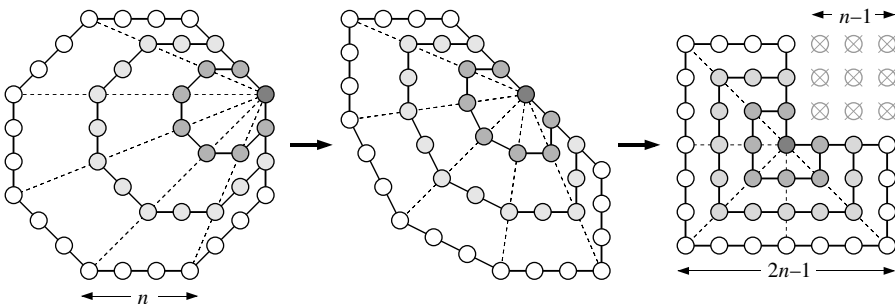


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Proof Without Words: Every Octagonal Number Is the Difference of Two Squares

$$\begin{aligned}
 1 &= 1 = 1^2 - 0^2 \\
 1 + 7 &= 8 = 3^2 - 1^2 \\
 1 + 7 + 13 &= 21 = 5^2 - 2^2 \\
 1 + 7 + 13 + 19 &= 40 = 7^2 - 3^2 \\
 O_n = 1 + 7 + \dots + (6n - 5) &= (2n - 1)^2 - (n - 1)^2
 \end{aligned}$$



—ROGER B. NELSEN
LEWIS & CLARK COLLEGE
PORTLAND, OR 97219