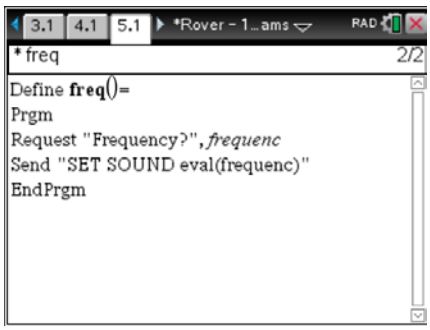
Unit 4: Make Rover Move! — Application: Polygons

The application for this unit is to program the Rover to make a *polygon* where the user enters the length of a side (in 'Rover units') and the number of sides of the polygon. The Rover will then make the polygon.

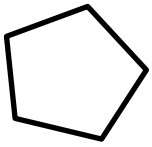
Objectives:

- Input statements
- Using **eval( )** in Rover instructions
- Understanding polygon principles
- Working with COLOR and timing (**Wait**)

Recall that the purpose of **eval( )** is to convert the value of a handheld variable or expression into a string to be sent to the TI-Innovator™ Hub. In the sound program shown at the right, the user enters a frequency for the variable *frequenc*. The **eval(frequenc)** function converts that number into a string representation that the TI-Innovator Hub can process.



Write a program that asks for the length of a side and the number of sides of a polygon and moves the Rover in that pattern. You can add a marker to the Rover and actually draw the polygon on a large sheet of paper. Remember that 1 unit is 10 cm.



Optional: Make the COLOR LED light up at the vertices of the polygon.

> **Teacher Tip:** The Rover has to turn 360/n degrees at each corner since the sum of the exterior angles of a polygon is 360 degrees. This is an important geometric principle of regular polygons.

Some useful commands:

```
Request "LENGTH OF SIDE?",L
Request "NUMBER OF SIDES?",N
For I,1,N
Send "RV FORWARD eval(L)"
Send "RV RIGHT <something>"
EndFor
```

> **Teacher Tip:** Suggested solution:

```
Request "LENGTH OF SIDE?",L
Request "NUMBER OF SIDES?",N
For I,1,N
  Send "RV FORWARD eval(L)"
  Wait L
  Send "SET RV.COLOR.BLUE 200"
  Send "RV RIGHT eval(360/n)"
  Wait 1
  Send "SET RV.COLOR.BLUE 0"
EndFor
```