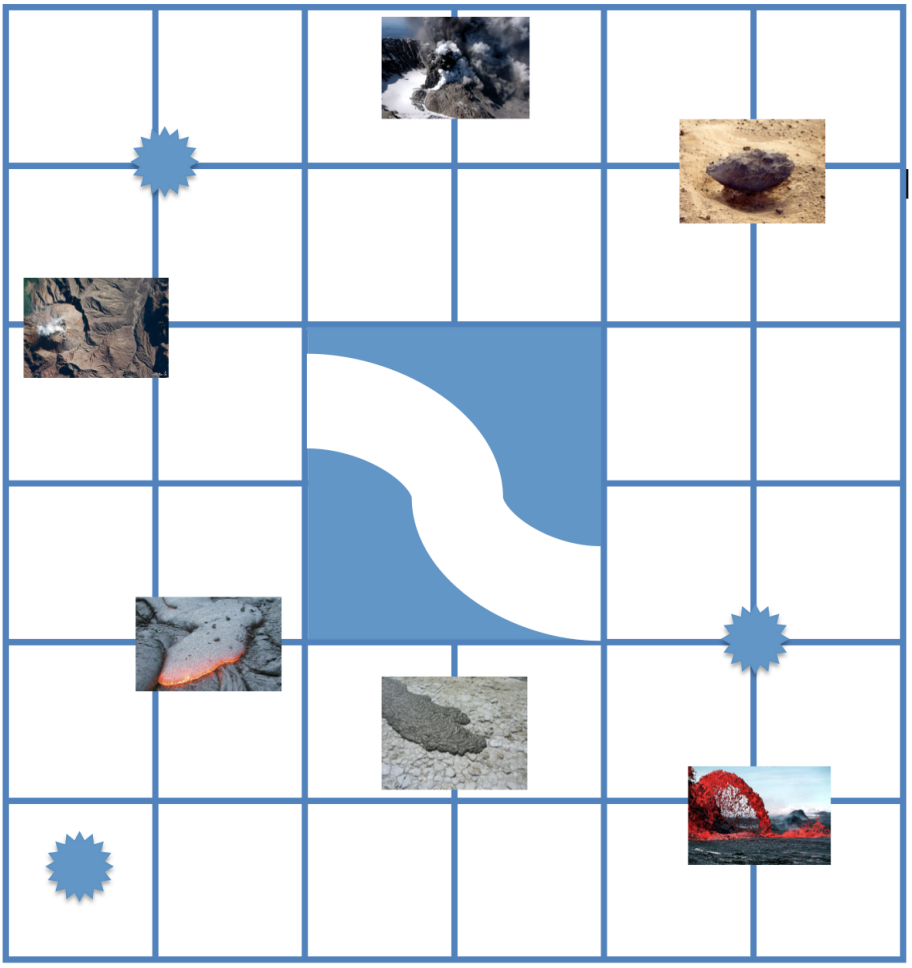
Previous Tasks

Task A

The guidelines for completing the task are:

1. The robot must begin and end their sampling event at the same position on the grid.
2. The robot must come to a complete stop at each sample location.
3. To be considered a successful sample collection some portion of the robot must be either touching or be directly over a portion of the sample collection site.
4. Points will be gained for the following: execution of 90 degree turns, successful sample collections, complete stops on collection sites, completion of the full task, time on task, and the celebratory ending dance.

Points will be deducted for instances of the entire robot leaving the grid and instances of the robot coming in contact with the obstacles.



Task A Scoring Rubric

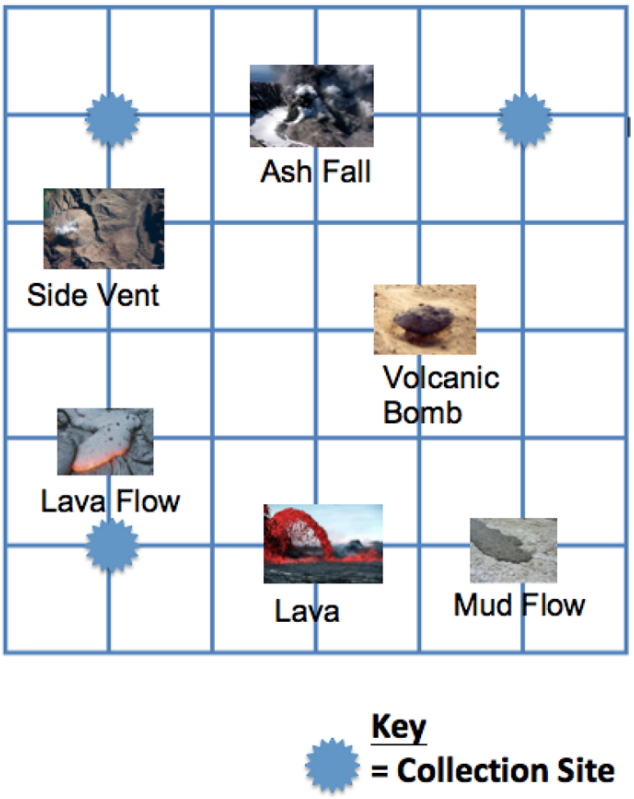
Category	Tally	Tally Total
90 Degree Turns +1 point for every successful 90 degree turn		+_____
180 Degree Turns +1 point for every successful 180 to reverse direction		+_____
Collection Sites +2 for every collection site visited		+_____
Stops +1 for coming to a complete stop on a collection site		+_____
Center Bridge +3 for each crossing of the "S" shaped bridge in the center of the grid (-1 for each instance of a wheel touching the blue area around the bridge)		+_____ -_____
Completion +5 for completing each site and returning to your starting point		+_____
Obstacles -1 point for each obstacle a wheel touches (includes solid blue center)		-_____
Off the Grid -1 point for each instance of a wheel leaving the grid paper		-_____
Completion Time Bonus Less than 30 Minutes +6 points 30 - 44 minutes +4 points 45 - 59 minutes +3 points 60 - 74 minutes +2 point 75 -89 minutes +1 point		+_____
Creativity Bonus +3 for a celebratory dance at the end		+_____
Total		

