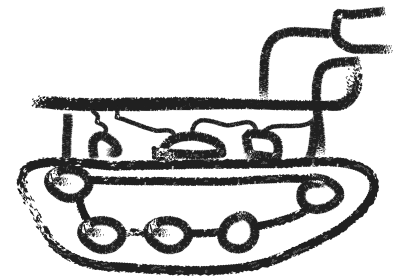


# Robotics

This project will introduce youth to the operation and programming of electronic robots. Teams will be challenged to program a robot to achieve specific and progressively more difficult tasks of their own design. Scouts can follow the scenario that is laid out in the Adventure Book and program the robot to explore new planets for signs of life. Or, alternatively, come up with their own plan and design their own activities (for example, robots can be programmed to explore a mining shaft and detect explosive gasses and flooding).



ROBOTICS

## PLAN

Scouters and patrol leaders will familiarize themselves with the robots and the support documents in advance and introduce them to Scouts.

The group should decide what they want the robot to do and then plan accordingly. The mission described in the Adventure Book is for planetary exploration in which the robot will search an area to find signs of life. To fully implement this mission, the group needs spots where the robot can test the moisture in the soil, the

hydrocarbon level in the air, and the presence of other objects in its way. So the group should prepare the area in which the robot will drive and explore.

Scouts will organize themselves into Planetary Exploration Mission Teams. The Mission Team will avail itself of the support materials and equipment required. After the Mission Team reviews the support material they will proceed to plan their Planetary Exploration Mission.

## DO

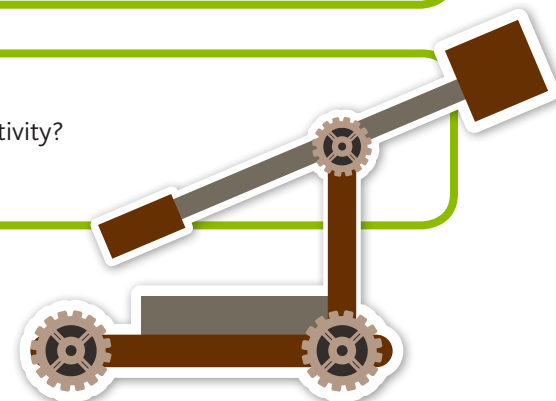
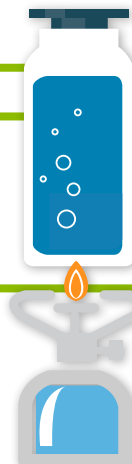
The Adventure book activities are designed based on a step by step approach. Scouts will program the robot to complete each step and then put the programs together to create a more complicated routine. For each activity, Scouts will take the steps below:

- Think about the algorithm
- Create the program in ArduBlock
- Upload the program to the robot and observe how the robot functions
- Revise the program if needed and test it again (repeat this step until the desired results are achieved)

## REVIEW

- What did you learn in the process of working with the robot?
- What else do you think you can do with this robot?

- What did you enjoy the most about this activity?
- How would you do it differently?



# Robotics

## MATERIAL NEEDED:

- DFRobotShop Rover V2 with appropriate sensors
- Computer with Arduino and Ardublock software
- Power supply for charging
- Testing area that includes a source of hydrocarbon (like rubbing alcohol) and moisture (like a bowl of water or moist sand/soil)

## IMPORTANT NOTES:

Robots, while built to be as robust as possible, are subject to various conditions or events which could damage them. Hence it is recommended that falls from a height and being struck by a falling object be avoided. Some of the components on the printed circuit board are subject to damage from electrostatic discharge and hence the handling or touching of circuit board components should be avoided especially in low humidity environments.

Products: <http://www.robotshop.com/ca/dfrobotshop-rover-tracked-robot-basickit-18.html>

Video describing different parts of the board: <http://youtu.be/L5cmJo9BEnw>

