**BA 355: Business Analytics ICE 2**

A big part of analytics is being able to find and recognize patterns, similar to what we did on ICE 1 with the silly bubble popping apps. Of course, in business, finding and recognizing patterns will help create insight, informing better decision-making.

But we must be careful about being too confident about what we have found, as the example below may illustrate.

Consider a circle. If we put one dot on the edge of the circle, the circle is still just one section.

1

Now if we put two dots on the edge and connect them with a line, it divides the circle into two sections.

2

1

1. What happens with three dots? Draw a circle with three dots on it and connect **all the dots to all the other dots** with straight lines, I’ve included some circles on the next page for you. How many sections (or partitions) is the circle divided into? (It doesn’t matter where the three dots are as long as they are distinct and on the edge of the circle.)
2. What happens with four dots? Be sure to connect all pairs of dots.
3. What happens with five dots? Be sure to connect all pairs of dots.

|  |  |
| --- | --- |
| Dots | Sections |
| 1 | 1 |
| 2 | 2 |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |

1. Fill in the data on the table for dots = 1, 2, 3, 4, and 5. Do you see a pattern? Try to write the pattern as a function with n = number of dots and f(n) = number of sections.
2. Make a (bold) prediction of how many sections there will be for a circle with six dots on its edge.
3. Draw a circle with six dots on its edge, carefully connect each pair of dots, and even more carefully count how many sections the circle has been divided into. Count again to be sure. (There are actually two possible correct answers here.)
4. What is the lesson from part f)?

Extra Credit) What is your guess for seven dots? Carefully draw it and check your answer.