

What you need

(TI-Nspire CX II configuration)

Tello drone
with battery
inserted



Micro:bit External battery
connected to BitMaker board.
(Power for the WiFi module)

**Extra Tello
batteries and
charger**



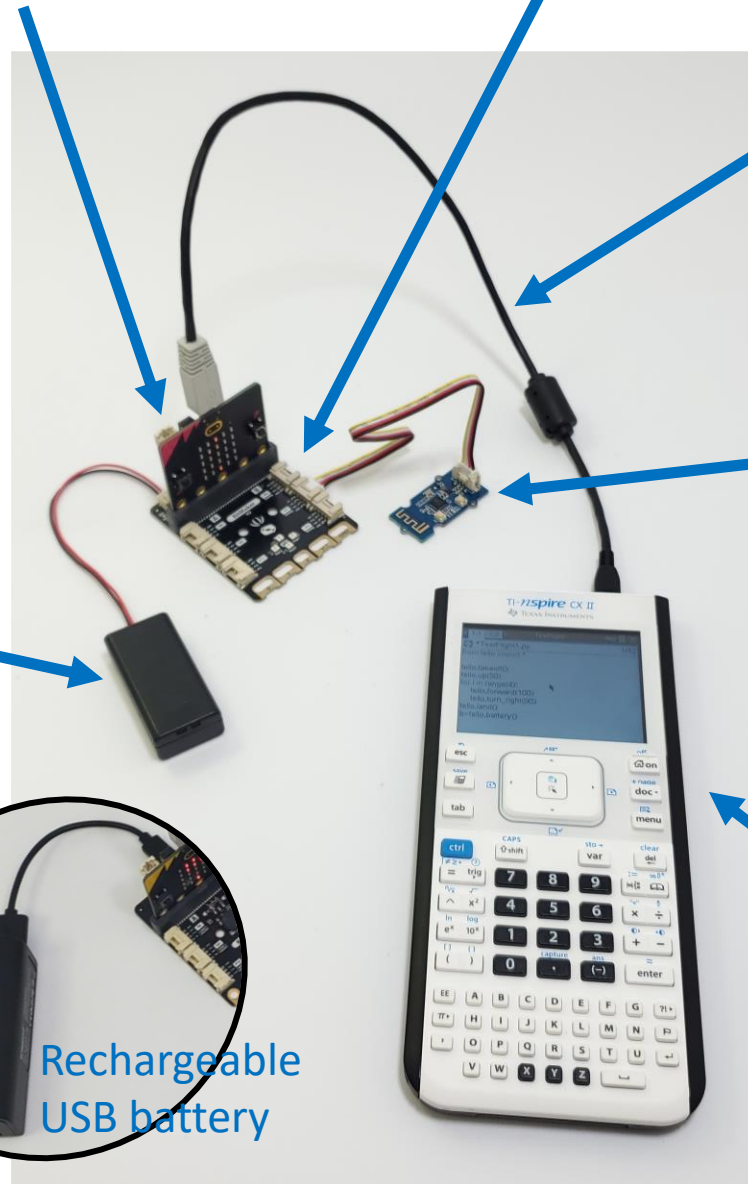
micro:bit V2 - flashed
with ti_runtime hex file

**Grove BitMaker V2 expansion
board** for micro:bit connection

USB OTG mini <=> micro cable
to connect calculator to the
micro:bit

Grove WiFi V2 module
Including the Grove cable
connected into the
Pin1/Pin2 port

TI Graphing with Python
to write and run Python
programs



Alternative

Rechargeable
USB battery

What you need

(TI-84 Plus CE Python configuration)

Tello drone
with battery
inserted



Micro:bit External battery
connected to BitMaker board.
(Power for the WiFi module)

