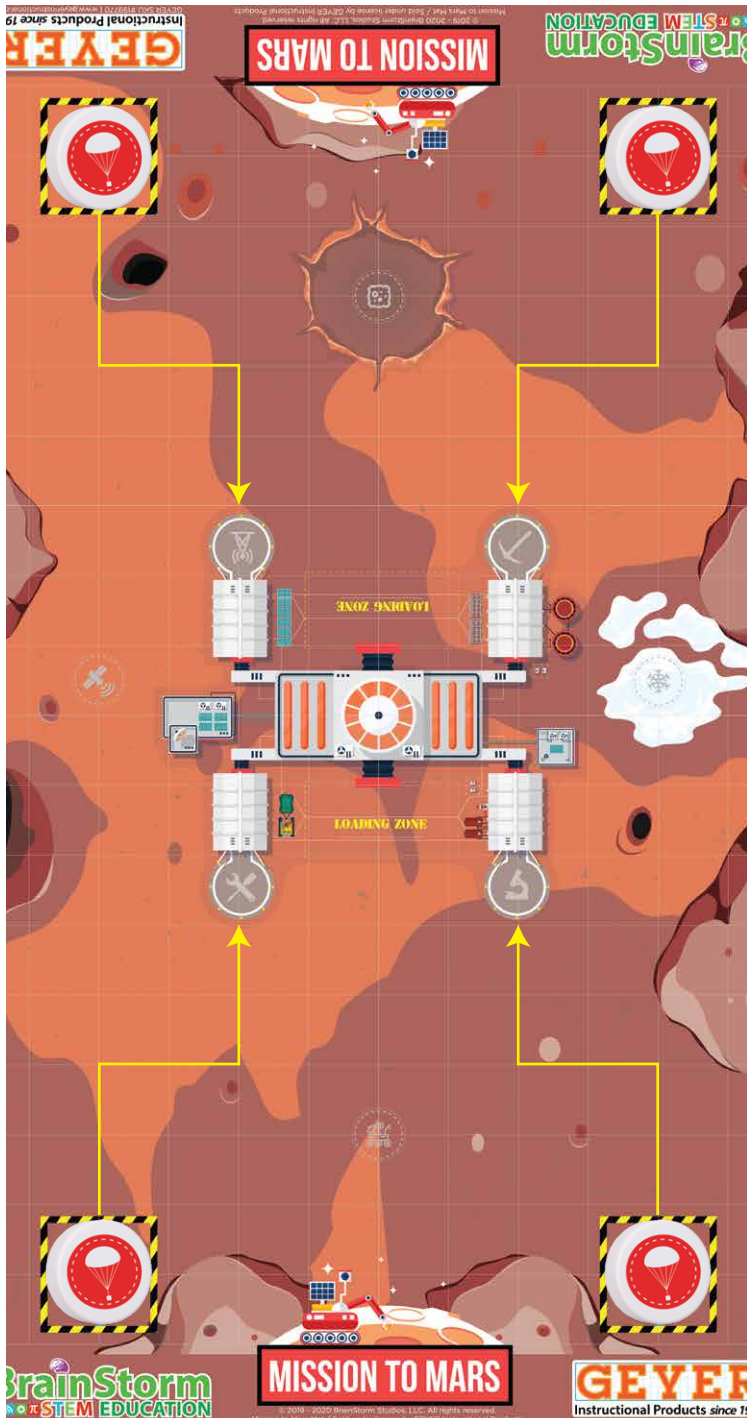
Game Pieces (8 Total):

x4

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STEM EDUCATION
Curriculum & Robot Mat Developed By

1

Activity 1 : Station Resupply

Help the base get supplies

Each team needs necessary supplies before they can start their work and begin preforming research on the red planet and what it can help us learn.

How To Use:

1. Robots will start in each of the starting squares located near the corners of the mat.

2. Analyze the mat and visualize the direction(s) needed for the robot to navigate through the terrain and to the corresponding station icon.
(Tip: program your code two sequential commands at a time).

3. Code the sequential navigation commands into the robots program.

4. Place the robot in the specific starting square, with a supply game piece in it's possession, and execute the program.

5. Repeat steps 2-4 until the robot has delivered a supply game piece from the starting square icon to its corresponding station icon.

6. Repeat steps 1-5 for each corner and each station on the mat.

Activity 2 : Satellite Repair

"Ground control, can you hear me?" -Major Tom

The Communication team needs your help retrieving a fallen satellite. Search for the broken satellite and bring it back to base to get repaired.

