ACTIVITY 1: Shake It Up with Scatterplots  

A) You can use scatter plots to analyze the frequency of submitted insurance claims after a hurricane and the range of average claim amounts insured companies paid to customers over a particular period of time. The information in the table on the left below lists the number of flood claims submitted and average paid flood claim amounts as a result of storms in 2005. An average paid claim is the average of all the flood claims paid by the insurance companies. Read the claims in the table, then answer the questions below.

<table>
<thead>
<tr>
<th>Distance from Epicenter (km)</th>
<th>Number of Flood Claims</th>
<th>Average Paid Flood Claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>$500</td>
</tr>
<tr>
<td>1000</td>
<td>200</td>
<td>$1000</td>
</tr>
<tr>
<td>2000</td>
<td>300</td>
<td>$1500</td>
</tr>
<tr>
<td>3000</td>
<td>400</td>
<td>$2000</td>
</tr>
<tr>
<td>4000</td>
<td>500</td>
<td>$2500</td>
</tr>
<tr>
<td>5000</td>
<td>600</td>
<td>$3000</td>
</tr>
</tbody>
</table>

Questions:  
1. Complete the histograms using the information provided in the table.  
2. Use a ruler and mark the “line of best fit” for the scatterplot you have created.  
3. Which type of information provided is a “mean” and why is it useful?  
4. Use a ruler and mark the “line of best fit” for the scatterplot you have created.  
5. What would be the cost to replace everything in your store? Work with your group to find an estimated total value. Keep in mind:  
   - You buy used CDs for about $2 to $6, and used DVDs for $4 to $6. You usually have 10,000 items in stock.  
   - Border the CDs and DVDs, what else needs replacing? (Designing walking into a music store. What do you see around you?)

ACTIVITY 2: Histograms Manage a Flood of Data  

NAME:  
NAME:  

Shake It Up with Scatterplots  

** Intensity is measured by the Modified Mercalli Intensity Scale, and is based on effects on people, structures, and the natural environment.

Use a ruler and mark the “line of best fit” for the scatterplot you have created.

ACTIVITY 3: Tune In to Insurance  

ACTIVITY 4: Branch Out with Tree Diagrams  

NAME:  
NAME:  

ACTIVITY 3: Histograms Manage a Flood of Data  

You are the owner of Cyclone Secondhand Music and Movies, located in an area that has experienced a number of damaging hurricanes in the last ten years. EV Insurance (Evansville, IN) is your insurance provider. You rent your space but own everything in it. The expectation of a tornado will affect the choices you would make to secure your investment. For $400 per year, you can buy $200,000 of basic coverage for fire and theft. For an additional $400 per year, you can get $200,000 in tornado coverage. Remember that if your store is damaged, you will not automatically get $200,000 but what it will cost to replace the damaged items up to $200,000.

Questions:  
1. What is your estimate? (Visit an office supply store online or look in a catalog for ideas of prices.)  
2. Besides the CDs and DVDs, what else needs replacing?  
3. If flooding is possible in any of these scenarios, what is your estimate? (Visit an office supply store online or look in a catalog for ideas of prices.)

ACTIVITY 4: Branch Out with Tree Diagrams  

Hurricanes are measured based on wind speed and storm surge. The Saffir-Simpson Hurricane Scale ranks hurricanes from Category 1, weakest, to Category 5, strongest. A tropical storm is weaker than a Category 1, but stronger than a tropical depression. It takes more than eight hours for most hurricanes to change in intensity. Property and casualty actuaries think about and list different outcomes caused by natural events. Then they determine costs related to each outcome. These costs may affect premium prices in the future. The tree diagram to the right shows some of the possible outcomes of a Category 1 hurricane over time. Study the tree diagram carefully and then answer the questions.

Questions:  
1. List the possible events that could happen after a hurricane has been identified.  
2. What is the probability that this hurricane is a Category 1 after 16 hours? Write your answer as a fraction and a percentage.  
3. What is the probability that this hurricane remains a Category 1 for the entire time? Write your answer as a fraction and a percentage.  
4. What is the probability that this hurricane is Category 2 after 20 hours? Write your answer as a fraction and a percentage.  
5. After 10 hours, it’s more likely that the hurricane will be a Category 1 or a Category 2? Explain your answer using fractions and a percentage.

6. If flooding is possible in any of these scenarios, would a storm and a flood be mutually exclusive events?