**Arithmetic Sequences Revisited**

1. Let’s revisit the toothpick problem from Unit 1. If we had a box of 100 toothpicks, how many connected pentagons could we build?



The formula to find the *n*th term of an arithmetic sequences is

$t=a+\left(n-1\right)d$,

where *t* = *n*th term, *a* = first term, *n* = number of terms, and *d* = common difference between consecutive terms. This problem involves using the formula and working backwards. What are *a* and *d* in this problem? What is *t*? Why?

So, how many connected pentagons could we build?

1. Chantal has just been hired to run a new movie theater. It is a really special one because of its design. Each row has three more seats in it than the row before it. As Chantal was walking through the theater, she noticed that row 20 had exactly 65 seats in it. Using this information, can you tell how many seats are in the first row? If interested, visit <http://www.essential-architecture.com/TYPE/TYPE-10.htm> for information about innovative theater designs.
2. During spring training, a major league baseball team has their pitcher increase the number of pitches he throws every time he starts. He started with 25 pitches in the first game and added the same number of pitches each time. Now after 9 games, he is up to 81 pitches. What is the number of new pitches that is added to each successive game?