Task B

The guidelines for completing the task are:

1. The robot must begin and end their sampling event at the same position on the grid.
2. The robot must come to a complete stop at each sample location.
3. To be considered a successful sample collection some portion of the robot must be either touching or be directly over a portion of the sample collection site.
4. Points will be gained for the following: execution of 90 degree turns, successful sample collections, complete stops on collection sites, completion of the full task, time on task, and the celebratory ending dance.
5. Points will be deducted for instances of the entire robot leaving the grid and instances of the robot coming in contact with the obstacles.

Programming Task Grid Setup for Round 1 School-Level Competition



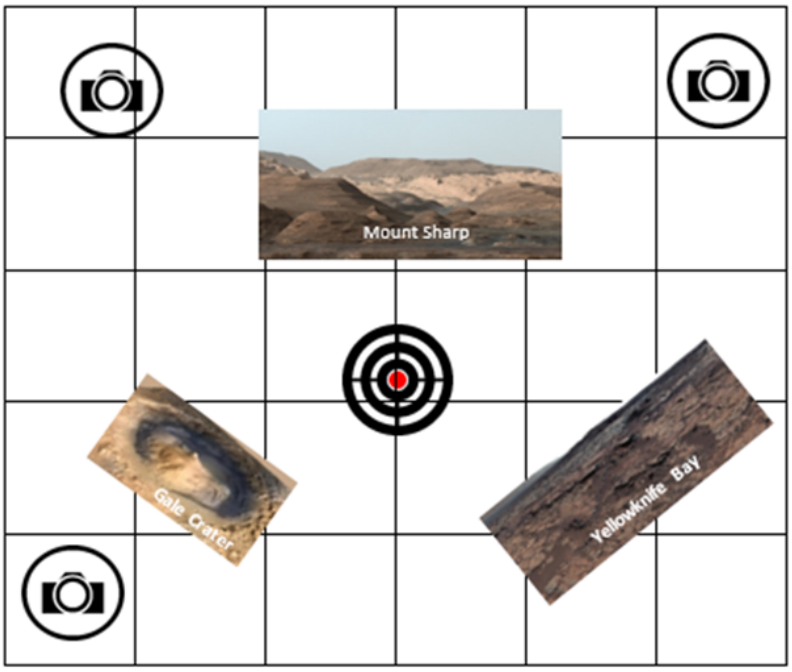
Task B Rubric

Category	Tally	Tally Total
90 Degree Turns +1 point for every successful 90 degree turn		+_____
Collection Sites +1 for every collection site visited		+_____
Stops +1 for coming to a complete stop on a collection site		+_____
Completion +5 for finishing at the start point		+_____
Obstacles -1 point for each obstacle touched		- _____
Off the Grid -1 point for each instance of leaving the grid paper		- _____
Completion Time Bonus Less than 30 Minutes +6 points 30 - 44 minutes +5 points 45 - 59 minutes +4 points 60 - 74 minutes +3 points 75 - 90 minutes +2 points Over 90 minutes +1 point		+_____
Creativity Bonus +3 for a celebratory dance at the end		+_____
Total		

Task C

As part of the Mars Exploration Rover Expedition scientists at NASA would like to have panoramic photos taken from three specific locations on Mars. They have asked your team to program a robot to take photos at the predetermined locations. In order to move the robot into position to take each photo you must be very careful to avoid three of Mars' unique land features: Mount Sharp, Gale Crater, and Yellowknife Bay. Use the terrain grid provided and your robot to complete your task. As you work you will need to do the following:

1. Begin and end your mission from the designated Landing and Pick-up Zone. The Landing and Pick-up Zone is marked by a bullseye on your terrain grid.
2. Avoid the obstacles of Mount Sharp, Gale Crater, and Yellowknife Bay.
3. Be sure that your robot stays within the grid boundaries.
4. Come to a complete stop at each designated photo location. Each photo location is marked by a camera symbol .
5. While stopped at each photo location, your robot will need to make a 360 degree turn while taking the photo.



Landing and Pick-up Zone

Task C Rubric

Category	Tally	Tally Total
Collection Sites +1 for every collection site visited		+_____
Stops +1 for coming to a complete stop on a collection site		+_____
360 Degree Turns at Photo Sites +1 point for every successful 360 degree turn at photo site		+_____
Completion +5 for finishing at the start point		+_____
Obstacles -1 point for each instance of touching an obstacle		- _____
Off the Grid -1 point for each instance of the robot going outside of the grid boundary		- _____
Completion Time Bonus Less than 30 Minutes +6 points 30 - 44 minutes +5 points 45 - 59 minutes +4 points 60 - 75 minutes +3 points		+_____
Bonus Points **Explanation of Strategy (3 points possible)** **+1**Students are able to clearly explain their approach to completing the task. **+1**Students are able to clearly explain how programming decisions were made. **+1** Students are able to clearly explain how they worked through challenges. **Problem Solving Process (1 point possible)** **+1** Students' approach to the task demonstrates organization, planning, and consideration of limitations.		+_____
Total		