

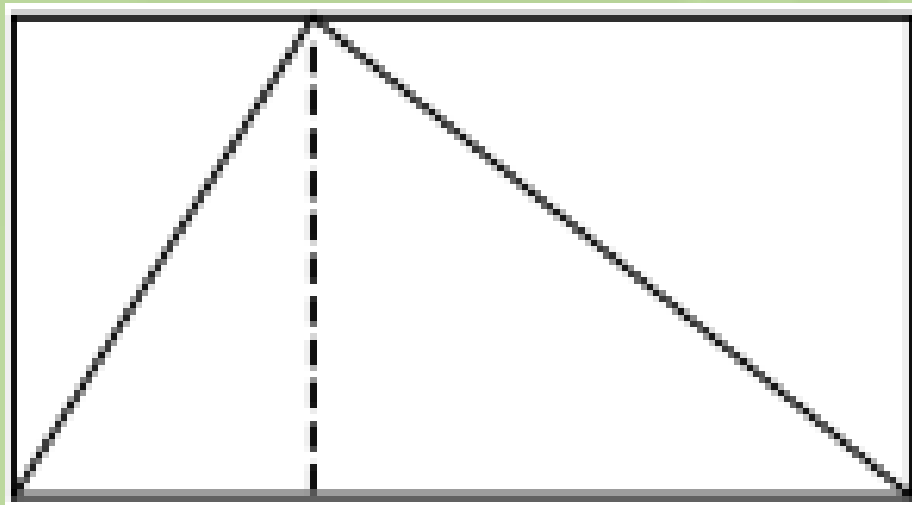
# **Proofs Without Words**

***Math Club 10/24***

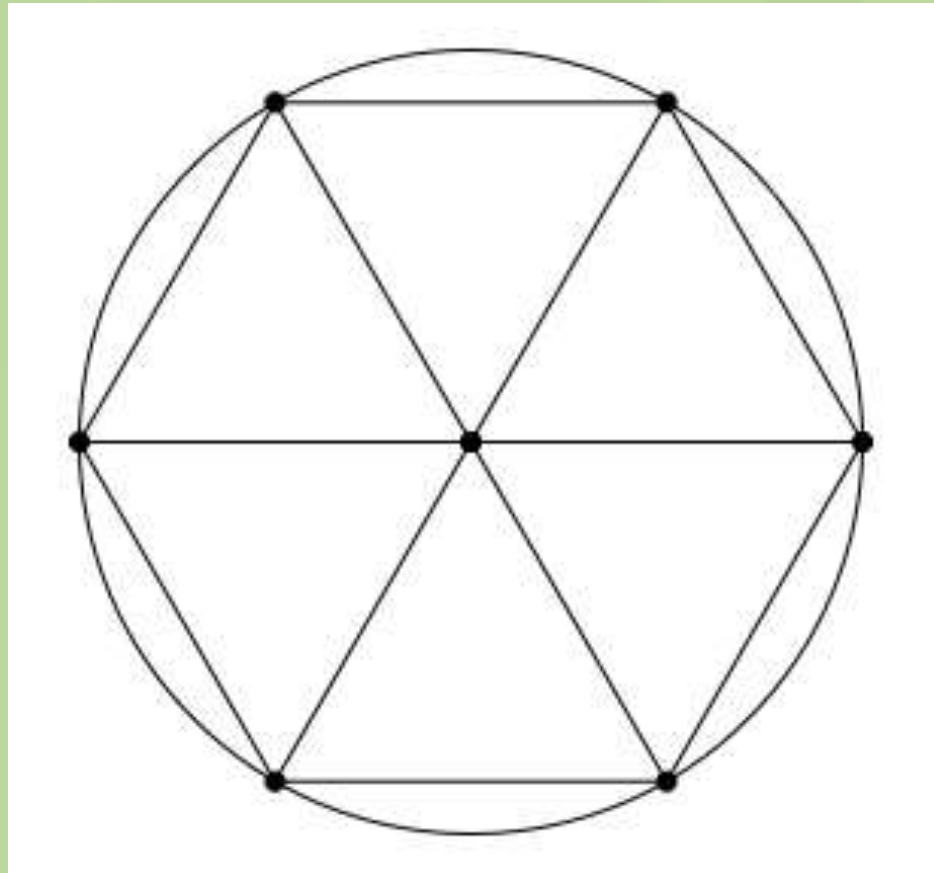
## Try proving these facts:

- $A = \frac{1}{2}bh$
- $\pi > 3$
- $A = \pi r^2$
- $A = rs$
- $1 + 2 + \dots + n = \binom{n+1}{2}$
- $1^3 + 2^3 + \dots + n^3 = (1 + 2 + \dots + n)^2$  (Nicomachus's theorem)
- $h_1 + h_2 + \dots + h_n = n^3$
- $\frac{a+b}{2} \geq \sqrt{ab}$  (AM-GM)
- Sum of first  $n$  odd numbers is  $n^2$ .
- $\arctan 1 + \arctan 2 + \arctan 3 = \pi$
- A  $8 \times 8$  chessboard with a black and white square removed can be tiled with  $2 \times 1$  dominoes.

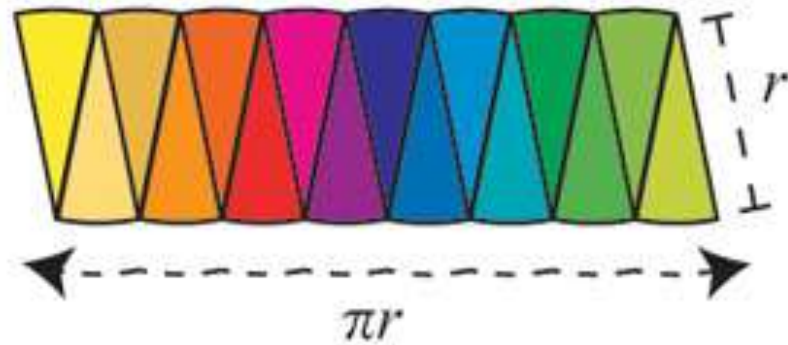
$$A = \frac{1}{2}bh$$



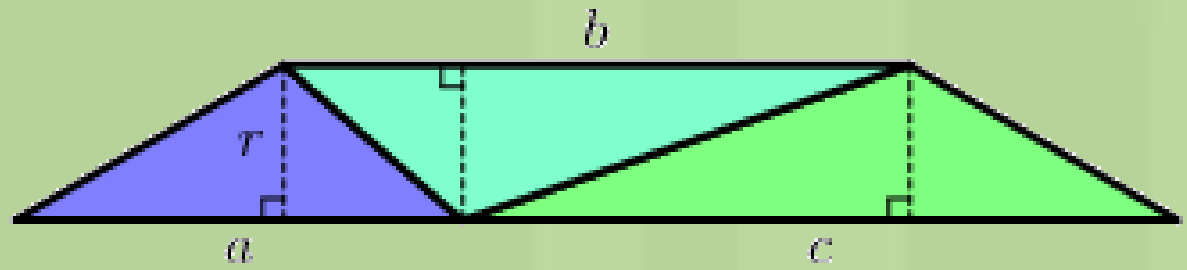
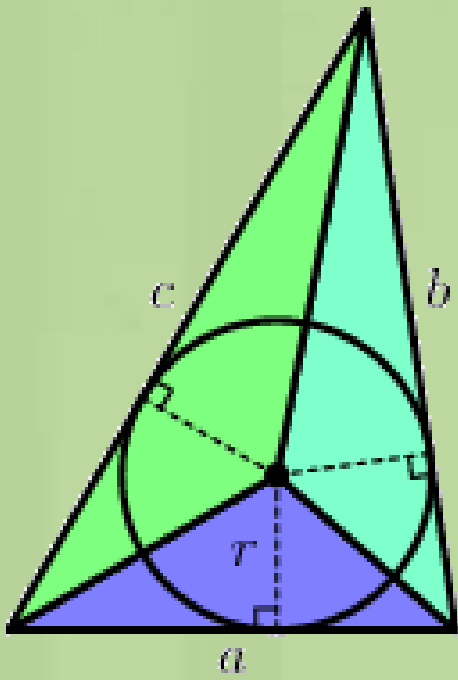
$$\pi > 3$$