Alternative

**Extra Tello
batteries and
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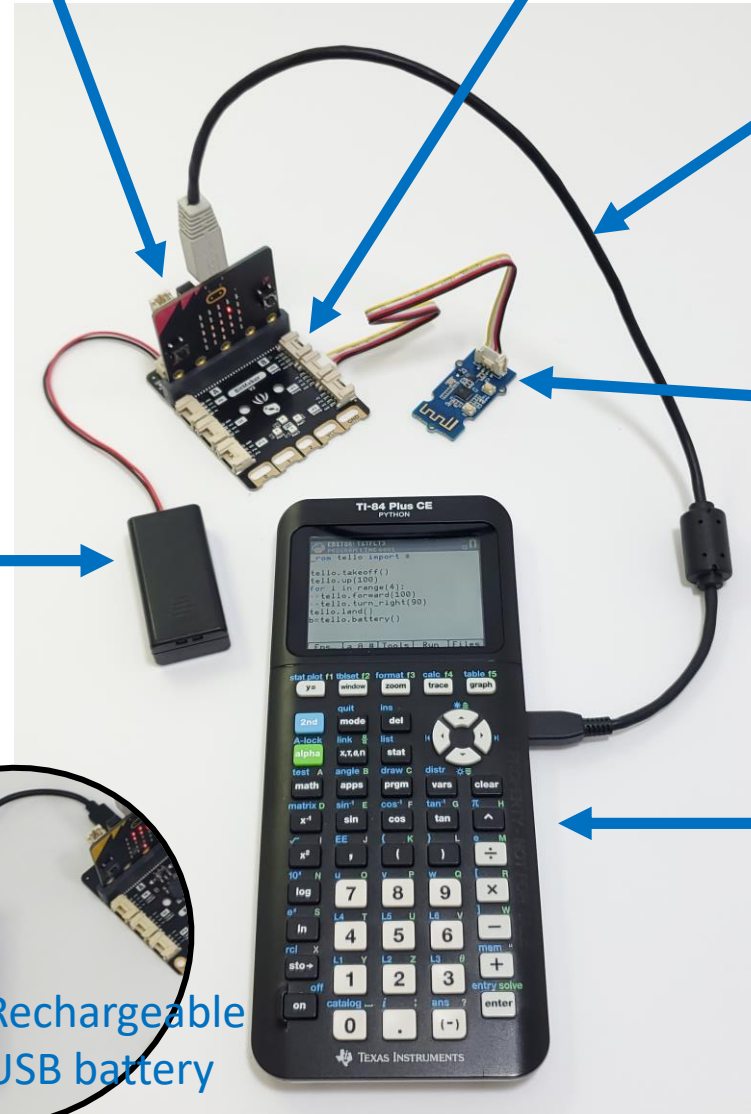
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to write and run Python
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Rechargeable
USB battery

What you need: TI Calculators with Python (North America)

TI-Nspire CX II family calculators



North America

- **TI-Nspire CX II**
- **TI-Nspire CX II CAS**
- Product info: [Link](#)
- Where to buy: [Link](#)

School recommendation:
Calculator 10-packs which include
a 10-calculator docking station for
charging and file transfer.

TI-84 Plus CE Python calculator



North America

- **TI-84 Plus CE Python**
- Product info: [Link](#)
- Where to buy: [Link](#)

School recommendation:
Calculator 10-packs which include a 10-
calculator charging bay.

Use-scenario recommendations




In-Person Learning

- Each student should have a calculator to write and run their own Python programs.
- Students working in groups of **two** to **four** share a Tello drone and connectivity configuration, taking turns to fly the Tello drone.
- 4:1 ratio: Four calculators per Tello/connectivity configuration.



Remote Learning

- Each student should have a calculator to write and run their own Python programs.
- Each student will need their own Tello drone and connectivity configuration.
- 1:1 ratio: One calculators per drone/connectivity configuration.

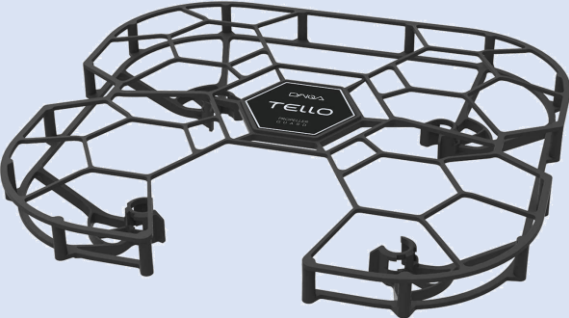
What you need: Tello Components

Item	Links for Information and Procurement
<p data-bbox="84 292 665 329">Tello Drone – EDU model (~\$130)</p> 	<p data-bbox="907 292 2040 329">RYZE Tello EDU website: https://www.ryzerobotics.com/tello-edu</p> <p data-bbox="907 344 1651 381">Google Shopping search (Link): “Tello EDU”</p> <p data-bbox="907 444 2420 582">The Tello “EDU” model is recommended for greatest stability and flexibility with educational activities. Comes with one battery and a USB charging cable that plugs into the Tello USB port.</p>
<p data-bbox="84 715 555 752">Extra Tello batteries (~\$55)</p> 	<p data-bbox="907 715 1819 752">Google Shopping search (Link): “tello battery 4 pack”</p> <p data-bbox="907 815 2382 903">Needed for repeated Tello flights. One battery may last 5 to 10 minutes with rigorous use.</p>
<p data-bbox="84 986 570 1023">Tello battery charger (~\$20)</p> 	<p data-bbox="907 986 1944 1023">Google Shopping search (Link): “tello 4 in 1 battery charger”</p> <p data-bbox="907 1086 2339 1123">Note: Some vendors include batteries and charger <u>together</u> (totaling ~\$65 to \$120)</p>

