

Lesson 10 Supplemental Teacher Cell Sector Drawing Instructions

Google Earth or Google Earth Pro Download:

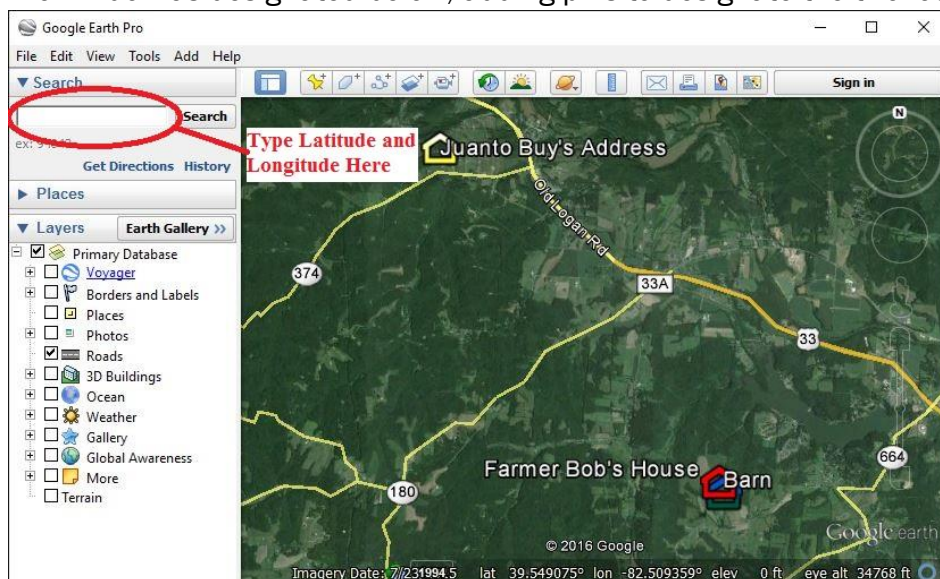
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Interpreting Cell Records:

