ID Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Average
1 1 0 0 0 5 1 75 7 AverageQ1 63% =AVERAGE(B$4:B$43) 1
2 0 0 1 0 1 1 58 6 AverageQ2 40% =AVERAGE(C$4:C$43) 2
3 1 0 0 0 3 4 76 5 AverageQ3 48% =AVERAGE(D$4:D$43) 3
4 0 1 1 1 3 2 89 6 AverageQ4 28% =AVERAGE(E$4:E$43) 4
5 0 1 1 1 4 4 77 7 AverageQ5 3.90 =AVERAGE(F$4:F$43) 5
6 1 0 1 0 3 4 73 6 AverageQ6 2.50 =AVERAGE(G$4:G$43) 6
7 1 0 0 0 4 1 72 6 AverageQ7 68.78 =AVERAGE(H$4:H$43) 7
8 1 0 0 0 4 1 88 6 AverageQ8 5.93 =AVERAGE(I$4:I$43) 8
9 1 0 0 0 4 3 90 6
10 1 0 0 0 3 4 39 5
11 1 0 0 0 5 2 40 4
12 1 1 1 0 5 5 68 9
13 1 1 1 1 5 1 71 8
14 1 0 1 0 3 1 98 4
15 1 1 0 1 3 1 80 7
16 0 0 1 0 4 1 93 6
17 0 0 1 0 3 1 41 6
18 1 0 1 1 4 2 42 8
19 1 0 0 0 3 3 39 6
20 0 1 0 0 4 2 65 7
21 0 0 0 0 4 2 70 6
22 1 0 1 0 5 4 55 6
23 1 1 0 0 4 2 74 6
24 1 0 1 0 5 2 36 4
25 0 0 1 0 4 4 65 5
26 1 1 1 1 5 2 49 7
27 0 1 1 1 2 89 7
28 0 1 1 1 4 4 64 4
29 0 0 0 0 5 3 82 5
30 0 1 1 0 4 1 82 4
31 1 1 0 0 5 1 76 6
32 1 0 0 0 3 1 92 4
33 0 1 1 1 3 4 75 7
34 1 0 0 0 5 5 62 4
35 1 0 0 0 5 4 54 7
36 1 0 0 0 5 5 68 5
37 0 1 1 1 3 1 80 5
38 1 1 0 1 5 5 60 6
39 0 0 0 0 4 2 83 6
40 1 1 0 0 4 2 61 8

Project requirements: P3A
This demo uses the symbols (row #1, Q2, etc) .. and the practice questions
Q1-Q4 are binary with values of zero and one.
1 stands for YES; 0 stands for NO

1) Generate averages shown above.
2) Create these pivot tables using demo data.
3) Describe specified cell values using question shown below.
   Do not show symbols such as row #1 or Q2.

Population: Students
Questions
Q1 Are you female?
Q2 Are you a senior?
Q3 Do you live on campus?
Q4 Are you a business major?
Q7 What is your height
Q8 Years in college?

Total cell: the cell in the total column and total row
Margin cell: a cell in a total column or total row.
Body cell: a cell not in a total col and not in total row.
Symbolic 1: Uses question #, row# and col#
Symbolic #2: Uses answers by question #,
Actual: Uses answers to actual questions

P3-Demo: Practice-Run Instruction
1 Obtain PR3 Demo data. Create averages for all 8 variables (columns)
2 Create pivot tables and describe selected values.
   Two group table of counts as shown. Two-way table of counts as shown.
   Two-group table of averages as shown. Two-way table of averages as shown.
   Two-group table of statistics as shown.
   Two 100% tables: % of Row and % of Col as shown.
   Two-way half table: Average that said Yes to those shown [Format as percentages]
3 Describe selected cells using survey questions without symbols (row #1, Q2).
Describe a total cell and a body cell

**TWO-GROUP COUNT TABLE**

Construct a two-group count table on Q1

<table>
<thead>
<tr>
<th>Count of Q1</th>
<th>Q1</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

Symbolic1: 40 subjects are in the Total row
Symbolic2: 40 subjects took this survey
Actual: 40 subjects took this survey

Symbolic1: 25 subjects are in row #1
Symbolic2: 25 [respondents] said Yes to Q1
Actual: 25 respondents are females

**TWO-GROUP TABLE OF AVERAGES**

Construct average table for Q7 indexed by Q1

<table>
<thead>
<tr>
<th>Average of Q7</th>
<th>Q1</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>74.2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>65.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>68.8</td>
</tr>
</tbody>
</table>

Symbolic1: 68.8 is mean of Q7 in row #3
Symbolic: 68.8 is mean of Q7 for these respondents
Actual: The average height of these students is 68.8"

Sym: 65.5 is mean of Q7 among population in row #2
Symbol: 65.5 is mean of Q7 of those saying Yes to Q1
Among women students, the average height is 65.5"

**TWO-GROUP TABLE: SUMMARY STATISTICS**

Construct statistics table for Q2 indexed by Q1

<table>
<thead>
<tr>
<th>Q1</th>
<th>Data</th>
<th>Total</th>
<th>Count of Q2</th>
<th>Average of Q2</th>
<th>0.53</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Just describe the average]

Average of zero-one binary gives percentage of ones. Drag Q2 into the body area twice.

