**Moon Lab Directions**

1. **Open excel workbook called moon sun rise on the desktop.**
2. **Go to** [**http://aa.uso.navy.mil/data/**](http://aa.uso.navy.mil/data/)
3. **On the page, Click: "Table of Sunrise/Sunset, Moonrise/Moonset, or Twilight Times for an entire year.”**
4. **Enter the year, 2011, and choose sunrise/sunset, New Mexico for the state, and Bloomfield for the city**
5. **Copy (Ctrl +C) from the day 01 all the way down to 31 and copy all these rows (do NOT copy the month, day rise or set, h or m)**
6. **Paste (Ctrl +V) into the tab labeled Sun Data**
7. **Click on the Data tab at the top of the menu and select “text to columns”**
   1. **Select fixed width and hit next**
   2. **Your fixed widths should be automatically correct, but be sure you have a column of dates on the left and columns of times to the right**
   3. **Select finish**
8. **Now, insert a row above your data by going to the home tab at the top of the spreadsheet, clicking insert on the right side of the menu bar, and click insert row.**
9. **In this first column, label it Day of the Year; in the second column label rise, and the third column label set.**
10. **Cut (Ctrl +X) and paste (Ctrl +V) all of the 12 rise columns under the second column ( You should end up with 366 rows)**
11. **Repeat this for the set times**
12. **Now, in the first column highlight days 30 + 31, in the very right hand corner a + should appear. If you drag this down, it should plug in days 32-365.**
13. **Make a 4th column labeled length of day (min). In row 2 (in line with your first day of the year) type in =C2-B2 and hit enter. Again, move your cursor to the bottom right corner of the cell box and a + should appear. Click and drag this all the way down to row 366 to copy the formula to the rest of your cells.**
14. **Make a 5th column labeled length of day (hrs). In row 2, type =D2/60 and hit enter. Again, move your cursor to the bottom right corner of the cell box and a + should appear. Click and drag this all the way down to row 366 to copy the formula to make your cells.**
15. **Time to make graphs.**
    1. **Highlight Columns A, B, and C by holding the Ctrl button and clicking A, B, C.**
    2. **On the top of the menu select insert.**
    3. **There should be an icon for line graphs, click this and select the first option**
    4. **After the graph is made at the top left there should be a button to select data. Click this and delete the day of the year series. This should make your graph complete.**
16. **Graph #2**
    1. **Highlight columns A & D by C by holding the Ctrl button and clicking A, B, C.**
    2. **On the top of the menu select insert.**
    3. **There should be an icon for line graphs, click this and select the first option**
    4. **After the graph is made at the top left there should be a button to select data. Click this and delete the day of the year series. This should make your graph complete**
17. **Repeat steps 4-16 for the moonrise and moonset time**
    1. **To get this data table, hit the back button in your web browser and change type of table to moonrise/moonset.**

**Questions to answer**

1. **What happens to the sunrise and sunset times throughout the year?**
2. **What happens to the length of day throughout the year?**
3. **What happens to the moonrise times throughout the year?**
4. **Is there any pattern between the when the moonrises and sets with the sunrise and sunset times? What is it?**

**BE SURE THAT I CHECK ALL 4 graphs!!! Be sure to ask for any help!**

**Graph 1 \_\_\_\_\_\_\_ Graph 2 \_\_\_\_\_\_\_\_\_ Graph 3\_\_\_\_\_\_\_\_\_ Graph 4\_\_\_\_\_\_\_\_\_\_\_**