

CHAPTER 1 Mathematical Processes
 1.1 Focus on Problem Solving
 Problem Solving Strategies

Example:

a) Find the next three terms in the pattern 2, 5, 7, 12, 19,

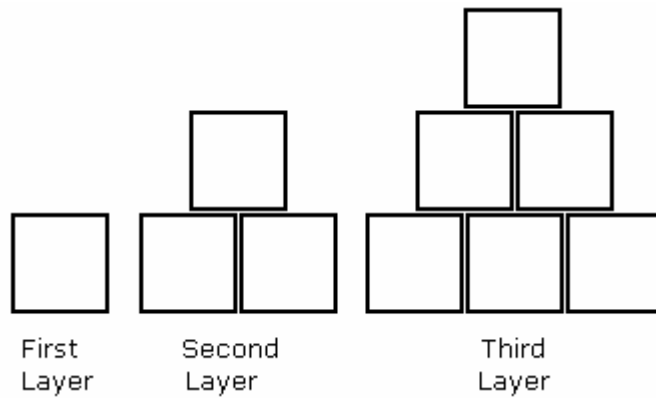
b) A triangular-based pyramid is made up of sugar cubes. Each layer has a side length one greater than the layer above it. The top layer has one sugar cube. How many cubes are required to make up a pyramid with a bottom layer 12 cubes on a side?

Solution:

a) Look for a pattern. The third number is the sum of the first two. The fourth number is the sum of the second and third. The fifth number is the sum of the third and fourth. Continue the pattern to determine the next three numbers:
 $12 + 19 = 31$, $19 + 31 = 50$, $31 + 50 = 81$.

b) Make a model. Use a chart to record the number of cubes. Continue the chart to a side length of 12 cubes. The first three layers are shown.

Layer	# Cubes	Total
1	1	1
2	3	4
3	6	10
4	10	20
5	15	35
6	21	56
7	28	84
8	36	120
9	45	165
10	55	220
11	66	286
12	78	364



Practice:

1. Find the next three terms in the pattern 2, 5, 10, 17, 26,

2. Determine the decimal equivalent of $\frac{1}{7}$, $\frac{2}{7}$, and $\frac{3}{7}$ to 10 decimal places. Then, predict the decimal equivalent of $\frac{4}{7}$ and $\frac{5}{7}$ to 10 decimal places.

Answers:

1. 37, 50, 65

2. 0.571 428 571 4, 0.714 285 714 3