FIRST® at Home Activity
Over Rover

PROBLEM STATEMENT

Are you ready to fly into the future and blast off into outer space? Imagine you are living at a base camp on Mars! The supplies you need were delivered to Mars but are far from your location. You need to send a Mars Rover to retrieve the supplies and bring them back to your base camp. The Mars Rover is a type of Robot and needs to receive a set of commands to do a job or complete a task. Your task is to create a "code" to tell the robot how to complete a specific set of instructions. See your mission details below to retrieve the supplies!

CRITERIA & CONSTRAINTS

- Your solution can be presented as a physical model or drawing
- You must use the set of coding block commands provided to get the rover to the correct location.
- Create a map and/or obstacle course from your base camp to the supply location.
- Make sure you include at least 3 different surfaces found on Mars.
- Provide a drawing or show the coding blocks the rover used to navigate the surface of Mars and arrive at the correct location.

ENGINEERING DESIGN PROCESS & *FIRST* CORE VALUES

FIRST Engineering Design Process | Explore *FIRST*® Core Values

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BUILDING THE BACKGROUND & BRAINSTORMING

- Watch PBS Kids: Kids Visit the Mars Yard
- Reflect, research and answer the questions below.
- What is the surface like on Mars? What difficulties would a rover have?
- What ideas do you have for your own drawing or physical model of Mars?
- What features of the rover help you navigate the surface of Mars?

SKETCH YOUR DESIGN

Sketch your path to the supplies on the left and write your step by step code that you would need to get your rover from base camp to the supplies on the right.

Sketch the path to the supplies	Write the steps the rover will take to get to the supplies and back
Start Finish	

REFLECTION QUESTIONS

1. What surfaces did you include on you map of Mars?
2. Can you combine steps to make your code shorter?
3. What skills did you use or learn in this activity?

GO FURTHER!

Learn more about Mars and its Rovers:

https://spaceplace.nasa.gov/all-about-mars/en/

CORE VALUES SELF-REFLECTION

	Amazing Skill	Great Job	Making Progress	Could Be Better
Discover	I approached the tasks looking for all possible answers independently and used perseverance to discover the answer on my own.	I approached the tasks and asked questions from one other person but persevered to discover the answer on my own.	I approached tasks but needed assistance multiple times to reach a point of discovery.	I depended on others to make the discovery for me.
Innovation	I used creativity and perseverance to solve problems on my own, coming up with unique solutions for the tasks I was given.	I used creativity and perseverance to solve problems on my own coming up with different solutions for the tasks I was given.	I used creativity but struggled with perseverance to solve problems on my own.	I struggled with being creative and only used the information given and needed a lot of encouragement from others to complete the task.
Impact	I approached the tasks applying understanding of the information with the impact it can have on me and my future as well as how I could help others.	I approached the tasks knowing and applying the information with impact it can have on me and my future.	I understand the tasks but struggle to apply how it will help me in my future or to influence others.	I understand the tasks but did not approach it with understanding the impact it can have on my future or others.
Inclusion	I approached all tasks with inclusion of others' ideas, I showed tremendous kindness by including others' views in my projects and work. I approached my solution thinking how all people would interact with the solution.	I approached most with inclusion of others' ideas, I tried to understand others' views and include them in my projects and work. My solution mostly incorporates needs of others.	I approached some tasks with inclusion of others' ideas, I tried to understand others' views and include them in my projects and work. My solution meets only a few needs of others.	I did not approach tasks with inclusion of others' ideas, I tried to understand others' views and include them in my projects and work. My solution is not inclusive of different types of people.
Teamwork	I used collaboration, communication and project management to get all tasks accomplished for myself as well as the others.	I used collaboration, communication and project management to get most tasks accomplished for myself as well as the others.	I used collaboration, communication and project management to get some tasks accomplished for myself as well as the others.	I only sometimes used collaboration, communication and project management and accomplished a few tasks for myself as well as the others.
Fun	I kept a positive attitude throughout and found opportunities to have fun even through struggle. I looked for additional opportunities to have fun in my tasks.	I kept a positive attitude throughout and found opportunities to have fun even through struggle.	I saw the enjoyment and fun after the activity but struggled to see it during.	I only saw struggle in completing my tasks and did not look for times to have fun.