Unit 4: Make Rover Move! **Skill Builder 2: Driving Features**

In this lesson, you will investigate some of the optional driving features. The four driving commands in Skill Builder 1 did not include the closing quotation mark and closing parenthesis. This is because there are other options that you can supply to the commands. This lesson investigates those options.

Objectives:

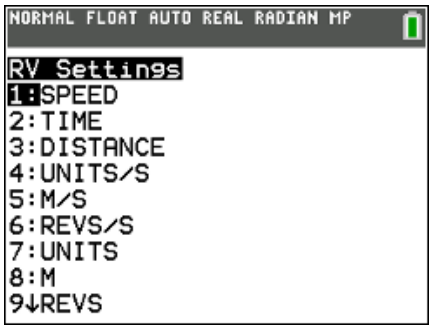
- Extending the driving features of the Rover
- **RIGHT** and **LEFT** options
- Wait

Parameters for FORWARD and BACKWARD

These driving commands have three optional parameters:

- **SPEED**
- **TIME**
- **DISTANCE**

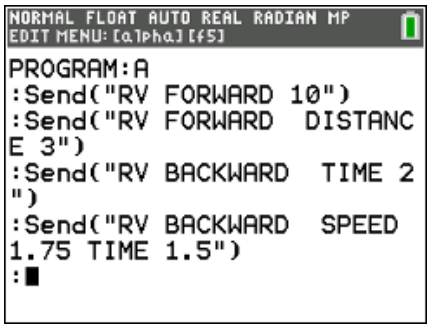
They are found in the **prgm > Hub > Rover (RV)… > RV Settings…** menu. Also, **SPEED** rates (**UNITS/S** and **M/S**) can also be accessed in this menu.



Using DISTANCE, **SPEED** and **TIME**

Some examples of different implementations of the **FORWARD** command:

- **FORWARD DISTANCE #** is the same as **FORWARD #**.
- **FORWARD DISTANCE # M** moves the Rover **# Meters**.
- **FORWARD # SPEED #** where *speed* is between 1.4 and 2.3.
  - Values outside this range result in a TI-Innovator™ Hub error.
- **FORWARD TIME #**.



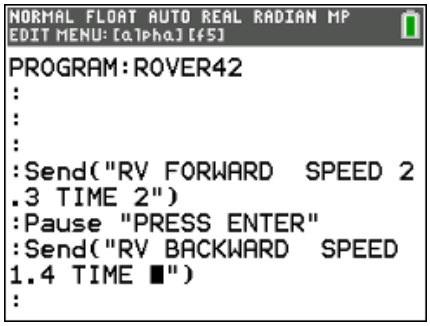
You can specify any two of these three options in the **FORWARD** and **BACKWARD** commands.

You can also use **eval( )** if the value you want to use is stored in a calculator variable or if you want to use the result of an expression.

SPEED and TIME Program

1. The program on the right has this command already added: **Send("RV FORWARD SPEED 2.3 TIME 2")**

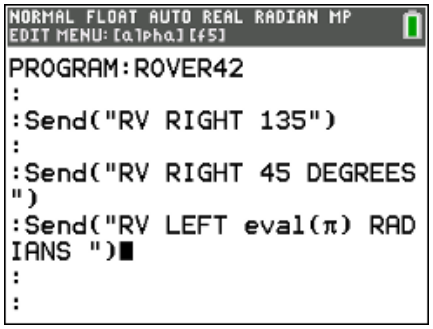
2. Complete the program by providing the correct **TIME** so that Rover returns to its starting position: **Send("RV BACKWARD SPEED 1.4 TIME ?")**



Hint: **DISTANCE = SPEED * TIME**

RIGHT and LEFT Options

These commands by default turn the Rover **RIGHT** or **LEFT** 90 degrees but you can add a degree measure to the command to turn any angle (-360…360 degrees). Negative values are also permitted, so **LEFT -90** is the same as **RIGHT 90**.

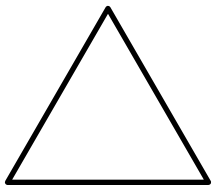


3. Add a command to make the Rover turn **RIGHT 135** degrees. You have to key in the **135** plus the closing quotation mark and closing parenthesis. The word **DEGREES** is not needed but is available in the **RV Settings…** menu for clarity.

You could also specify the angle measurement in **RADIANS** or **GRADS** but these units must be stated and are also found in the **RV Settings…** menu.

Some examples are shown to the right. What is the final heading of the Rover after these three statements are processed?

Write a program to make the Rover drive along the path of an equilateral triangle.



Start with:

Send("CONNECT RV")
Send("RV FORWARD ?")
Send("RV LEFT ?")

Or, use a loop.