

February 14<sup>th</sup>

Number of sides (n)	3	4	5	6	n
Number of diagonals	0	2	...	...	?

Find the formula for the number of diagonals in an n-sided polygon.

A diagonal from a vertex goes to every other vertex apart from itself, and the 2 either side.

So if there are n sides (and therefore n vertices), each vertex goes to (n-3) other vertices.

So the number of diagonals will be the number of vertices (n) multiplied by the number of diagonals per vertex (n-3) = n(n-3)

Except, this counts every diagonal twice as each one connects 2 vertices, so the formula is

$$\frac{1}{2} n (n - 3)$$