**Strand:** Exploring, analyzing and modelling data  
**Band:** Middle Years  
**Standard:** 3  
**Year Level:** 6

**Key Idea**  
Students use statistical methods to reduce, analyse and interpret data, while critically evaluating the cultural and social inclusivity of samples used. [In] [T] [KC1]

Students engage with data to understand, analyse and apply notions of chance and probability in the social and natural worlds. [F] [In] [T] [KC1]

**Outcome**  
3.3 Analyses data to search for patterns in events where the range of outcomes is generated by situations where chance plays a role. [F] [In] [T] [KC1]

4.2 Reads and describes information in given tables, diagrams, line and bar graphs. Makes predictions based on the information, understanding the limitations of data interpretation and possible social consequences of these limitations. [In] [T] [KC2] [KC6]

**Task/Activities**  
Domestic water consumption in Australia  
1. Use Excel to create a column graph from data provided.  
2. Calculate the ratio between average rainfall and water consumption for each city. Identify the relationship between amount of rainfall and household consumption, identifying trends.  
3. Analyse data and offer explanations.

**Examples of evidence towards achievement of outcomes**  
1. Well constructed graph is developed using the excel program.  
2. Graph demonstrates the attributes of scale, heading, labels on axes and column format.  
3. Ratio calculated correctly. \[
\frac{\text{Average rainfall}}{\text{Average water consumption}}
\]  
4. Demonstrate understanding of a variety of social and natural factors on the consumption of water and report conclusions in a logical and appropriate manner.
Water consumption in Australia

Domestic consumption of water in Australia is about 21% of the total usage of our water. It has increased significantly over the last 40 years due to increased population and increased per capita use.

Task 1
Create a column graph to display the data from the table below.
Average annual household water consumption in Australian capital cities, 1993 – 94.

<table>
<thead>
<tr>
<th></th>
<th>Sydney</th>
<th>Perth</th>
<th>Melbourne</th>
<th>Adelaide</th>
<th>Canberra</th>
<th>Brisbane</th>
<th>Darwin</th>
<th>Hobart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual</td>
<td>1227</td>
<td>869</td>
<td>656</td>
<td>451</td>
<td>626</td>
<td>1149</td>
<td>1659</td>
<td>626</td>
</tr>
<tr>
<td>rainfall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average household</td>
<td>263</td>
<td>330</td>
<td>270</td>
<td>265</td>
<td>400</td>
<td>430</td>
<td>700</td>
<td>570</td>
</tr>
<tr>
<td>consumption of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>water (kl/yr)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Task 2
Look at your graph and answer the following questions
1. Using a calculator, divide the average rainfall by the average water consumption to find the ratio. Record your results for each city in the spaces in the table on this sheet.
2. What is the relationship between household consumption of water and the amount of rain that falls. Try to give an explanation for any trend that you observe.
Task 3
Look at the pie chart and answer the following questions
1. How do you think the following changes might affect water usage by individual householders?
   - A drought
   - An education campaign (Don’t be a Wally with water!)
   - Increased use of dishwashers
   - Planting native species in gardens.
   - A price increase in the cost of water.
   - An addition of several people to a household.

2. If all the above changes occurred, which do you think would have the greatest effect on water usage? Explain your reasons.