



On the graph paper provided, plot the values given in the following data table. The values represent the positions of the sun over a period of eight hours. Write the time next to each plotted point. Also plot the position of the pencil. Connect all of the points on the graph with a smooth line. Measure the length of the pencil shadow for each hour and record your answers in the data table.

| Time | X-axis Value | Y-axis Value | Pencil Shadow (length in cm) |
|-----------------|--------------|--------------|------------------------------|
| 8:00 a.m. | 29 | 2 | |
| 9:00 a.m. | 21 | 15 | |
| 10:00 a.m. | 17 | 23 | |
| 11:00 a.m. | 16 | 29 | |
| 12:00 noon | 14.5 | 35 | |
| 1:00 p.m. | 13.5 | 41 | |
| 2:00 p.m. | 13 | 46 | |
| Pencil location | 1 | 31 | |

- How long is the pencil shadow at noon? _____ At what hour is the shadow longest? _____ Why is the shadow longest at this hour? _____
- Based on the line you have drawn on the graph, describe the path of the sun across the sky.

- In what direction is the pencil shadow pointing at 8:00 a.m.? _____
Where in the sky would the sun be located at that hour? _____
- At what hour is the pencil shadow the shortest? _____ Why is the shadow shortest at this hour? _____
- Why are the summer months in a state such as Texas hotter than the winter months?

Time _____

Merid _____

Path of the Sun Across the Sky

