

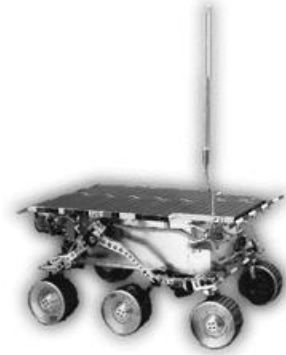
# Mars Pathfinder

## **Objective:**

To write a computer program that directs a robot to a specific location where it should take a sample, then return to base.

## **Introductory Remarks:**

A program is a series of instructions that tells a computer exactly what to do. The computer does no more, no less. So, a computer scientist must design the program carefully, to be sure that the computer will do the right thing.



The Sojourner robot landed on Mars in 1997. Each day, it was given a new program to direct its exploration. The NASA scientists would write small programs to send it to a particular place to gather the next sample.

## **Materials:**

- A Lego rover robot and laptop computer
- A simulation area on the floor marked off in a 6 X 6 foot grid
- Program cards: Turn Left, Turn Right, Forward 1, Forward to End of Grid, Take Sample (only 2 of these).
- 2 red cards representing "Mars Dust"
- Groups of 2 or 3

## **Activity:**

1. Assess the situation; determine where the Mars Dust is located and where the rover base is located.
2. Think about and discuss with your partner(s) the steps needed to sample the dust and return the rover to its base.
3. Play the role of programmer – Put the index cards provided in order to create a program for your robot.
4. Test your program. Use the laptop to enter your sequence of cards and download the program to the rover.
5. Fix/Debug the program, if needed.

## **Notes:**

Can you run your same program more than once, without touching the rover in between?

Can you write a program that finds and samples the dust, *regardless of where the rover is placed initially?*