Name _____Date_____ Period_____

Graphing Homework #_____

Seasons on the Earth are determined by when the direct ray of the sun strikes a specific line of latitude. The summer solstice happens when the sun hits the Tropic of Cancer (23 1/2° N) at a 90° angle. This normally happens around June 21st. For observers in New York, the summer solstice is the day when the sun reaches the highest angle for the year. The angle of the sun increases from sunrise until solar noon and then decreases until sunset.

The summer solstice is also the day with the greatest period of daylight for the northern hemisphere. In New York, we have around 15 hours of daylight and 9 hours of darkness on the summer solstice. As you travel farther north, the difference between daylight hours and nighttime becomes more extreme.

Locations that are located above the Arctic Circle will have 24 hours of daylight on the summer solstice. The southern hemisphere experiences the fewest daylight hours on June 21st. The entire Antarctic Circle is in darkness for 24 hours on this day.

The data below represents the angle of the sun for the entire day for a location found at 41°N latitude on June 21st.

When does the direct ray of the sun strike the Tropic of Cancer?

_____

How does the angle of the sun change from sunrise to sunset?

_____

_____

How many hours of daylight does New York experience on the summer solstice? _____

What part of the Earth is in complete daylight on the June 21st?

_____

What happens in the southern hemisphere on June 21st?

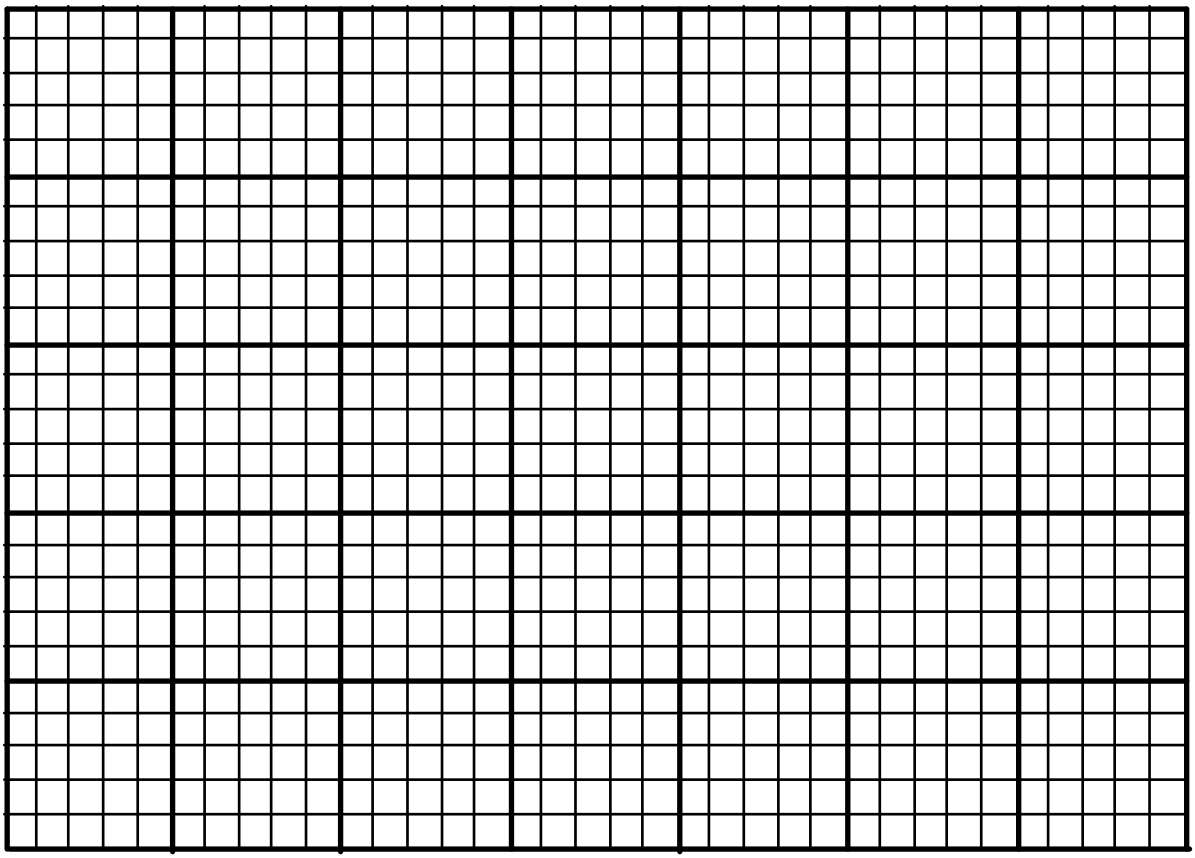
_____

_____

Data for 41° N on June 21st (Summer Solstice)	
Time	**Altitude of the Sun (°)**
4:30 AM	0
5:00 AM	4.6
6:00 AM	14.9
7:00 AM	25.8
8:00 AM	37.1
9:00 AM	48.3
10:00 AM	59.1
11:00 AM	68.2
12:00 PM	72.5
1:00 PM	68.6
2:00 PM	59.7
3:00 PM	49
4:00 PM	37.8
5:00 PM	26.5
6:00 PM	15.5
7:00 PM	5.2
7:30 PM	0.6

Create a line graph from the data table on the Graph Paper on the back.

- create a uniform scale for Time of Day on the x - axis (2 points)
- label the x - axis with both a label and a unit. (2 points)
- create a uniform scale for Altitude of the Sun on the y axis. (2 points)
- label the y - axis with both a label and a unit. (2 points)
- plot all seventeen points on your graph (2 points)
- connect the points to draw your line (1 point)
- put an appropriate title on top of your graph. (1 point)



Answer the questions below in Complete Sentences (2 points each)

(2 points)	x- axis	y - axis
Range		
Boxes		
Divide		
Round up		

1) Describe what happens to the angle of the sun from 10 am to 2 pm.

2) What would the angle of the sun be at 3:30 pm?

3) What times would have an angle of the sun of 60°?

4) How many hours of daylight are received on this day?

5) How would the angles change if you moved closer to the Tropic of Cancer?