# Sample Activity: *Could I use a Barometer to measure Altitude?*

What do students know about air pressure? What is being measured by the barometer, and how might this be related to altitude (science)

How might students convert their barometric pressure readings to measure height above a given point? (mathematics and science)

Can you account for observed differences? How might the most effective exploration be designed? How accurate is the data they collect? How might they validate this?
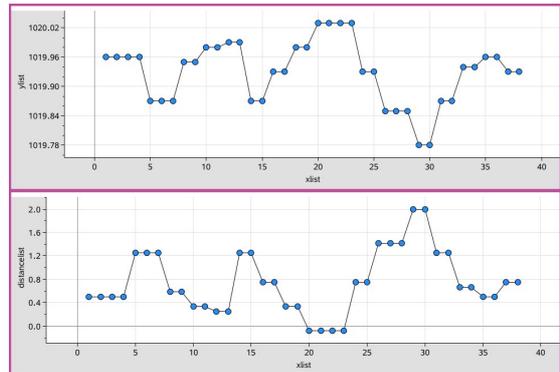
Sensors: Barometric Pressure

Step 1: Connect	
Step 1: Connect (1.1) Turn on your TI SensorTag and open the TI_SensorTag.tns document. (1.2) Press **'Scan'** and wait for the checklist of sensors. (1.3) Select **Barometer** (as shown). (1.4) Tap on the blue **CC2650 SensorTag** button at the top left. (1.5) Wait for the Sensor readings to appear and begin to change. *You are now connected – time to grab some calibration points!*	
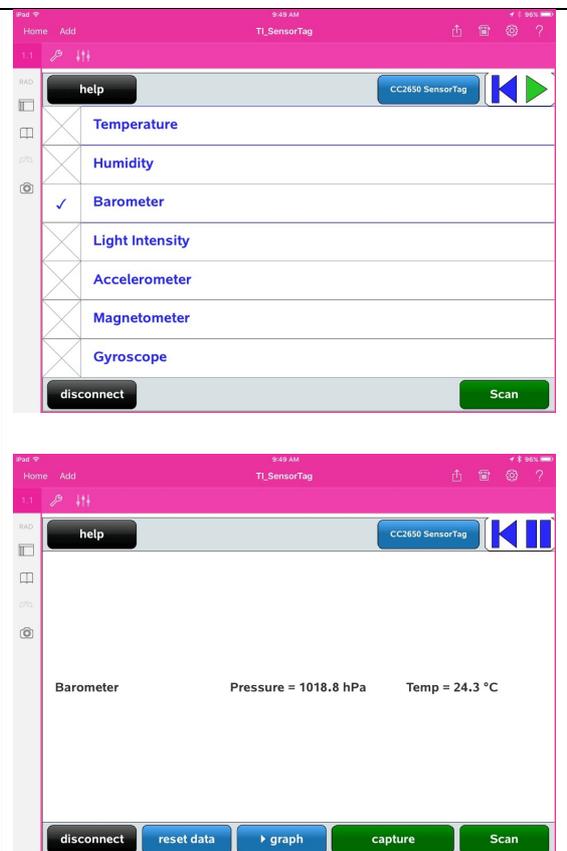
Step 2: Capture Calibration Data

(2.1) Tap on the centre of the screen. You will see the data window change to a graph window, as shown.

You will also see the green button at the centre bottom of the window change to read **'calibrate**.

(2.2) Place your SensorTag **on the floor** (or wherever you want your zero height to be). Tap the green **'calibrate'** button.

(2.3) Now place your SensorTag **1 metre above** the zero position, and tap the button to capture a second point.

(2.4) Tap the blue **'reset data'** button and you will set the data stream back to zero, and display both barometer and altitude readings.

Step 3: Working with the Data

(3.1) Move to page 1.2 (either swipe left from the right edge of the screen, or use the page sorter at the top left side of the screen).

Among other things, you will see a spreadsheet page. Column B shows the values you have just captured in 'CalibList'. Cell B1 shows the barometer reading at zero, and B2 shows the 'unit' reading (taken at 1 metre).

Two other lists have been captured – 'xlist' (time) and 'ylist' – the barometric pressure readings.

Your challenge: How to convert the barometric pressure data to distance using the calibration values you have captured?

The two values are sufficient for a linear model, which seems to work reasonably well for distances up to around 1.2 metres (with some serious limitations!).

What other model(s) would make sense here?