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## 6. Embedded Systems Lab Exercises

### 1. Task:

Fit your Roverbot with a light sensor pointing downwards. With the help of this sensor, the robot is capable of following a black line.

- Configure your RCX unit in such a way that the light sensor values can be retrieved and displayed in a suitable way. Determine the range of readings the light sensor returns when the robot is moving over a white or a black area, respectively. These values will also depend on ambient lighting! Take care to make your program easily adaptable to different lighting conditions.
- Write a program which is **as short as possible** to make your robot find the black line from an arbitrary starting point and move along this line. The arena to be used is made up of a black line forming a large oval.

### 2. Task:

Make your robot follow the bended line (open “8” shape) provided. Note that the short and simple algorithm might not work for this pattern!

*Hint:* Consider the fact that the light sensor does not read a value for one single point, but for a certain area, thus delivering a lighter or darker value of grey, depending on the location relative to the black line. Thus, try to have your robot detect the border of the line instead of the black area.