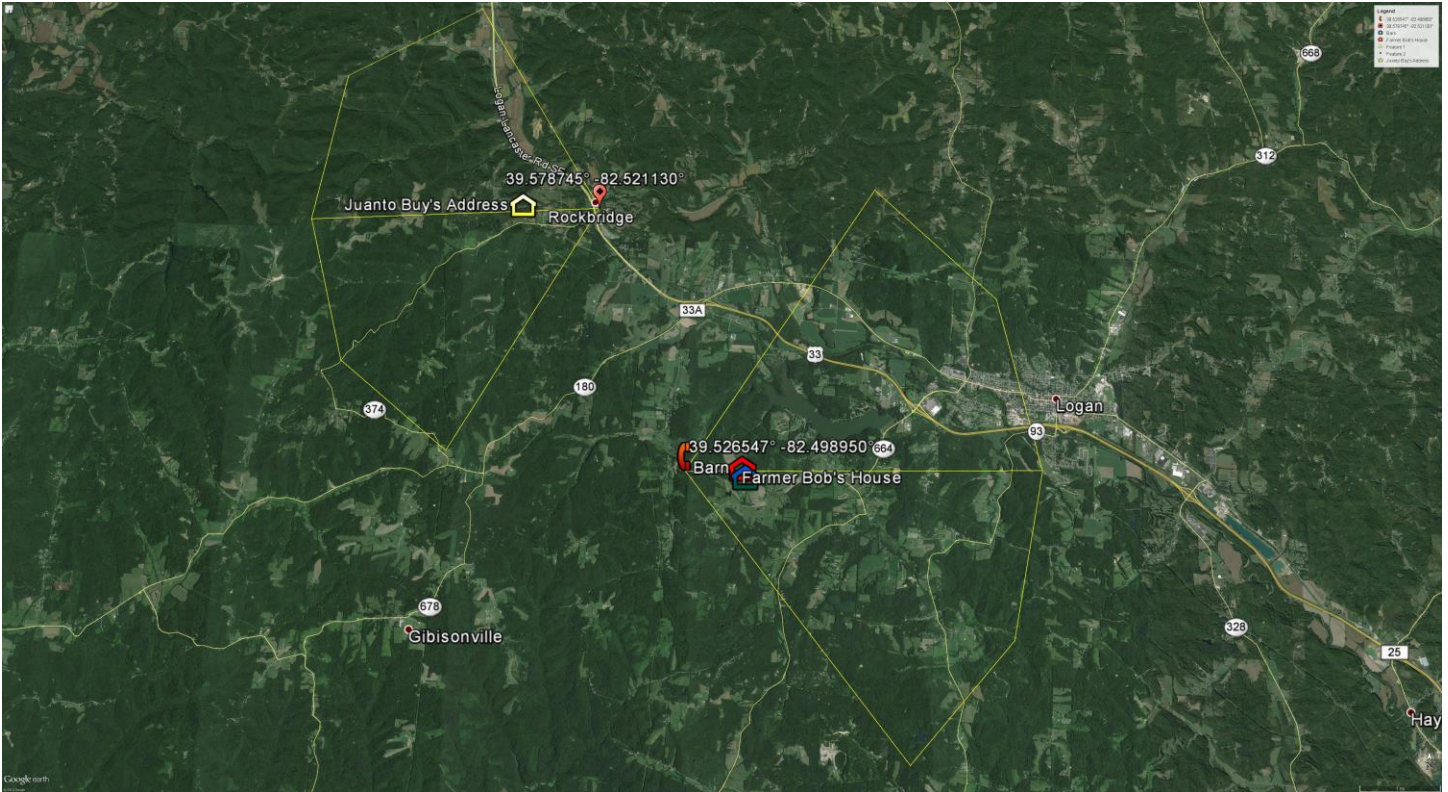
| | A | B | C | D | E | F | G | H | I | J |
|----|-------|------------|----------------|---------------|-------------------|----------------------------|--------------|-----------------------|----------------|-----------------------------------------------------------------------------------------------|
| 1 | Date | Time (EST) | Calling Number | Called Number | Incoming/Outgoing | Duration of Call (seconds) | Type | Tower Location | Sector Azimuth | Content |
| 2 | 10/23 | 2217 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | Hey! Hope you had a good day. I'm so tired. I |
| 3 | 10/23 | 2218 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | I'll have a Compass bearing of center |
| 4 | 10/23 | 2219 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | It got line of 120 degree cell sector |
| 5 | 10/23 | 2220 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | Bob to which denotes direction from |
| 6 | 10/23 | 2221 | 740-555-2757 | 513-555-9874 | Outgoing | | Text Message | 39.578745, -82.521130 | 270 Degrees | Anyways Cell Tower where cell phone |
| 7 | 10/23 | 2222 | 513-555-9874 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | Did you was used. |
| 8 | 10/23 | 2223 | 740-555-2757 | 513-555-9874 | Outgoing | | Text Message | 39.578745, -82.521130 | 270 Degrees | Missequit: The refs are pathetic! |
| 9 | 10/23 | 2224 | 513-555-9874 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | Doesn't surprise me! They've been making bad |
| 10 | 10/23 | 2230 | 740-555-2757 | 614-555-9314 | Outgoing | | Text Message | 39.578745, -82.521130 | 270 Degrees | Hey there! I did have a good day, but it would have been better if I saw your pretty face. |
| 11 | 10/23 | 2231 | 740-555-2757 | 614-555-9314 | Outgoing | | Text Message | 39.578745, -82.521130 | 270 Degrees | Call me tomorrow. I'm curious what you are going to chat with Bob about, and btw I can go |
| 12 | 10/23 | 2232 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | Ok, goodnight |
| 13 | 10/23 | 2330 | 740-555-2757 | 614-555-9314 | Outgoing | | Text Message | 39.526547, -82.49895 | 90 Degrees | Night! |
| 14 | 10/24 | 930 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | Morning! If you are home, I'm going to head |
| 15 | 10/24 | 932 | 740-555-2757 | 614-555-9314 | Outgoing | | Text Message | 39.578745, -82.521130 | 270 Degrees | Yes, I'm home. Come on over. Already at Bob's |
| 16 | 10/24 | 935 | 614-555-9314 | 740-555-2757 | Incoming | | Text Message | 39.578745, -82.521130 | 270 Degrees | I want you to look at my car tire. I think I ran over a nail or something on the way to Bob's |
| 17 | 10/24 | 938 | 740-555-2757 | 614-555-9314 | Outgoing | | Text Message | 39.578745, -82.521130 | 270 Degrees | Oh no! I'll see you soon and can't wait to hear |
| 18 | 10/24 | 2140 | 614-555-9314 | 740-555-2757 | Incoming | 240 | Call | 39.578745, -82.521130 | 270 Degrees | |

Drawing Cell Sectors to Determine Cell Phone Usage Location:

- Refer to Juanto's Cell Record and take notice that there are only two different cell sectors in the record. One has a cell tower location of 39.578745 Latitude and -82.521130 Longitude and a sector azimuth of 270 degrees (due west). The other has a cell tower location of 39.526547 Latitude and -82.49895 Longitude and a sector azimuth of 90 degrees (due east). **Only two cell tower sectors need to be drawn to Represent All Record Entries.**
- Type the Latitude and Longitude for a specific record entry into the search bar at the top left of the Google Earth Pro window as designated below, adding pins to designate the two locations.



- Next, zoom out the map so both Juanto Buy's and Farmer Bob's "Houses" are visible with plenty of room to draw the Cell Sectors on the board. Use a dry erase marker to draw a line to represent the Cell Sector Azimuth that is listed next to the Latitude and Longitude. The Azimuth will be either 90 degrees (due east) or 270 degrees (due west). The Azimuth denotes the centerline of the 120 degree cell sector. To draw the upper and lower boundaries of the cell sector, use a protractor to draw lines 60 degrees on either side of the Azimuth.
- Repeat procedure for the other Latitude, Longitude, and Azimuth. Finished product will resemble the map below with the exception that these sector lines were drawn on the map in yellow while yours will be drawn in marker on the white board the map is projected on:



Alternate Methods of Demonstrating:

- Advanced classes may choose to allow students to read the Cell Records, plot the Tower Locations, and draw the Sectors.
- If technical difficulties or other circumstances make this demonstration too difficult, the grid map provided on Activity Master 19 may be used to plot the location of the cell phones by advising the students the Cell Records provided grid coordinates corresponding to Juanto Buy's and Farmer Bob's residences respectively. The students can then draw 60 degree angles above and below the yellow azimuth lines provided.