How much does auto insurance cost?

Student Worksheet **Name:_____**

Investigate the question: *How much do people pay for car insurance?*

The data below shows average annual expenditures for auto insurance by state in 2008 (from III website).

State	Liability	Collision	Compre-hensive	Average expenditure
Alabama	$354	$310	$134	$667
Alaska	558	375	149	904
Arizona	486	296	207	858
Arkansas	365	283	152	653
California (2)	450	363	103	776
Colorado	427	263	155	729
Connecticut	592	332	121	950
Delaware	698	287	106	1,007
D.C.	583	430	250	1,126
Florida	736	281	114	1,055
Georgia	413	357	164	765
Hawaii	506	312	113	816
Idaho	330	228	116	562
Illinois	401	287	111	720
Indiana	348	243	109	612
Iowa	272	192	153	519
Kansas	299	230	190	576
Kentucky	453	256	122	699
Louisiana	651	410	214	1,105
Maine	336	255	97	600
Maryland	555	316	140	922
Massachusetts	564	293	114	903
Michigan	494	387	152	907
Minnesota	411	207	162	698
Mississippi	366	269	154	654
Missouri	368	251	148	657
Montana	404	241	184	667
Nebraska	308	201	168	547
Nevada	631	335	134	970
New Hampshire	398	277	100	727
New Jersey	721	342	134	1,081
New Mexico	442	294	171	728
New York	687	331	154	1,044
North Carolina	352	240	114	595
North Dakota	242	186	216	503
Ohio	355	239	100	617
Oklahoma	381	275	160	663
Oregon	485	230	95	727
Pennsylvania	490	299	120	817
Rhode Island	646	372	121	986
South Carolina	466	252	147	751
South Dakota	275	186	191	520
Tennessee	356	283	121	641
Texas	471	359	178	854
Utah	430	268	111	709
Vermont	340	280	115	653
Virginia	384	252	114	663
Washington	551	258	116	840
West Virginia	501	289	167	808
Wisconsin	322	202	117	581
Wyoming	322	271	202	632
United States	**$471**	**$298**	**$134**	**$789**

Analyzing the data:

1. Which 5 states have the overall highest average expenditures?

2. Which 5 states have the overall lowest average expenditures?

3. What is the average expenditure for the United States as a whole?

4. Between liability, collision, and comprehensive insurance, which tends to be the highest? Why do you think this might be?

5. How does your state compare to the national average? Is it more or less? Calculate the percentage different? Use this formula for percentage difference (let A = the national average and B = the average expenditure in your state).

   $$Percentage\ Difference = \frac{B - A}{A} * 100$$

   Express your answer in terms of "The annual average expenditure for auto insurance in _____ (my state) is _____% higher/lower than the national average."

6. In the KWHS article, according the Rocky Mountain Insurance Information, a policy for a newly licensed male teen driver will run about $1,000 every six months. How does this compare to the average expenditure for the state of Colorado in general? Specifically, what is the percentage difference?

7. In the space below, create a bar graph showing the average expenditures by state for the 5 most expensive states and the 5 least expensive states. Within each category, list them in order from most-to-least expensive.
   Before you start drawing…
   a. What information should go on the x-axis?

   b. What information should go on the y-axis?

8. Look at a map of the United States. Including your own state, select the 9 states closest to you (10 total). Make a box plot of average annual expenditures by those states. (For example, for PA, you might use NJ, DE, NY MD, OH, WV, DC, CT, and VA.)

9. Exploration in Excel.
   In the attached Excel file, you will find the data displayed in this file.

   a. Produce a bar (column) graph of the annual expenditure by state in alphabetical order. To do this: 1) Highlight the 2 columns (make sure to include the headings), 2) select the "Gallery" or "Graphs" button and chose "Column" 3) the graph should generate automatically. 4) Cut and paste into a word document if desired.

   b. Produce a bar (column) graph of the annual expenditure by state in order of most expensive to least expensive. To do this you will need to first sort the data by the Average Annual Expenditure ($) or Column B. 1) Highlight all of the data, 2) under the Data tab, select Sort, 3) Sort by Column B or Average Annual Expenditure ($). Then produce a bar graph in the same way as in part 9a. To do this: 1) Highlight the 2 columns (make sure to include the headings), 2) select the "Gallery" or "Graphs" button and chose "Column" 3) the graph should generate automatically. 4) Cut and paste into a word document if desired.

   c. Compare the two graphs. Which is more helpful/useful? Why?

   d. Using the graphs, approximate the mean. On which graph is it easier to locate or approximate the mean?