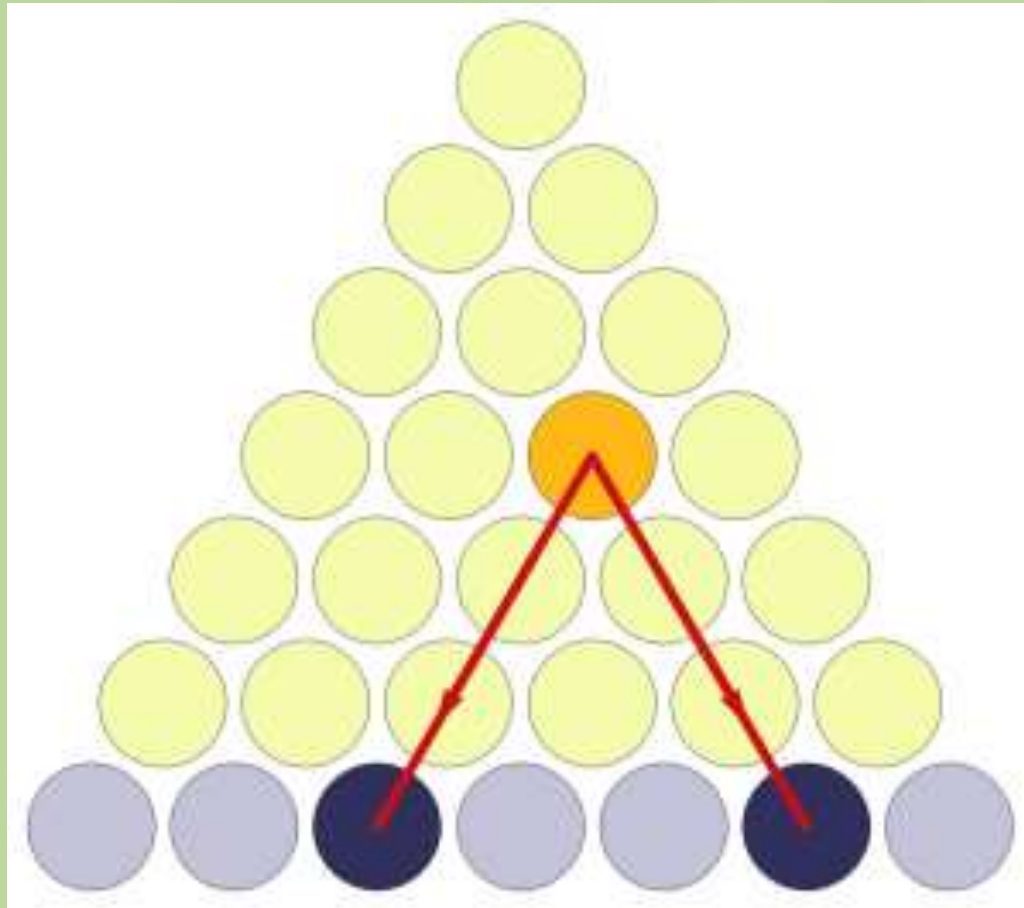
$$A = \pi r^2$$



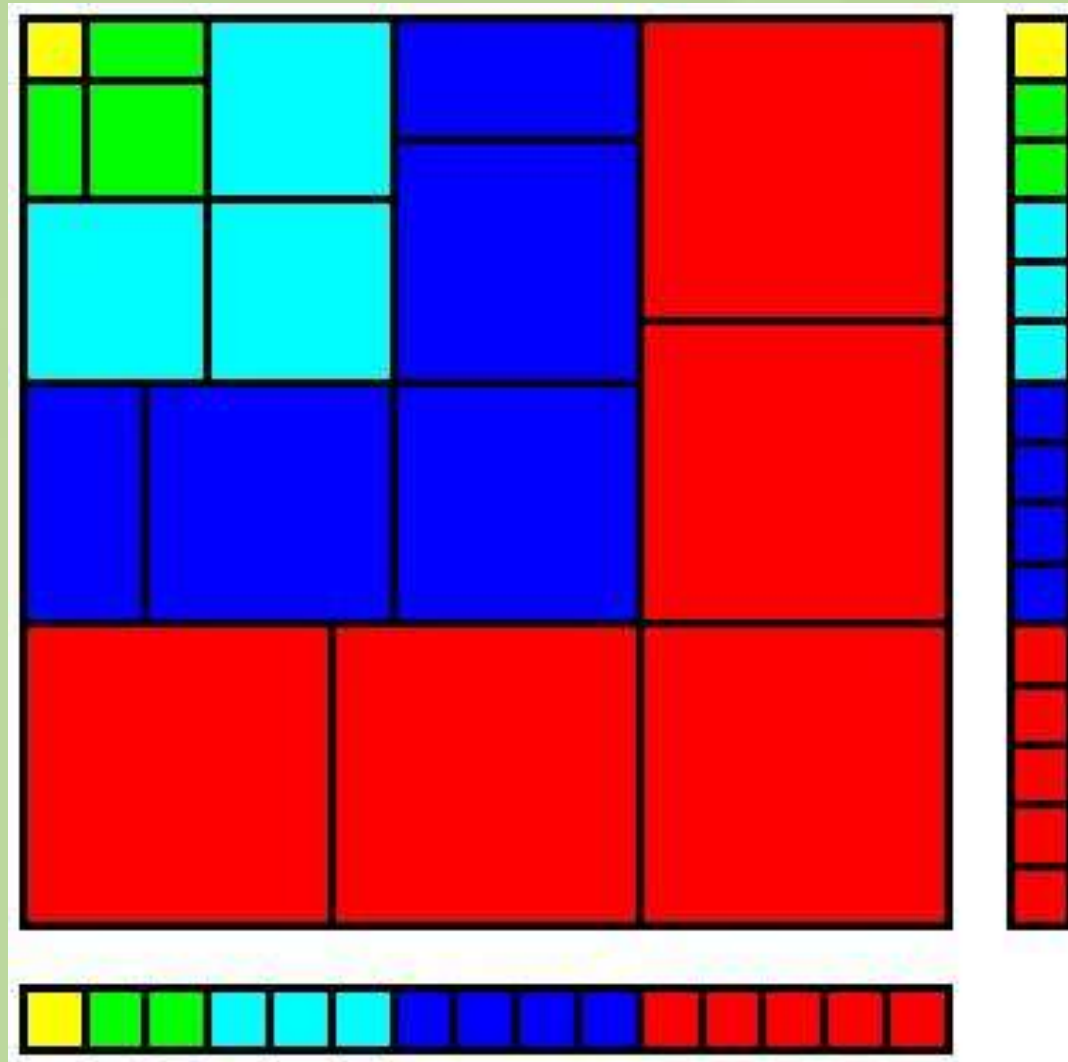
$$A = rs$$