How To Use:

1. Robots will start in the starting squares marked with a Tower icon
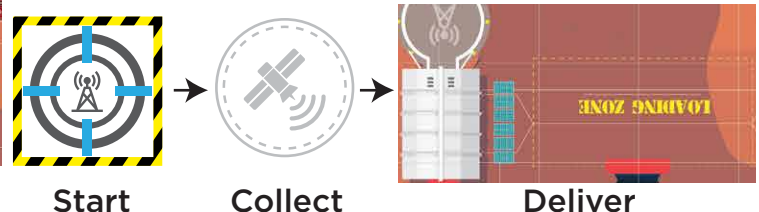
2. Analyze the mat and visualize the direction(s) needed for the robot to navigate through the terrain to complete the objectives.
(Tip: program your code two sequential commands at a time).

3. Code the sequential navigation commands into the robots program.

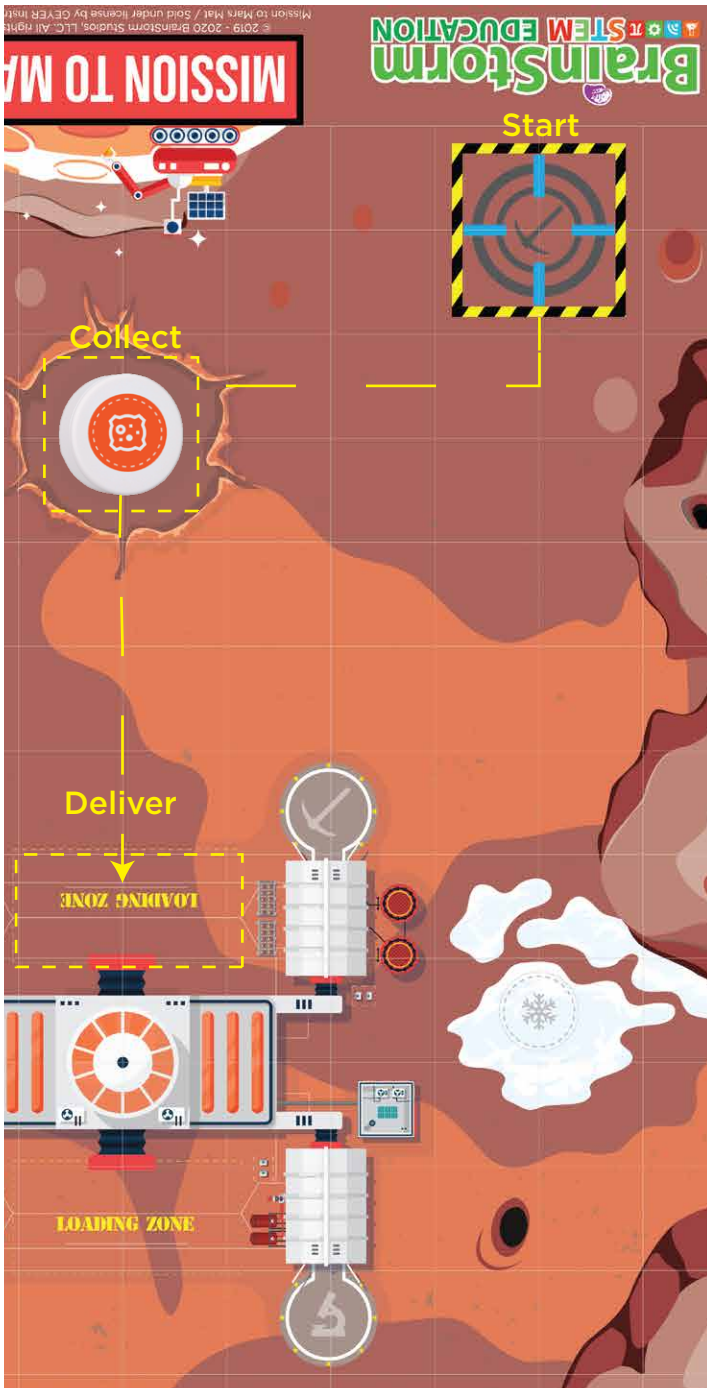**4. Place the robot in the specific starting square and execute the program.**

5. Repeat steps 2-4 until the robot has collected the satellite game piece and delivered it to the loading zone on the correct half of the mat.

Start → Collect → Deliver

Activity 3 : Meteorite Samples

Search the peculiar rock for samples.

The Geology team needs to collect data from the nearby crater. Bring some of the material back to base so we can study its evolution.

