



## Box and Whisker Plots and Krill Populations

### Student Packet

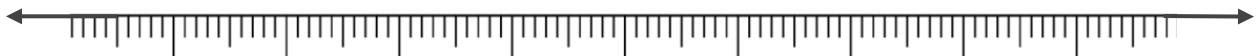
Throughout this assignment, we will be trying to answer the following questions: Has the krill population changed over time? If so, in what way (increase/decrease)? What could contribute to a change in population?

Year	Krill Abundance 1 Square Mile
1977	2539
1978	6970
1979	NO DATA
1980	244
1981	4136
1982	9732
1983	14635
1984	12208
1985	12441
1986	1503
1987	5774
1988	3052
1989	746
1990	1863
1991	220
1992	1747
1993	2450
1994	5368
1995	1787
1996	22270
1997	1939
1998	4827
1999	714

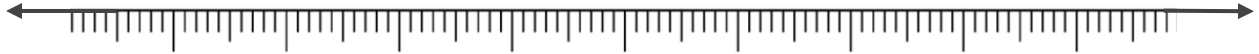
2000	1665
2001	7143
2002	7546
2003	6284
2004	2170
2005	1418
2006	556
2007	2185
2008	7927
2009	961
2010	1893
2011	239
2012	82
2013	566
2014	64
2015	14
2016	335

1. How many years are you given data on?
2. Will that many years provide us with an accurate look at the krill's population in Antarctica?
3. Which year had the lowest krill population?
4. Which year had the highest krill population?
5. Before creating a box plot or calculating the averages, do you believe that there has been a change in krill population? Why or why not?

Create a Box and Whisker Plot of all population from 1977-2016.



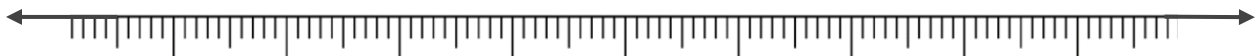
Create a Box and Whisker plot of the population from 1977-1996.



Create a Box and Whisker plot of the population from 1986-2006.



Create a Box and Whisker plot of the population from 1996-2016.



6. Now that you have created several box and whisker plots, visually, during which span of time does the krill population seem the lowest?(1977-1996, 1986-2006, 1996-2016) Which span of time appears to have the highest population?(1977-1996, 1986-2006, 1996-2016)

7. Find the mean of the different time spans.

a. 1977-1996

b. 1986-2006

c. 1996-2016

8. Find the median of the different time spans.

a. 1977-1996

b. 1986-2006

c. 1996-2016

9. Based on the averages and box and whisker plots, do you believe that there is a change in the population of krill?

10. Do you believe that there is a correlation between the temperatures in Antarctica and the population of krill?

11. Do you believe that temperature COULD BE the cause of a change in krill populations?