

Name _____

Earth Science

Lab 3: Sunspot Analysis

Date _____

Introduction: Photographs of the sun show dark areas on its surface. These spots are believed to be due to solar storms, areas of cooler gases on the surface. The number and pattern of these spots change over time. When the data collected over many years are graphed a pattern emerges. This representation makes it easier to see relationships that are not obvious from a column of numbers.

Objective: You will see how graphing a natural phenomenon can aid in predicting future events.

Vocabulary:

Frame of reference _____

Independent variable _____

Dependent variable _____

Predictable _____

Cyclic _____

Extrapolate _____

Procedure: Observe the graph of the sunspot data to answer questions related to changes.

Questions:

1. Describe the pattern shown on the graph.
2. On this graph, which quantity is the dependent variable?
3. Each peak on the graph represents a sunspot maximum. In which years do these maxima occur?
4. According to the data graphed, during which year did the last maximum occur?

5. What is the average time span (to the nearest tenth of a year) between maxima? Between minima?
6. Predict when the next maximum will occur after the last one plotted on the graph.
7. Predict when the next minimum will occur after the last one plotted on the graph.
8. Extrapolate this graph to determine approximately how many sunspots will occur in the year that you will graduate from high school.
9. How does graphing show us that some natural phenomena may be predictable?

Data

Year	Number of Sunspots
1945	32
1946	100
1947	171
1948	167
1949	174
1950	104
1951	64
1952	31
1953	13
1954	3
1955	35
1956	126
1957	168
1958	172
1959	145
1960	102
1961	45
1962	30
1963	22
1964	7
1965	12
1966	39
1967	86
1968	98
1969	105
1970	107
1971	67
1972	67
1973	37
1974	32
1975	14
1976	12
1977	26
1978	87
1979	146
1980	149
1981	147
1982	115
1983	65
1984	44
1985	16
1986	11
1987	29
1988	101
1989	162
1990	145
1991	144
1992	94
1993	55
1994	31
1995	18
1996	8
1997	20
1998	62
1999	96
2000	123
2001	123
2002	109
2003	66
2004	43
2005	30
2006	15
2007	8
2008	3
2009	3