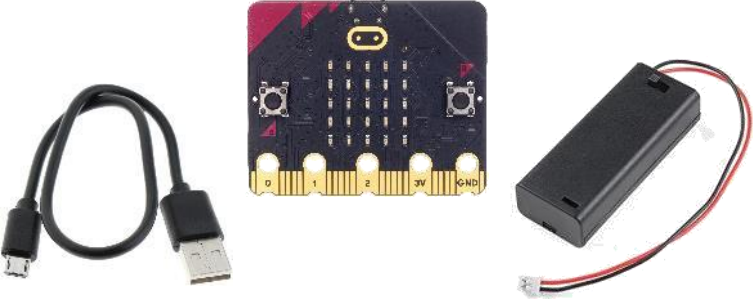


What you need: Tello Components

Item	Links for Information and Procurement
<p data-bbox="86 291 715 329">Replacement Tello Propellers (~\$10)</p> 	<p data-bbox="907 291 1862 329">Google Shopping search (Link): “tello drone propellers”</p> <p data-bbox="907 391 2410 482">Optional. May eventually be needed to replace damaged propellers, or add a little flair with propeller colors.</p> <p data-bbox="907 544 1888 582">One package should be enough for multiple Tello drones.</p>
<p data-bbox="86 819 830 858">Tello Drone Carrying Case (Optional) (~\$18)</p> 	<p data-bbox="907 819 1905 858">Google Shopping search (Link): “tello drone carrying case”</p> <p data-bbox="907 919 2270 958">Optional. A convenient way to store and carry Tello drones to prevent damage.</p>



What you need: Tello Components

Item	Links for Information and Procurement
<p data-bbox="86 292 825 332">Tello Full Propeller Guard (Optional) (~\$23)</p> 	<p data-bbox="912 292 2048 332">Google Shopping search (Link): “Cynova Tello full propeller guard”</p> <p data-bbox="912 392 2328 482">Optional. Useful if you prefer a propeller guard that offers greater protection from spinning rotors.</p>

What you need: Connectivity Components

Item	Links for Information and Procurement
<p data-bbox="84 291 504 329">BBC micro:bit V2 (~\$20)</p>  <p>The image shows three items: a black USB micro cable on the left, a BBC micro:bit V2 board in the center, and a black battery holder with two AAA batteries on the right.</p>	<p data-bbox="901 291 1964 329">microbit.org website: https://microbit.org/buy/?location=US</p> <p data-bbox="901 339 1691 378">Google Shopping search (Link): “micro:bit V2”</p> <p data-bbox="901 444 2456 582">The BBC micro:bit V2 GO Bundle includes a micro:bit, a USB micro cable, a battery holder and two AAA batteries. You can also purchase BBC micro:bit Club 10-packs that include a corresponding number of USB cables, battery holders and batteries.</p>
<p data-bbox="84 662 728 701">BitMaker V2 expansion board (~\$11)</p>  <p>The image shows a black BitMaker V2 expansion board with various components and connectors.</p>	<p data-bbox="901 662 2333 701">Seeed Studio: BitMaker V2: copy/paste link into your browser (include the dashes)</p> <p data-bbox="901 715 1951 753">https://www.seeedstudio.com/CH-BitMaker-V2-p-5330.html</p> <p data-bbox="901 768 1174 806">SKU 114992653</p> <p data-bbox="901 868 2430 1006">This is an expansion board that the micro:bit V2 and WiFi module plug into. There is an original BitMaker and a newer BitMaker V2 board. The BitMaker V2 is preferred if available for purchase, otherwise, the original BitMaker board is compatible.</p>
<p data-bbox="84 1088 486 1179">WiFi module V2 (~\$16) (and cable)</p>  <p>The image shows a blue WiFi module V2 on the left and a Grove cable with a white connector on the right.</p>	<p data-bbox="901 1088 2303 1126">Seeed Studio: Grove - UART WiFi V2 (ESP8285): copy/past link into your browser</p> <p data-bbox="901 1140 2058 1179">https://www.seeedstudio.com/Grove-UART-WiFi-V2-ESP8285.html</p> <p data-bbox="901 1193 1174 1232">SKU 113020011</p> <p data-bbox="901 1293 2354 1379">ESP8285 is the latest version. This is recommended over the older ESP8266 version. The WiFi module comes with a Grove cable for connection to the BitMaker board.</p>

What you need: Connectivity Components

Item	Links for Information and Procurement
<p data-bbox="84 289 695 332">USB OTG mini <> micro cable (~\$8)</p> 	<p data-bbox="879 289 1949 332">Google Shopping search (Link): “USB OTG mini to micro cable”</p> <p data-bbox="879 389 2415 532">Used to connect the TI graphing calculator to the micro:bit V2 board. (Teachers can request a single sample cable free by filling out the form found here on the TI website. http://ti-eneews-education.ti.com/cable)</p> <p data-bbox="879 589 1490 632">TI SKU Number: (to be determined)</p>
<p data-bbox="84 718 407 761">External battery</p> 	<p data-bbox="879 718 1465 761">Wide variety available on Amazon</p> <p data-bbox="879 818 2440 961">Used to power the BitMaker V2 board. An alternative to use of the micro:bit battery pack. Connected via USB type A to micro cable that comes with the micro:bit kit or the Tello drone.</p>