

“Toto, we’re not in WV anymore!”

Open Internet Explorer.

Go to the following website to obtain weather statistics for the state of West Virginia:

<http://www.disastercenter.com/tornado.htm>

Click on “Tornado Statistics for 1950-1995” for West Virginia. Complete the data sheet by finding the following information.

- 1) The total number of tornadoes in WV during this time period.
- 2) The total number of deaths due to tornadoes in WV during this time period.
- 3) The total number of injuries due to tornadoes in WV during this time period.
- 4) The total cost of damages due to tornadoes in WV during this time period.

Use the following space to calculate the average for each statistic: Carry the decimals out to two places.

WV Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

4) **Find the Tornado Statistics for the surrounding states:** Use the space below to show your calculations.

Tennessee

Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

Kentucky

Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

Ohio

Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

Pennsylvania

Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

Maryland

Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

Virginia

Avg # tornadoes = Total number / 46 years

Avg # of deaths = Total number/ 46 years

Avg # of injuries = Total number/ 46 years

Avg cost of damages = Total cost/46 years

Complete the table below with the data you calculated. Round all numbers to the nearest whole number.

	WV	TN	KY	OH	PA	MD	VA
Avg Number of Tornadoes							
Avg Number of deaths							
Avg Number of injuries							
Avg cost of damages							

According to NOAA, The United States today averages 1200 tornadoes a year.¹

5) Use this data and your average number of tornadoes to calculate the **experimental probability** of a tornado occurring in WV as a fraction and a percentage. (Experimental Probability = Average/1200). Round to tenths place.

	WV	TN	KY	OH	PA	MD	VA
Experimental Probability Fraction and percent							

6) How does the average number of tornadoes and the probability of each of these states compare to WV? Why do you suppose they are higher or lower or about the same?

7) Choose three states from “Tornado Alley” -- one from the north, one from the middle states and one from the south and calculate the average number of tornadoes and the experimental probability of a tornado occurring in each one. The following website has helpful information about “Tornado Alley”.

<http://www.ncdc.noaa.gov/oa/climate/severeweather/tornadoes.html>

Remember to write the name of the state. Use the 1200 tornadoes a year to calculate the probability. (Average / 1200 and round to tenths place). Show calculations below:

	State 1	State 2	State 3	
				WV
Avg # of tornadoes				
Experimental Probability				

8) Obtain more recent information from 1995 – 2005 for WV from the following website: <http://www.ncdc.noaa.gov/oa/climate/severeweather/tornadoes.html>

State Occurrence Maps

Record your data in the table below:

Year	# of tornadoes
1995	
1996	
1997	
1998	
1999	
2000	
2001	
2002	
2003	
2004	
2005	
TOTAL:	

Calculate the average number of tornadoes for this time period:

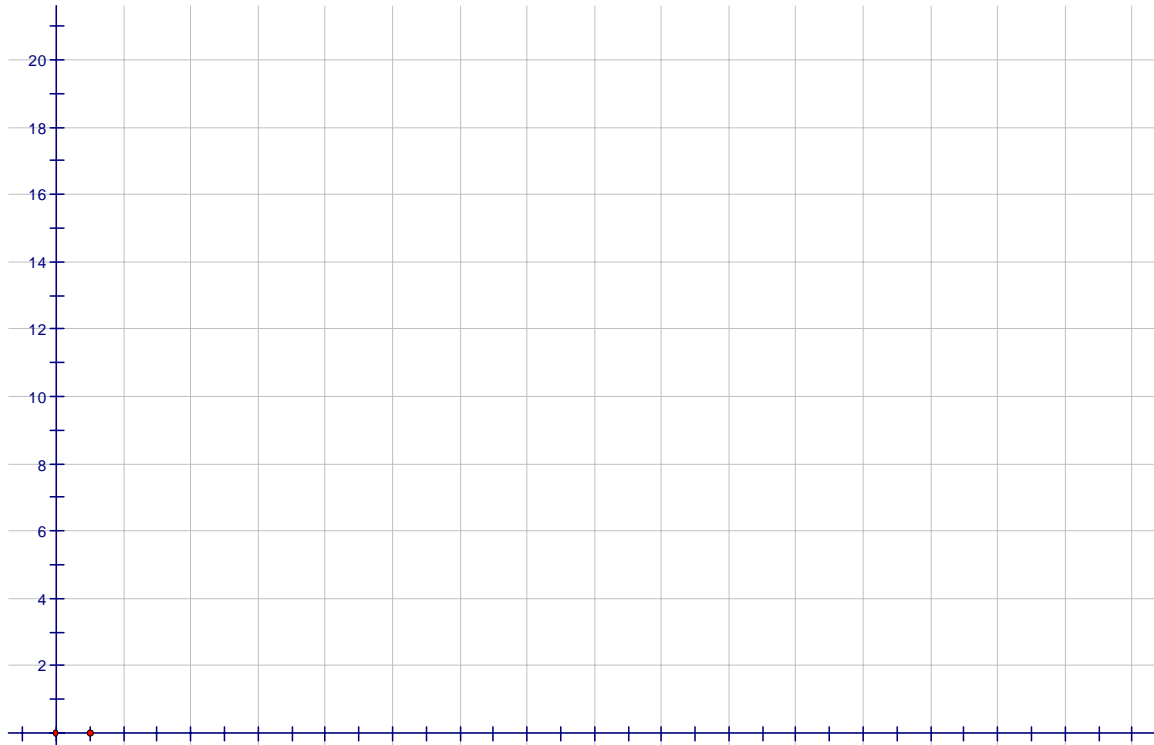
(Total/11 and round) _____

9.) Problem Based Learning Activity

There is a new marketing pitch in WV – selling Tornado Insurance. As a consumer, would this be a good investment?

Using the data you collected on tornado activity in WV during the period 1995-2005, design a frequency polygon to show the results of your data collection. Based on this trend, would you recommend a consumer to purchase this insurance? Why or why not.

Draw the frequency polygon below. Be sure to label each axis and give the graph a title.



Answer the essay questions here:

“Honors” Extension:

Research and write a 1-1.5 page report on why the number of tornadoes in WV spiked in 1998 with 17 tornadoes.

Additional Essay Question: How and why does the unusually large number of tornadoes in 1998 affect the average for 1995-2005 and the overall average?

Related topics: The following are similar topics, extensions, or pre-requisites to the topic of tornadoes in West Virginia.

- 1) Basic information about tornadoes: <http://www.spc.noaa.gov/faq/tornado/>
- 2) The New Fujita Scale of Tornado Damage:
<http://www.ametsoc.org/amschaps/West%20Central%20Florida%20Dec%202006.pdf> ; <http://www.spc.noaa.gov/efscale/ef-scale.html> ;
<http://www.spc.noaa.gov/efscale/>
- 3) Severe Weather Awareness Week: www.theweatherchannell.com

Information Sources:

¹ <http://www.spc.noaa.gov/efscale/>

9.) Problem Based Learning Activity

There is a new marketing pitch in WV – selling Tornado Insurance. As a consumer, would this be a good investment?

Using the data you collected on tornado activity in WV during the period 1995-2005, design a frequency polygon to show the results of your data collection. Based on this trend, would you recommend a consumer to purchase this insurance? Why or why not.

Draw the frequency polygon using the TI Graphing Calculator.

Create a frequency polygon using the TI. We will store the years in L_1 by letting 1995 = 0, 1996 = 1, 1997 = 2, etc. up to 2005 = 10. We will store the number of tornadoes for each year in L_2 .

To enter data:

Push the Stat key. Choose Edit. Select L_1 . If you need to clear this list, \blacktriangle until the L_1 is highlighted, press Clear and then Enter. Enter the numbers 0 – 10 in this column. Cursor over to L_2 (clear if you need to). Enter the number of tornadoes in this column.

Push 2^{nd} and then Y= to get to the stat plots. Select Plot 1. Turn the plot on. Select the connected dot graph. X-List: L_1 , Y-List: L_2 , select the first mark to graph with.

Push Window. Set x min = -1, x max = 11, Xscl = 1, y min = -1, y max = 20, Yscl = 2.

Push Graph.

The frequency polygon should be displayed in the viewing window.

Accurately draw this graph on graph paper. Remember to label the x and y axis. Give the graph a title.

Answer the essay question -- use the data from the graph to help justify your answer.

Calculator Page

When you enter the information in to the Lists, your lists should look like the following:

L1	L2	L3	3
0	0		
1	3		
2	1		
3	17		
4	1		
5	4		
6	1		

L3(1)=

The stat plot screen should look like this:

Plot1	Plot2	Plot3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Off		
Type:	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
Xlist:	L1	
Ylist:	L2	
Mark:	<input type="checkbox"/>	+

The window screen should look like this:

WINDOW
Xmin=-1
Xmax=11
Xscl=1
Ymin=-1
Ymax=20
Yscl=2
Xres=1