January 2011 Science Olympiad
Compute This! (Division B)
Decker MS Invitational

Background
Hurricanes are damaging storms that occur every year between August and November. The regions of North America most commonly affected by these large systems of low pressure are the Gulf coast region, Texas to Florida, and the East coastal Region, roughly Florida to Maine. The National Oceanic and Atmospheric Administration (NOAA) has devoted a large amount of research towards predicting and understanding these particular weather phenomena. The damage that can range from minor to extremely deadly usually comes from a combination of two forces, wind damage and storm surge. In Today's competition, you will be looking through the **noaa.gov** website to find information about hurricanes that have occurred in the past, to answer the items below:

Graphical Problem
The National Oceanic & Atmospheric Agency has documented all the storms making US and Texas landfall for the time period of **1851 through 2004**. On the NOAA website, please **find the total numbers of hurricanes making US landfall, separated by their Saffir/Simpson Category (1-5)**. Also **find the total numbers of hurricanes making TX landfall, separated by their Saffir/Simpson Category**. Please put this data in a data table and plot this data in MS Excel using one bar graph displaying both data sets. The x-axis of your bar graph should be labeled as the Saffir/Simpson Category 1-5. The y-axis of your graph should be labeled as the frequency of storms. Make sure your graph is properly titled and axis' labeled.

From the **same set of data**, please take the data representing the numbers **of hurricanes making TX landfall and create a Circle graph**. Please make sure the sections of your circle graph are **labeled with both Saffir/Simpson Scale and %**. Make sure your graph has an appropriate title as well.

Short Answer Questions:
In Microsoft Word, please provide the <u>answer</u> and associated <u>URL</u> for each of the following questions. Once again, official NOAA web sites should be used as the source for your answers. Please note that several questions require two separate answers, and that complete sentences are NOT required in your response.

1. Please list the names of all the storm names retired from 1990-1999 in alphabetical order. (10 points)

2. Give the description of and the sustained winds associated with each of the following: tropical depression, tropical storm, hurricane (5 points each x3)

3. What does ATCF stand for and what year was it developed? (5 points each x2)

4. Which hurricane carries the distinction of having the lowest recorded pressure? What was that recorded low pressure value? (5 points each x2)

5. When does the 2011 hurricane season start for the Atlantic Region (includes Gulf Coast Region)? (5 points)

General Instructions:
1. Please place your <u>school name</u> and <u>team number</u> at the top of your Excel and Word files.
2. Even though you will print your final documents, <u>save your work regularly throughout the event.</u>
3. Your <u>Excel document</u> should include both a <u>spreadsheet data table and your 2 graphs</u> as described above.
4. Your <u>Word document</u> needs to include <u>only the answers and URLs</u> for each of the five questions.
5. Reference materials and calculators are not permitted. You may use blank scrap paper to organize your work.
6. This is a two-person event. <u>Absolutely no external communication with others</u> (e-mail, chat, or other).
7. Please <u>raise your hand if you have a technical problem or question</u> on the event.
8. Please speak in a low tone with your partner. Let's keep the noise level down.
9. Make sure your graphs print to your satisfaction and they fit on one page.
10. When you are done, please **print your documents** and **hand in your forms**.

HAVE FUN AND GOOD LUCK!

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SCHOOL NAME _____ TEAM NUMBER _____

STUDENT SIGNATURES 1. _____

2. _____

(Do Not Write Below This Line)
(Event Supervisor Use Only)

PLACE _____

Completeness & Accuracy of Quantitative Data Collected   **(20 Points Max)**   _____

Appropriate data for US landfall   _____ (10 Points – 2x5)

Appropriate data for TX landfall   _____ (10 Points – 2x5)

Completeness, Accuracy, and Format of Graphical Data   **(30 Points Max)**   _____

Table
US landfall data in a table   _____ (4 Points)
TX landfall data in a table   _____ (4 Points)

Bar Graph
Both data sets on one graph   _____ (4 Points)
X Axis Labeled   _____ (3 Points)
Y Axis Labeled   _____ (3 Points)
Table is properly titled   _____ (3 Points)

Circle Graph
Saffir/Simpson Scale on wedges   _____ (3 Points)
% on wedges   _____ (3 Points)
Table is properly titled   _____ (3 Points)

Answers and URL's for Short Answer Questions   **(50 Points Max)**   _____

1. list of retired storms in the 1990's, alphabetized   _____ (10 Points)

2. description/winds of depression, storms, hurricanes   _____ (15 Points – 5x3)

3. ATCF stands for and year of development   _____ (10 Points – 5x2)

4. Hurricane with lowest pressure, pressure measurement   _____ (10 Points – 5x2)

5. 2011 hurricane season start date   _____ (5 Points)

TOTAL SCORE   _____

TIE BREAKER: [ ] Short Answer Questions   [ ] Quantitative Data Collected   [ ] Overall Graphical Quality