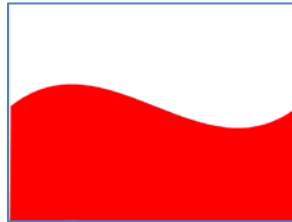| Unit 5: Rover Sensors	Application: The Winding Road

In this application for Unit 5, you will write a program to get the Rover to follow a path on a piece of paper.

Objectives:

- Use COLORINPUT to detect and follow a curved path on paper
- Need a sample path on paper (See the PDF File of the test pages.)

Write a program to get the Rover to follow a curved path on paper using the color sensor. The path will be described by two different colors like this:

The Rover will start at the left edge of the page and travel to the right following the curved path across the paper. When the Rover sees RED, it will turn to the left a little and move forward a little. When the Rover sees WHITE, it will turn to the right a little and move forward a little.

Experiment with the turning angle and the moving distance to see how the Rover reacts to the different colors. If your page is red and white as in the image above, you can use **READ COLORINPUT.RED** to see what values are given by each side of the paper. If you use a different color such as black, you can use **READ COLORINPUT.GRAY** (or .GREEN or .BLUE).

Here's a program, colortest(), that you can use to test the Rover's color sensor. See what values you should use in your program:


```
Define colortest()=
Prgm
Send "CONNECT RV"
While getKey(0)=" "
  DispAt 1,"Press any key to end."
  Send "READ RV.COLORINPUT.RED"
  Get r
  DispAt 2,"Color value: ", r
EndWhile
EndPrgm
```

Notice that the Rover does not move in this program. Use the above program to determine what the Rover sees on each side of the wavy line by observing the values of R that are displayed. Use this information to design your program. Test your program by placing the Rover on the left edge of the paper with the color sensor near the border between the red and white sides of the paper. Be sure Rover's color sensor is over the paper. Your program should work no matter where the Rover begins.

> **Teacher Tip: READ COLORINPUT.RED** produces a value from 0 to 255. White is not 0, black is (but getting 0 as a value is really difficult). Red produces 255; white is approximately 55.

Sample solution:

```
Define rover5app()=
Prgm
Send "CONNECT RV"
While getKey(0)="☐"
Send "READ RV.COLORINPUT.RED"
Get color
DispAt 1,"Color =",color
If color >200 Then
Send "RV LEFT 10"
Send "RV FORWARD .15"
Else
Send "RV RIGHT 10"
Send "RV FORWARD .15"
EndIf
Wait 0.5
EndWhile
EndPrgm
```

The turning angle (**LEFT** or **RIGHT**) and the **FORWARD** values are approximate and can be refined depending on the path to be followed.