**The Dizzy Sailor Problem**

A dizzy sailor is standing on a 15×15 square tiled board. From their initial square they are able to move to any square sharing a common side. Due to the sailor's dizziness, after every move they immediately make a left or right turn before repeating this process (that is, they are never able to enter and exit a square in a straight line). What is the largest number of squares the dizzy sailor can walk on if they are not allowed to repeat squares and the last step of their path must end at the square they started at?

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Perimeter of 18

Look at the figure below. What do you notice? What do you wonder?

1. Can you add squares to this figure to make a new figure with a perimeter of 18?

**Each square must share at least one complete side with another square. Trace or draw the shape that you make.**

2. Consider any figure made of squares where each square must share at least one complete side with another square, what is the minimum number of squares required to build a figure of perimeter of 18?

3. Under the same conditions, what is the maximum number of squares possible to build a figure of perimeter of 18?

4. What if a square didn’t have to share a complete side with another square? Would your minimums and maximums change?

Perimeter of 18

Look at the figure below. What do you notice? What do you wonder?

1. Can you add squares to this figure to make a new figure with a perimeter of 18? Each square must share at least one complete side with another square. Trace or draw the shape that you make.

2. Consider any figure made of squares where each square must share at least one complete side with another square, what is the minimum number of squares required to build a figure of perimeter of 18?

3. Under the same conditions, what is the maximum number of squares possible to build a figure of perimeter of 18?

4. What if a square didn’t have to share a complete side with another square? Would your minimums and maximums change?