Of those in row #3, the average of Q2 is 0.40 (40%)
Of all respondents, 40% are Seniors

Of those in row #2, the average of Q2 is 0.32 (32%)
Of the females, 32% are seniors

Describe a total cell and a body cell

**TWO-WAY COUNT TABLE**

Construct a two-way count table on Q1 and Q2

<table>
<thead>
<tr>
<th>Count of Q1</th>
<th>Q2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>24</td>
<td>16</td>
</tr>
</tbody>
</table>

Symbolic1: 16 of those in column #2 are in row #3.
Symbolic2: 16 [respondents] said Yes to Q2.
Actual: 16 respondents are seniors.

Symbolic1: 8 of these are in row #2 and in column #2.
Symbolic2: 8 of those said Yes to Q1 and Yes to Q2.
Actual: 8 respondents are female seniors.

**TWO-WAY TABLE OF AVERAGES**

Construct average table for Q7 indexed by Q1 and Q2

<table>
<thead>
<tr>
<th>Average of Q7</th>
<th>Q1</th>
<th>Q2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>70.3</td>
<td>77.6</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>64.6</td>
<td>67.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>66.3</td>
<td>72.5</td>
<td>68.8</td>
</tr>
</tbody>
</table>

Symbolic: 72.5 is mean of Q7 among those in col #2
S: 72.5 is mean of Q7 among those saying Yes to Q2
Among seniors, the average height is 72.5"

Sym: 67.4 is mean of Q7 for those in row #2 and column #2
Symbol: 67.4 is mean of Q7 among those saying Yes to Q1 & Q2
A: Among female seniors, mean height is 67.4 yrs

**TWO-GROUP TABLE: SUMMARY STATISTICS**

Construct statistics table for Q7 indexed by Q1

<table>
<thead>
<tr>
<th>Q1</th>
<th>Data</th>
<th>Total</th>
<th>Count of Q7</th>
<th>Average of Q7</th>
<th>74.20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Average of Q7 68.78
Total Count of Q7 40
Total StdDev of Q7 16.83

Of those in row #3, the average of Q7 is 66.78"
Average height of all subjects is 68.78"

Of those in row #1, the average of Q7 is 74.20"
Average height for males is 74.2"
Describe a total cell (not 100%) and a body cell.

**FULL 100% ROW TABLE**

<table>
<thead>
<tr>
<th>Count of Q1</th>
<th>Q2</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>47%</td>
<td>53%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>68%</td>
<td>32%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>60%</td>
<td>40%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: Closest 100% gives the whole (pie)

Symbolic1: 40% of those in row #3 are in column #2.
Symbolic2: 40% of respondents said Yes to Q2
**Actual:** 40% of respondents are seniors.

32% of those in row #2 are in column #2.
32% of those saying Yes to Q1 said Yes to Q2.
32% of women are seniors.

**FULL 100% COLUMN TABLE**

<table>
<thead>
<tr>
<th>Count of Q1</th>
<th>Q2</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>29%</td>
<td>50%</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>71%</td>
<td>50%</td>
<td>63%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: Closest 100% gives the whole (pie)

Symbolic1: 63% of those in column #3 are in row #2.
Symbolic2: 63% of respondents said Yes to Q1.
**Actual:** 63% of respondents are female

71% of those in column #1 are in row #2.
71% of those saying No to Q2 said Yes to Q1.
71% of non-seniors are female

**TWO-WAY HALF-TABLES OF PERCENTAGES**

Construct average table for Q3 indexed by Q1 and Q2.
Average of binary gives percentage who said Yes.
Saying Yes to Q3 is the common part in all cells

<table>
<thead>
<tr>
<th>Average of Q3</th>
<th>Q2</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>0</td>
<td>57%</td>
<td>88%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>29%</td>
<td>38%</td>
<td>32%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>38%</td>
<td>63%</td>
<td>48%</td>
</tr>
</tbody>
</table>

Sym: Of those saying Yes to Q1, 32% said Yes to Q3
**Among women students, 32% live on campus.**

Of those saying Yes to Q1 & Q2, 32% said Yes to Q3.
**Actual: 38% of female seniors live on campus.**

Construct average table for Q4 indexed by Q1 and Q2.
Average of binary gives percentage who said Yes.
Saying Yes to Q4 is the common part in all cells

<table>
<thead>
<tr>
<th>Average of Q4</th>
<th>Q2</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>0</td>
<td>0%</td>
<td>75%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>6%</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4%</td>
<td>63%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Symbolic: Of those saying Yes to Q2, 63% said Yes to Q4
**Symbolic: Among seniors, 20% are business majors.**

Sym: Of those saying Yes to Q1 & Q2, 50% said Yes to Q4
**Actual: 50% of female seniors are business majors.**