How To Use:

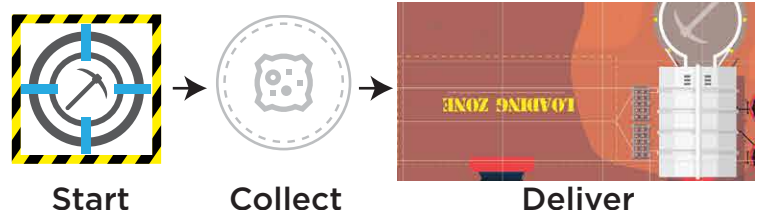1. Robots will start in the starting square marked with a Pickaxe icon

2. Analyze the mat and visualize the direction(s) needed for the robot to navigate through the terrain to complete the objectives.
(Tip: program your code two sequential commands at a time).

3. Code the sequential navigation commands into the robots program.

4. Place the robot in the specific starting square and execute the program.

5. Repeat steps 2-4 until the robot has collected the meteorite sample game piece and delivered it to the loading zone on the correct half of the mat.

| Start | Collect | Deliver |

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Activity 4 : Rover Repair

Check the rovers engine and ignition.

The Engineering Team has requested we return a rover they believe to be malfunctioning. Retrieve the rover and return it to base so it can be repaired.

Deliver

Collect

Start

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MISSION TO MA

How To Use:

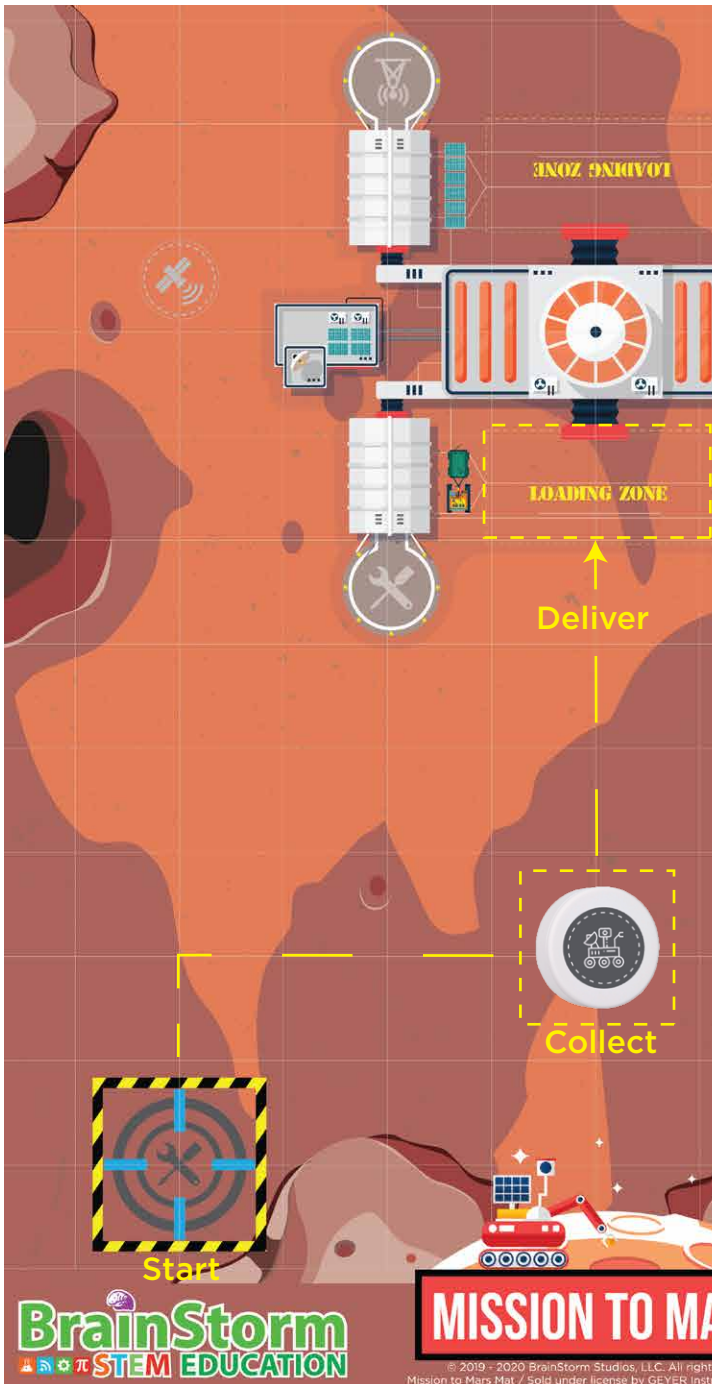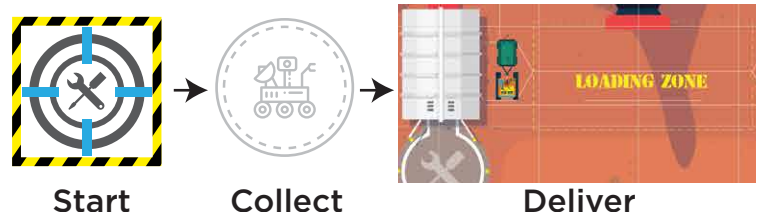1. Robots will start in the starting squares marked with a Tool icon

2. Analyze the mat and visualize the direction(s) needed for the robot to navigate through the terrain to complete the objectives.
(Tip: program your code two sequential commands at a time).

