Answers

Warm Up

- 5
- 23
- 16
- $\frac{1}{81}$

Arithmetic Sequences

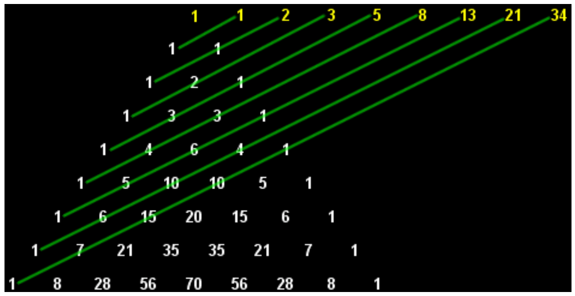
1. 10th term is 21, 100th is 201, and 1000th is 2001. In general, the nth term is $2n + 1$.
2. $a + (n - 1)d$
3. First 4 is 16, first 7 is 49, and first 11 is 121. The sum seems to be equal to the number of terms squared.
4. We see that each of the sums of corresponding terms is 34.
5. $\frac{n(2a+(n-1)d)}{2}$
6. We can find c because c is the average of all 5 numbers, or 6.
7. 31

Geometric Sequences

1. 10th is 2^9, 100th is 2^{99}, and 1000th is 2^{999}. For nth term it is 2^{n-1}.
2. Everything cancels out except $729 - 1$.
3. It is $ar^{10} - 1$
4. We get $S = \frac{ar^n - a}{r-1}$.
5. B
6. 5

Pascal's Triangle

1. The triangle is symmetric. The second diagonal is the counting numbers. The third diagonal is the triangular numbers.
2. The sum of each row is a power of 2.
3. Coloring in all of the odd entries will result in Sierpinski's Triangle.
4. Take the sum along diagonals in the picture below.



1. There are 4 combinations {Al/Bob/Carl, Al/Bob/Dan, Al/Carl/Dan, Bob/Carl/Dan}. The answer can be found as the 4th entry on the 5th row.

2. There are 70 combinations. This can be found as the 5th entry on the 9th row.