$$1 + 2 + \dots + n = \binom{n+1}{2}$$

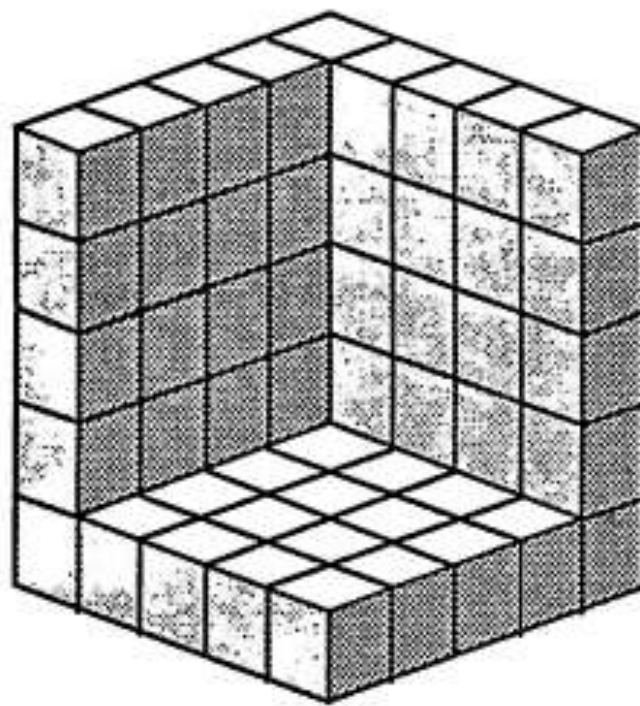
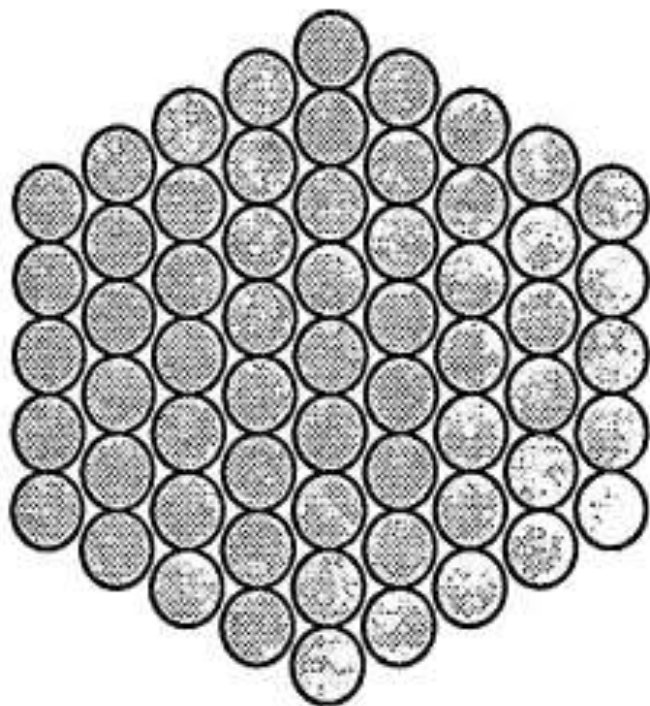


