Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ www.danielselements.weebly.com

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| **Key Concepts** | **Notes** |
| Patterns |  |
| Number sequence **Problem** | Describe the pattern. What are the next two terms in the sequence?  3, 9, 27, 81, ... |
| Geometric figures **Problem** | Describe the pattern. What are the next two terms in the sequence? |
| Inductive reasoning |  |
| Conjecture |  |
| **Problem** | Looking at the circles below, what conjecture can you make about the number of regions 20 diameters form? |
| **Problem** | What conjecture can you make about the sum of the first 30 even numbers? |
| Counterexample |  |
| **Problem** | What is a counterexample for each conjecture?  A. If the name of a month starts with the letter J, It is a summer month.  B. You can connect any three points to form a triangle.  C. When you multiply a number by 2, the products is greater than the original number. |

APPLICATION

1. What are the next two terms in each sequence?
   1. 45, 40, 35, 30, … b.
2. What conjecture can you make about the twenty-first term in

**R, W, B, R, W, B,** …?

1. What conjecture can you make about the sum of the first 30 odd numbers?
2. What is a counterexample for each conjecture?
   1. If a flower is red, it is a rose.
   2. One and only one plane exists through any three points.
   3. When you multiply a number by 3, the product is divisible by 6.

COMPREHENSION

1. Clay thinks the next term in the sequence 2, 4,… is 6. Given the same pattern, Oscar thinks the next term is 8, and Stacie thinks the next term is 7. What conjecture is each person making? Is there enough information to decide who is correct?