Satellite technology is everywhere! Right now, there are over 2000 working satellites orbiting Earth. But satellites do not work forever. Because Earth's atmosphere extends hundreds of kilometers into space, satellites in low Earth orbits (called LEOs) eventually experience enough frictional drag from the atmosphere. At altitudes below 300 km, they fall back to Earth and burn up.

The table below gives the number of LEO satellites that re-entered Earth's atmosphere, and the average sunspot number, for each year since 1969.

Year	Sunspots	Satellites
2004	43	19
2003	66	31
2002	109	38
2001	123	41
2000	124	37
1999	96	25
1998	62	30
1997	20	21
1996	8	22
1995	18	20
1994	31	17
1993	54	28
1992	93	41
1991	144	40
1990	145	30
1989	162	45
1988	101	33
1987	29	13
1986	11	16
1985	16	17
1984	43	14
1983	65	28
1982	115	19
1981	146	32
1980	149	41
1979	145	42
1978	87	33
1977	26	19
1976	12	16
1975	14	15
1974	32	21
1973	37	14
1972	67	12
1971	66	19
1970	107	25
1969	105	26

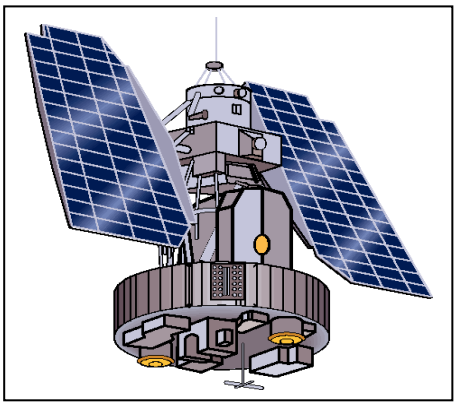

Figure: A typical weather satellite

Problem 1 - Find the mean, median and mode for the number of satellites that re-entered the atmosphere between 1969 and 2004 and burned up.

Problem 2 - From the tabular data, create two groups of satellites that correspond to times when Group A: the number of sunspots exceed 80, and Group B: the number of sunspots is less than or equal to 79. Calculate the mean, median and mode for these two groups.

Problem 3 - What can you say about the effect that sunspots have on the numbers of satellites in Low Earth Orbit that burn up?

Problem 1 - Find the mean, median and mode for the number of satellites that re-entered the atmosphere between 1969 and 2004 and burned up. Answer: The mean value is just the sum of the entries in the third column (940) divided by the number of entries (36) so **Mean = 26.1**. Sort the table in ascending order. The median value is the value corresponding to the 18th entry, which equals **Median=25**. The mode is the most frequent number found in the column of reentries. **Mode = 19**.

Problem 2 - From the tabular data, create two groups of satellites that correspond to times when Group A: the number of sunspots are below 79, and Group B: the number of sunspots is greater than or equal to 80. Calculate the mean, median and mode for these two groups. Answer: See the table below.

Group A: **Mean = 392/20 = 19.6, Median= 18 , Mode = 19**

Group B: **Mean= 548/16 = 34.3 Median= 33, Mode= 41**

Group A			Group B		
Year	Spots	Satellites	Year	Spots	Satellites
1971	66	19	1969	105	26
1972	67	12	1970	107	25
1973	37	14	1978	87	33
1974	32	21	1979	145	42
1975	14	15	1980	149	41
1976	12	16	1981	146	32
1977	26	19	1982	115	19
1983	65	28	1988	101	33
1984	43	14	1989	162	45
1985	16	17	1990	145	30
1986	11	16	1991	144	40
1987	29	13	1992	93	41
1993	54	28	1999	96	25
1994	31	17	2000	124	37
1995	18	20	2001	123	41
1996	8	22	2002	109	38
1997	20	21			
1998	62	30			
2003	66	31			
2004	43	19			

Problem 3 - What can you say about the effect that sunspots have on the numbers of satellites in Low Earth Orbit that burn up?

Answer: Mode satellites re-enter Earth's atmosphere and burn up when there are a larger number of sunspots on the sun.