$$1^3 + 2^3 + \dots + n^3 = (1 + 2 + \dots + n)^2$$

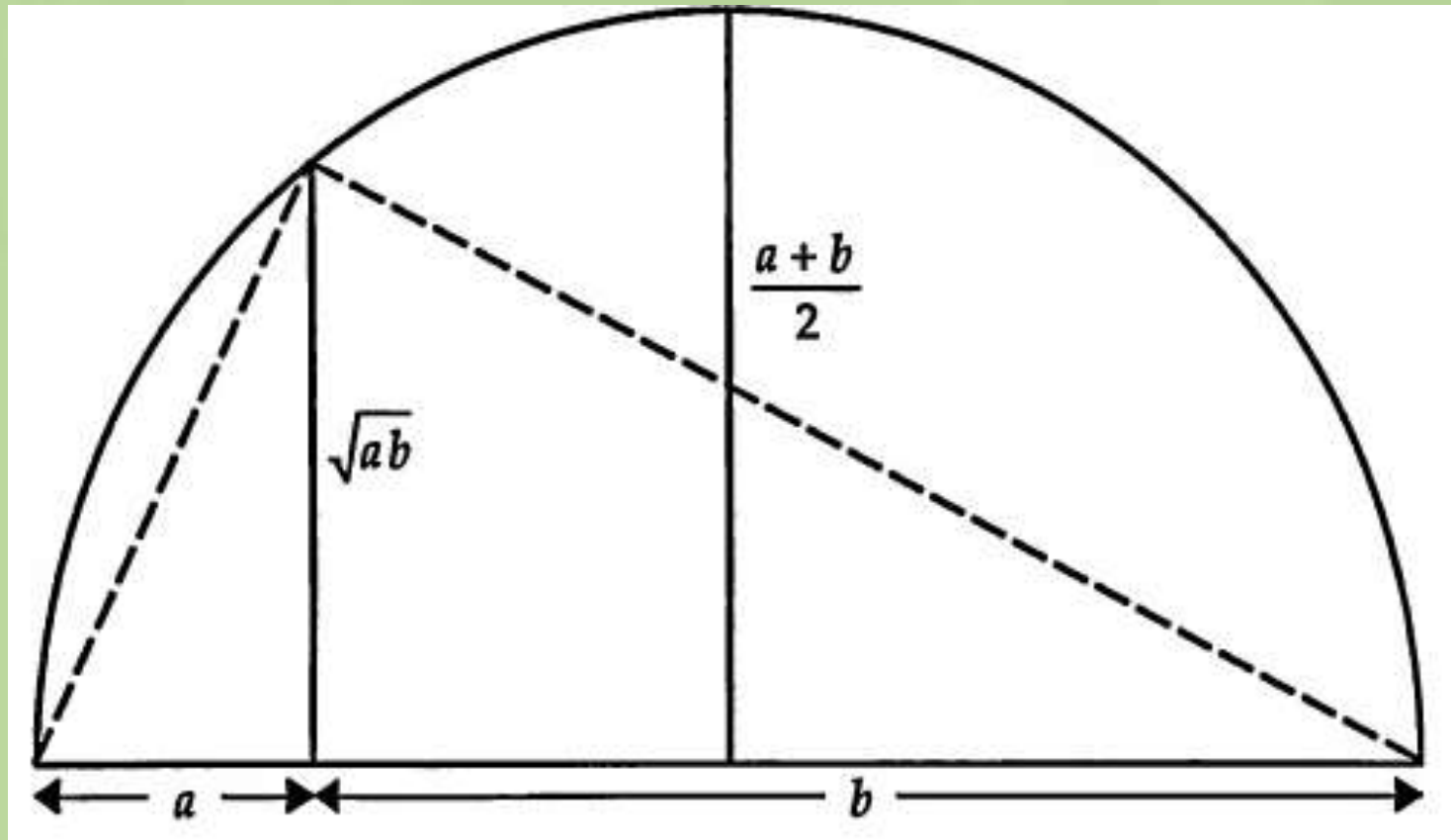