3. Code the sequential navigation commands into the robots program.

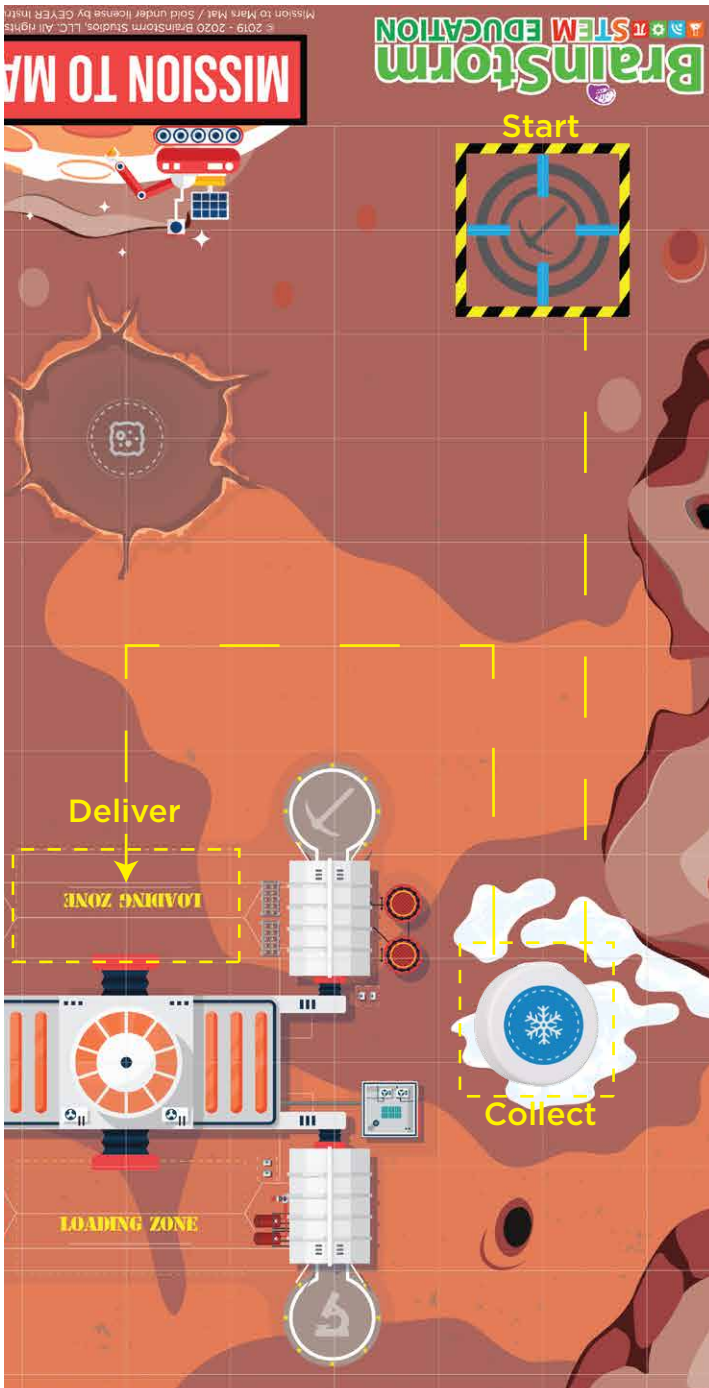4. Place the robot in the specific starting square and execute the program.

5. Repeat steps 2-4 until the robot has collected the rover game piece and delivered it to the loading zone on the correct half of the mat.

Start   Collect   Deliver

Activity 5 : Ice Samples

Its not just Earth thats blue.

The Science Team is eager to study the nearby ice formations. Help gather samples from the ancient glacial streams.

How To Use:

1. Robots will start in the starting squares marked with a Tower icon

2. Analyze the mat and visualize the direction(s) needed for the robot to navigate through the terrain to complete the objectives.

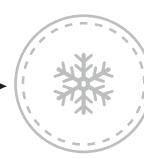(Tip: program your code two sequential commands at a time).

3. Code the sequential navigation commands into the robots program.

4. Place the robot in the specific starting square and execute the program.

5. Repeat steps 2-4 until the robot has collected the Ice sample game piece and delivered it to the loading zone on the correct half of the mat.

Start   Collect   Deliver