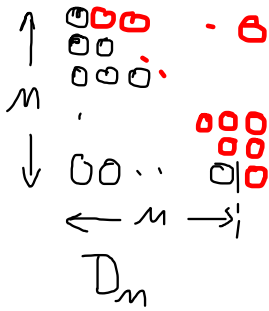


$$D_4 + D_4 = 4 \cdot 5 = 20$$

↑
4+1

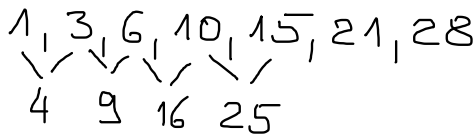
$$D_4 = \frac{1}{2} \cdot 20 = 10$$



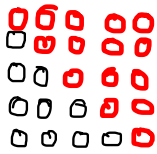
$$D_m + D_m = 2D_m = m(m+1)$$

$$D_m = \frac{m(m+1)}{2}$$

Explicit Definition



$$D_m + D_{m+1} = Q_{m+1}$$



$$D_4 + D_5 = 5 \cdot 5 = Q_5$$

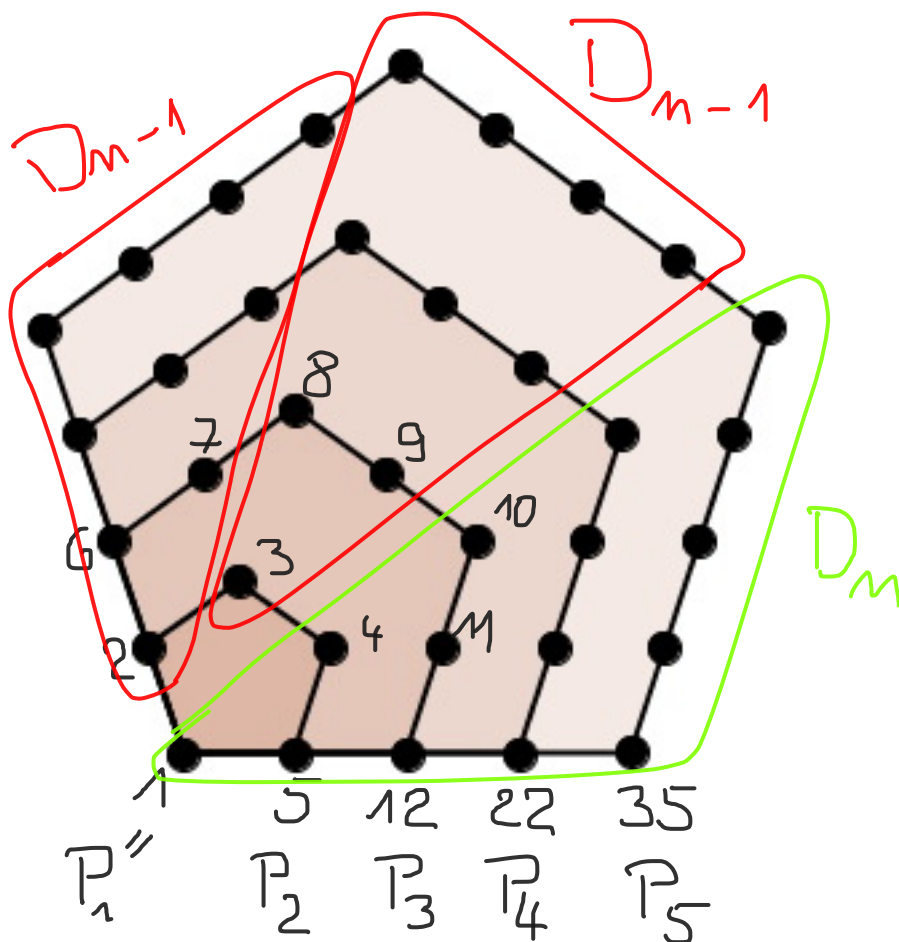
$$D_m + D_{m+1} = \frac{m(m+1)}{2} + \frac{(m+1)(m+2)}{2}$$

$$= \frac{m+1}{2} [m + m+2]$$

$$= \frac{m+1}{2} [2m+2]$$

$$= \frac{m+1}{2} \cdot 2[m+1] = (m+1)^2 = Q_{m+1}$$

Fünfeckzahlen



$$P_n = P_{n-1} + 3n - 2, \quad P_1 = 1 \text{ rekurs.}$$

$$n=5 \quad P_5 = P_4 + 13 \quad \checkmark$$

$$\begin{aligned} P_n &= D_n + 2D_{n-1} \\ &= \frac{n(n+1)}{2} + 2 \cdot \frac{(n-1)n}{2} \end{aligned}$$

$$= n \left[\frac{n}{2} + \frac{1}{2} + n - 1 \right]$$

$$= n \left[\frac{3}{2}n - \frac{1}{2} \right] = \frac{n}{2} [3n - 1]$$

$$\begin{aligned} P_5 &= \frac{5}{2} \cdot 14 \\ &= 35 \quad \text{😊} \end{aligned}$$

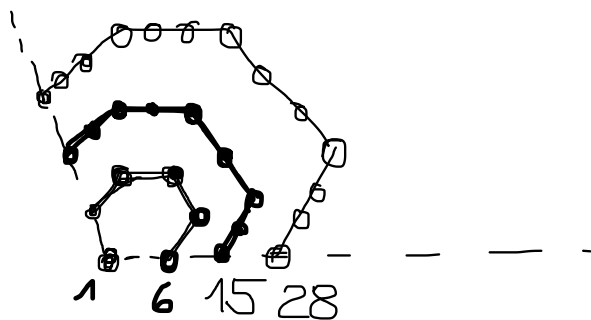
Dreiecksz : $D_n = \frac{n}{2} (n+1)$

Quadrat : $Q_n = n^2 = \frac{n}{2} (2n+0)$

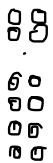
Fünfeckz : $P_n = \frac{n}{2} (3n-1)$

Sechseckz : $S_n = \frac{n}{2} (4n-2)$

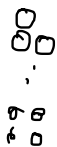
$S_1=1$ $S_2=6$ $S_3=15$ $S_4=28$



Punktemuster u Teilbarkeit



gerade Zahl



ungerade Zahl

gerade + gerade = gerade