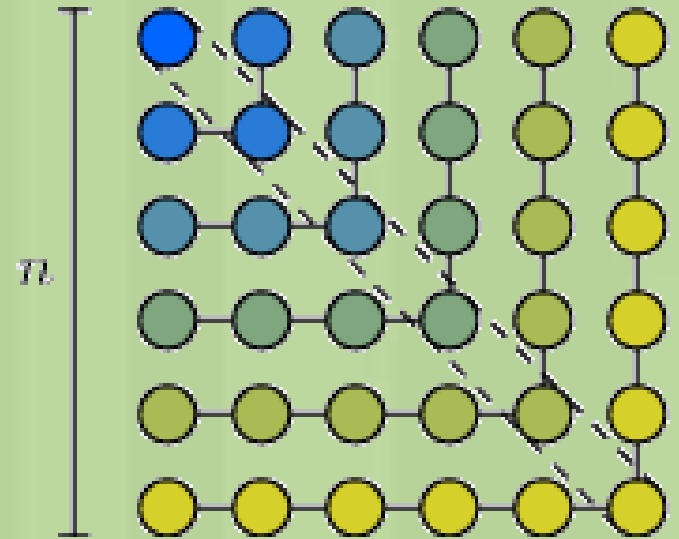
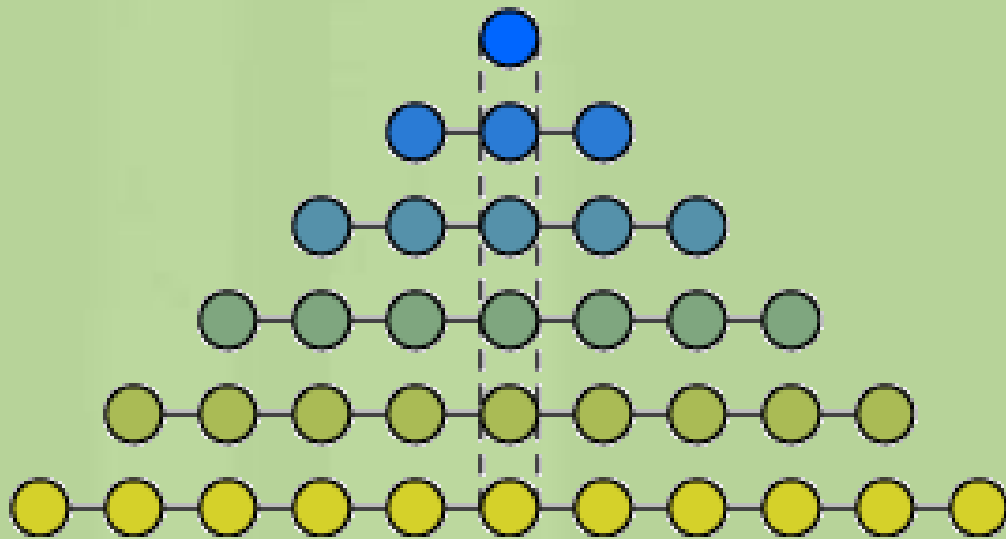
$$h_1 + h_2 + \cdots + h_n = n^3$$



