Visual and Conceptual Understanding in Precalculus, Calculus, and Statistics

Aaron Warnock
Bonnie Rosenblatt

Faculty Advisors Math
Pearson
Resources for Precalculus & Calculus

- Conceptual Question Library
- Setup & Solve
  - Including Trig Identities
- Interactive Figures
- GeoGebra
Resources for Statistics

- StatCrunch Projects
- Excel Grader Projects
- Applets
- Surveys/Groups/Reports
- Learning Catalytics

1. Teach statistical thinking.
   - Teach statistics as an investigative process of problem-solving and decision-making.
   - Give students experience with multivariable thinking.

2. Focus on conceptual understanding.

3. Integrate real data with a context and purpose.

4. Foster active learning.

5. Use technology to explore concepts and analyze data.

6. Use assessments to improve and evaluate student learning.
Excel Grader Projects

Download Starting Materials

1. You must download the starting files available below. The file for this project will be unique to you, so make sure to save it where you know you can retrieve it easily.

   📃 Download Materials

Work Project on your Computer

2. Follow the instructional steps to finish the project. Point values can also be seen using the link below.

   👀 Preview Steps

Upload Completed Document

3. All done? Now upload the project file in preparation for our automatic grading and reporting process.

   🖼 Choose File

Submit Project for Grading

4. Detailed feedback and grades on the submitted project are added to your submission and will be made available via the gradebook and submission report screen.

   🔄 Submit for Grading
### Sports Equipments Sales in 2017

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Equipment ID</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Total</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balls</td>
<td>1119</td>
<td>$1,741</td>
<td>$1,926</td>
<td>$1,812</td>
<td>$1,849</td>
<td>$2,203</td>
<td>$1,799</td>
<td>$1,819</td>
<td>$2,112</td>
<td>$2,021</td>
<td>$2,014</td>
<td>$2,484</td>
<td>$24,116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals</td>
<td>1214</td>
<td>$1,286</td>
<td>$1,585</td>
<td>$1,711</td>
<td>$1,574</td>
<td>$1,687</td>
<td>$1,523</td>
<td>$1,573</td>
<td>$1,424</td>
<td>$1,669</td>
<td>$1,556</td>
<td>$1,662</td>
<td>$15,587</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nets</td>
<td>1182</td>
<td>$1,263</td>
<td>$1,388</td>
<td>$1,479</td>
<td>$1,357</td>
<td>$1,671</td>
<td>$1,276</td>
<td>$1,493</td>
<td>$1,507</td>
<td>$1,157</td>
<td>$1,205</td>
<td>$1,239</td>
<td>$17,493</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racquets</td>
<td>1298</td>
<td>$1,046</td>
<td>$1,693</td>
<td>$1,938</td>
<td>$1,670</td>
<td>$1,895</td>
<td>$1,776</td>
<td>$1,608</td>
<td>$1,711</td>
<td>$1,856</td>
<td>$1,671</td>
<td>$1,807</td>
<td>$20,768</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boots and tackle</td>
<td>1206</td>
<td>$866</td>
<td>$1,214</td>
<td>$1,394</td>
<td>$1,174</td>
<td>$1,412</td>
<td>$1,291</td>
<td>$1,325</td>
<td>$1,448</td>
<td>$1,423</td>
<td>$1,534</td>
<td>$1,553</td>
<td>$17,529</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sticks, bars and clubs</td>
<td>1196</td>
<td>$1,772</td>
<td>$1,761</td>
<td>$1,773</td>
<td>$1,927</td>
<td>$1,706</td>
<td>$2,290</td>
<td>$2,160</td>
<td>$2,516</td>
<td>$2,466</td>
<td>$2,216</td>
<td>$2,592</td>
<td>$26,697</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total**

|       | $7,994  | $9,545  | $10,107 | $9,581 | $10,579 | $9,555 | $9,978 | $10,684 | $10,262 | $10,537 | $10,917 | $12,378 | $122,957 |

Use a cell reference or a single formula where appropriate in order to receive full credit. Do not copy and paste values or type values, as you will not receive full credit for your answers.

1. In merged cells D11-D11, select the data type of “Equipment ID” Qualitative-Nominal
2. In merged cells D12-E12, select the data type of “sales for each month” Qualitative-Ratio
3. In merged cells D13-E13, select the data type of “Equipment” Qualitative-Nominal
4. In cells D9 through N9 in the table above, find the total sales for each equipment.
5. In cells D9 through N9 in the table above, find the total sales for each month. In cell O9 in the table above, find the total sales for the year.
6. In cells D9 through N9 in the table above, find the total sales for each month. In cell O9 in the table above, find the total sales for the year.
7. In cells D9 through N9 in the table above, insert Sparklines.
8. In merged cells D17-E17, is there any trend in the data based on the line in cell P9?
9. In cell D18, find the average sales per month in 2017.

$10,246.42
10. In cell D19, find the median sales per month in 2017.

$10,184.50
Survey Link

https://www.statcrunch.com/s/32525
StatCrunch Group

https://www.statcrunch.com/groups/view?groupid=13263
Assume that adults have IQ scores that are normally distributed with a mean of $\mu = 100$ and a standard deviation $\sigma = 20$.

We want to find the probability that a randomly selected adult has an IQ higher than 140.

But first, we graph the problem.

What area is associated with the probability we want to find?
Click on the graph to identify that area.