Question 1

What do you notice about the number of monthly sunspots over time?

steadily increased

stayed the same

steadily decreased

Correct Answer

goes both up and down over time

Question 2

Which approximate number below is closest to the number of years in the sunspot cycle (the time it takes to go from maximum to maximum or minimum to minimum)?

1000 yr

100 yr

Correct Answer

10 yr

1 yr

Question 3

Citing evidence from the graph you made in Excel, does it surprise you that there were no sunspots during this period? Why or why not?

Question 4

Again, does it surprise you that there are few sunspots during this period? Why or why not?

Question 5

Is this sunspot close to the solar equator or relatively far away? (**Hint:** If you find this difficult to determine, click “Carrington Map” and you’ll get a flat-map projection of the sun. If you’re still not sure, you may need to see a few more runs. Complete the table and then come back to this question.)

close

Correct Answer

far away

Question 6

Are you able to pick out the solar maximum and solar minimum by looking at your sunspot column? Cite data to back up your conclusion.

Question 7

Look at the last column in your data table. Do you notice a relationship between the difference in location of your northernmost and southernmost sunspots? What can you say about the years when there is a relatively small value in your last column?

Question 8

Judging by this diagram, what can you say about the location of sunspots early on in a solar cycle (say 1996, 1997, 1998)? Do they tend to form close to the equator or far away?

close

Correct Answer

far away

Question 9

What happens to the average position of sunspots during the rest of a solar cycle?

sunspots stay at same average position

Correct Answer

sunspots move toward the solar equator

sunspots move toward the poles

Question 10

The figure above is sometimes referred to as a “Butterfly diagram.” If you were to plot the average location of sunspots versus time during the solar cycle (1996-2008) that you just investigated, would your data resemble a “butterfly diagram”? If so, why? If not, why not?

Question 11

Remember that there are 10 degrees of longitude between neighboring lines of longitude. Therefore, to determine how far your spot has traveled, multiply your number of crossed lines by 10 to determine the number of degrees of motion.

_____lines of longitude crossed x 10 degrees per line crossed = _____degrees of motion

0

Correct Answer

0

.5

Correct Answer

5

1

Correct Answer

10

1.5

Correct Answer

15

2

Correct Answer

20
2.5

Correct Answer
25
3

Correct Answer
30
3.5

Correct Answer
35
4

Correct Answer
40
4.5

Correct Answer
45
5

Correct Answer
50

Question 12

If your spot moved a certain number of degrees (your answer from Question 11), how long will it take your spot to make one full rotation (assuming that it does not dissipate before coming back around)? (Note: Make sure to show your math work.)

Question 13

Choose another spot and do the same analysis. Try to find one that is far from the equator. Again, if the sun is currently quiet, your instructor can give you a date that features greater activity.

How long does it take this spot to make a full rotation around the sun?

Question 14

Now open a pre-built movie at this address -- http://tinyurl.com/sunspot-race (be patient -- the movie may take a while to load)

Move your slider to the left and find sunspots 1959 and 1960 (focus just on the numbers – those won't change during the course of the movie). You'll find them near the left side of the sun.

What can you say about the latitude of sunspot 1959 compared to the latitude of sunspot 1960?

Correct Answer

latitude of sunspot 1959 greater than latitude of sunspot 1960

latitude of sunspot 1959 less than latitude of sunspot 1960