

Solution to Problem Solving #1 B

We are given:

figures:				
figure #'s:	1	2	3	4
# of toothpicks in each figure:	3	5	7	9

We seem to add 2 toothpicks when moving from one figure to the next.

The total number of toothpicks will then be

$$\begin{aligned}
 & (\text{\# of toothpicks in figure 1}) + (\text{\# of toothpicks in figure 2}) + \dots + (\text{\# of toothpicks in last figure}) \\
 & = 3 + 5 + 7 + \dots + (\text{\# of toothpicks in last figure})
 \end{aligned}$$

Note we were told the last figure has 29 toothpicks. So

$$3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23 + 25 + 27 + 29 = 31$$

or rearranging a bit:

$$\begin{array}{r}
 3 + 5 + 7 + 9 + 11 + 13 + 15 \\
 + 29 + 27 + 25 + 23 + 21 + 19 + 17 \\
 \hline
 32 + 32 + 32 + 32 + 32 + 32 + 32
 \end{array}$$

or $32 \times 7 = 224$. So Ryan will use 224 toothpicks in all.