# Meet the TI-Rover

#### TI-Nspire CXII Python

Texas Instruments @ticalculators





## Neet the TI-Innovator Rover





### Opening an existing TI-Nspire document file



Press the **[home/on]** key to display the home screen.

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	3 Recent
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Use **arrow keys** and **[enter]** or Press **[2]** to select 2 Browse files.

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Use **arrow keys** and **[enter]** to select a folder and a file.

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**Note:** Pressing the **[home/on]** key repeatedly toggles between the home screen and the current document.







## Saving a TI-Nspire document file

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folder indicated above. Press [enter] to save the file to the

save the file. folder before pressing [enter] to arrows and [enter] to select a [**UP**] arrow key and then use To change the folder press the

Press [esc] to cancel the save

to save the TI-Nspire document file. You can use [ctrl] [5] as a shortcut



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### Rover from the top



# Editing a Rover Program

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🔁 Python Shell		3/3
>>>#Running di >>>from drive ir >>>	rive.py nport *	

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rover.py import ti_rover a rv.forward(3)	S rV	3/5	rv.forward(3)
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Press **[ctrl] left** to go back to your Python editor page.

Use the arrow keys to position the cursor to change the value of the forward distance. Press **[del]** to backspace over the 3.

Type in a new value for distance, **right arrow** to the end of the line, then **[enter]** to move to the next line.

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1.1 1.2	*Doc	rad 🖉 🗙	◀ 1.
🛃 *drive.py		3/4	🔁 F
import ti_rover as rv rv.forward(5)			>>> >>> >>> >>>

Press **[ctrl] [R]** to run the program again from a Python shell on the next page.





# Turn Rover Over

# What do you see?



## Running a Rover Program

Python Shell >>>#Running drive.py >>>from drive import \*

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the shell by pressing [ctrl] [R]

Your program runs in a Python

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You can re-run the program from

		rv.forward(3)
		vi za rover as rv
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		<u> </u>

Press [ctrl] [R] to run the program from a Python shell on the next page.

Note: [ctrl] [R] also checks syntax and stores program changes. [ctrl] [B] is another option for checking syntax and storing. \* before the program name indicates that changes have not name indicates that changes have not been stored.

Before running the program make sure that Rover is connected to the calculator

Rover is connected to the calculate

- Rover is on a flat surface ready to roll









### Sensors on Rover

the wheels Motors to turn

measure distance

Ranger to

Color sensor to detect different colors

TEXAS INSTRUMENTS

# Creating a Rover Program



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<ul> <li>1</li> <li>2</li> <li>3</li> <li>4</li> <li>5</li> <li>6</li> <li>7</li> <li>8</li> <li>9</li> <li>2</li> <li>A</li> </ul>	Add Calculator Add Graphs Add Geometry Add Lists & Spreadsheet Add Data & Statistics Add Notes Add Vernier DataQuest™ Add Widget Add Program Editor Add Python	RAD	<ul> <li>1</li> <li>2</li> <li>3</li> <li>3</li> <li>4</li> <li>5</li> <li>6</li> <li>6</li> <li>7</li> <li>8</li> <li>9</li> <li>2</li> <li>4</li> </ul>	Add Calculator Add Graphs Add Geometry Add Lists & Spreadsheet Add Data & Statistics Add Notes Add Vernier DataQuest™ Add Widget Add Program Editor	1 2	RAD	×		1.1	Ne Nai Ty
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Press **[menu]** to bring up a menu of applications to add to the page.

Note: You can also add a new page to the document by pressing [ctlr] [doc] +page.

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You begin at a blank edit screen.

Press **down arrow** repeatedly then press **[enter]** or press **[A]** to select Add Python.

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1 import ti\_rover as rv

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🔁 \*rover.py

import ti\_rover as rv





Enter your program name and press **[enter]**.

	4 1 Actions ►De 1 forward(distance)	RAD 🚺 🗙	
8	<ol> <li>backward(distance)</li> <li>backward(distance)</li> <li>left(angle_degrees)</li> <li>right(angle_degrees)</li> <li>Drive with Options</li> </ol>	2/4 ▶t ti_rover as rv	
	6 stop() 7 stop_clear() 8 resume()	*Doc	rad 🚺 🗙
	9 stay(time) 🛃 *rov	ver.py	3/5
	A to_xy(x,y) import 1 v.forwa	i_rover as rv ard(3)	
2/4			
	Press [menu]	then <b>[9]</b> TI Ro	ver <b>[2]</b>

Press [menu] then [9] TI Rover [2] Drive [1] forward() to paste to the edit line. Type a value for units to drive. **Right arrow** to the end of the line and press [enter] to complete the statement.

Press **[ctrl] [R]** to run the program from a Python shell on the next page.



 Importe\_low

 Importe\_low

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4 1 Actions

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▷ 2 Run

🖪 3 Edit

Press [menu] then [9] TI Rover [1] Import ti\_rover. Importing the ti\_rover module is required at the beginning of every Rover program.

\*Doc

RAD

# **TI-Rover orientation and virtual grid**



Rover programs set the initial position as the origin and the heading as 0 degrees measured from the x-axis.

**Note:** The Rover tracks its position on a virtual coordinate grid with a unit value of 10 cm. The coordinate grid position applies to the to\_xy(x,y), to\_polar(r,theta\_degrees) and to\_angle(angle, "unit") functions on the Rover Drive menu. The virtual grid also applies to Path menu functions.



## Inserting a new TI-Nspire document

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a program.

Press [1] to select 1 New document.



display the home screen. Press the [home/on] key to

document. the home screen and the repeatedly toggles between the **[home/on]** key document open, pressing Note: If you have a



### Connecting Rover to your calculator

3 Make sure that your Rover is switched on and on floor ready to roll before running the program.





E

**Unit-to-unit cable** 

