Lab Name : Scavenger Hunt

Subject Area: Mathematics [How to find distance ...](https://www.instructables.com/id/Distance-measurement-with-radio-waves/)

Grade: 11

Course: Pre-Calculus

Topic: Trigonometry

Experiment Title:

Hardware:

Software:

Number of Sessions to teach the topics: 1 - 3 sessions at 55 minute classes

Educational standards to be addressed:

Cosmos concepts to be used for the lab:

K12 Educational Goals (How the educational goals are achieved through teaching using the experiment, how the topic is connected to the COSMOS concepts used)

Short Description and Walk-through of the experiment

Testbed mapping of the experiment

**Option #1** (Without any tools from the tool kit)

Step #1: Students will count from 1 - 8 then found into 8 groups with 4 in each group.

Step #2: QR code on the front board that all students will have to access using their phones.

Step #3: Clue #1 groups will have to find missing information based upon the given triangle. Once they have found what they were asked to find, then this will lead to a QR code and Clue #2

Step #4: Clue #2 will have the students complete a Caesar Cipher. This will tell each group what floor they need to go to.

Step #5: Once the groups are on the floor, there will be another QR code by the elevator.

Step #6: Clue #3 will give the distances from the elevator to 2 classrooms. Student have to find all relevant information. They will use the law of sines and cosines to do this.

Step #7: From clue #3, they will get 2 pieces of information. First the area of the triangle is needed to open the lock. Also, the clue will reveal what locker the students need to go to which they have to open.

Step #8: Once the locker is open, there will be a balloon inside with a message written on it that says, “The next clue lies within.” Students will pop the balloon to get the last puzzle.

Step #9: After solving students will find the resultant force which is where the last message is posted. If they calculated correctly room 416 they end up back into the classroom. The last QR code on the door says congratulations.

**Option #2 -**

If the technology is available the students could verify how close they were to the distance from classrooms.

Students will use a microphone and an access point to discover the distance from set points.

* 1st students will use the QR codes to determine which floor they are starting on.
* 2nd students will use triangularization to find the area of triangle EDB. This will lead to the location of a QR code/clue.
* 3rd, students will continue with Option #1 listed in this lesson.

Students will determine the distance from AC, AB & CB. After students find those lengths, they will find all relevant information associated with triangle DCB and EDB.

 