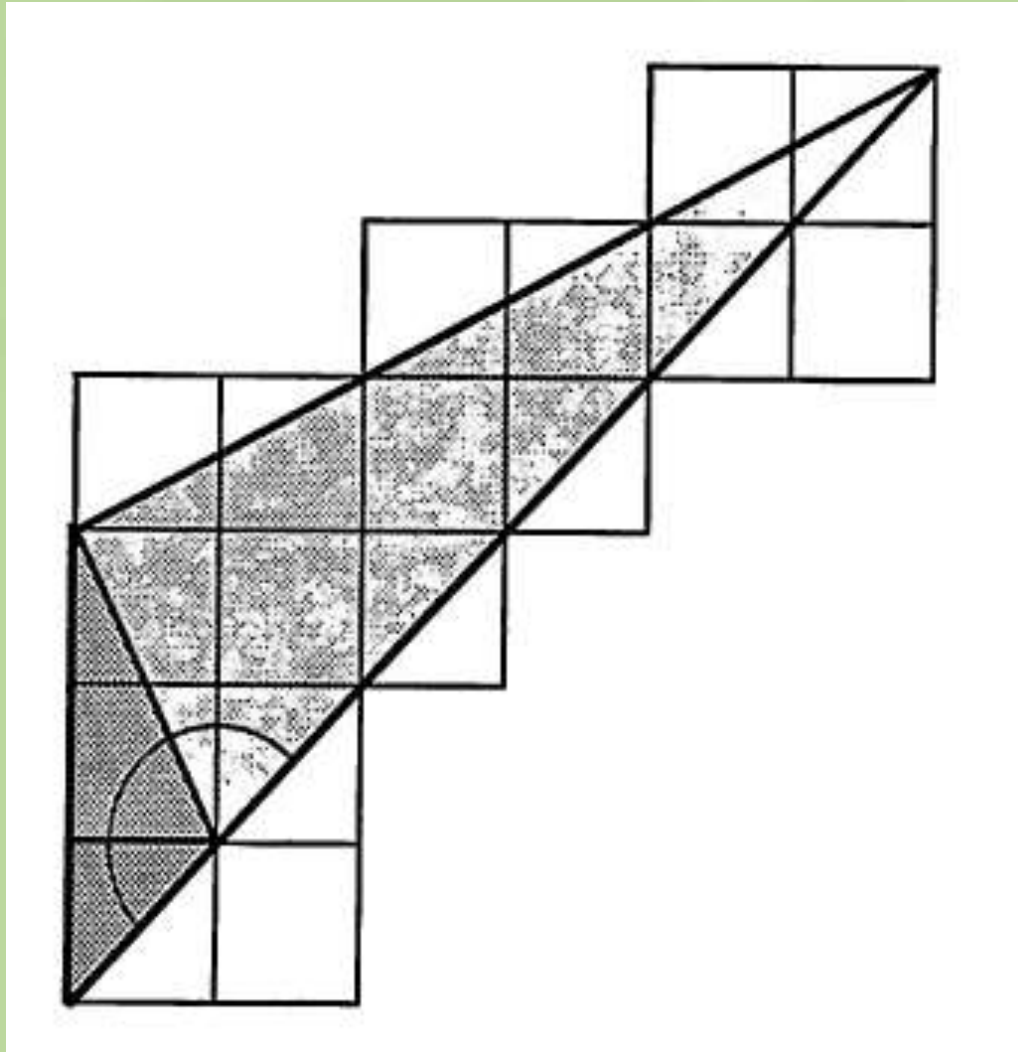
$$\frac{a + b}{2} \geq \sqrt{ab}$$



Sum of first  $n$  odd numbers is  $n^2$



$$\arctan 1 + \arctan 2 + \arctan 3 = \pi$$



A 8x8 chessboard with a black and white square removed can be tiled with 2x1 dominoes

