Get the Height Right!

Drone
Proximity Sensor
Altimeter

Because of your superb drone piloting skills and your strong grasp of sensor technology you have been hired to measure the height of tall ceilings using sensor technology and a drone.

Your mission is to use a drone, capable of carrying databot™ (34 grams), to measure the height of a room ceiling using an altimeter. As a safety precaution, there is a proximity sensor on databot™ that will provide details on when you are getting too close to the ceiling as you must not damage the drone or building.

This mission should be done with a partner where one individual flies and the other observes the data and spots for proximity.

How Does this Work?

databot™'s altimeter determines **altitude** by measuring the force of **air pressure** on a pressure sensitive area in the sensor. As the **altitude** increases, **air pressure** decreases as there is less air above you. As your drone rises, the air above it weighs less and less and Vizeey™ calculates the height you rise based on the altitude change.

Grades: 4 & Up
Time: 15 Minutes
Subject: Physics, Technology, Drones
Topics: **Altitude, Air Pressure**, and **Calibration, Precision**

What You Will Need/Prep

- databot™ 2.0 & Vizeey™
- IOS/Android Smart Device
- Drone (Tello or larger)
- A method to top mount databot™ on the drone.
- Read the Vizeey™ Fast Start Guide and install Vizeey™ if you haven't already.
- Do the Altimeter Sensor Starter and calibrate to your local altitude.
- Use Vizeey™ to scan this QR code and get started.

Drone Master
Get the Height Right
Drone handling precision r...
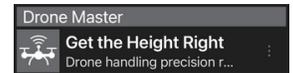
For Tello Users, download the free 3D printable mount for databot™. Download the zip file here.

PDQ: Get the Height Right!

Do this activity as a team of two. One teammate will be the spotter, watching the data and the proximity sensor to warn the pilot if they are getting too close to the ceiling. The other teammate will be the pilot, responsible for getting as close as possible without hitting the ceiling and crashing. Good luck and follow these steps!

1. Carefully mount your databot™ on your drone. Use the 3D printable mount provided if you are using a Tello.

2. Tap on **Get the Height Right** in Vizeey™ to load the experiment. Use the ▶❚❚ icons to start and pause the experiment. Clear your data before each measurement run.

3. With your drone flat on the ground, start your recording.

4. Take off and carefully navigate as close to the ceiling as possible. The proximity spotter will be watching the proximity value carefully to prevent hitting the ceiling.

5. Spotter: Note the minimum value of proximity so you can add that to your height measurement. Prepare to change units as necessary if you are metric or English.

6. Land, add the proximity value (C) to the experiment height value (A). Also add the distance from the floor to the bottom of the databot™ (B) when it is at rest to be precise.

7. Note your final measured height and prepare to submit this data to your client!

Add the minimum value C from your proximity sensor to your final value.

$$A + B + C = D$$

Add the height from the floor, B, to the base of the databot™ to your final value.

C

A

D Total Floor to ceiling height

B

Net Altitude Change: A
Mount Height Value: B
Proximity Value: C
Total Height:

D