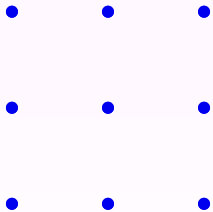
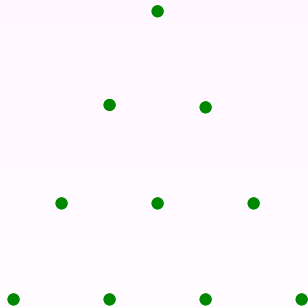


Square and Triangular Numbers



$$3^2 = 9$$

Square Number

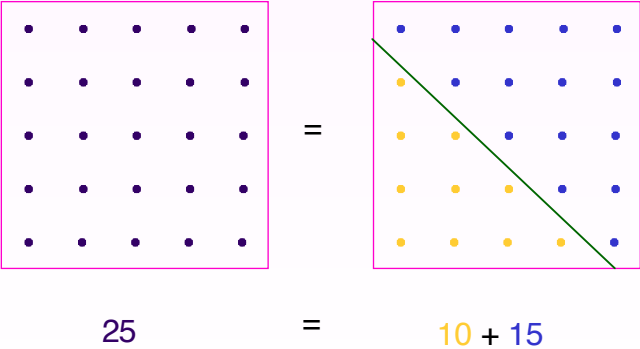


10

Triangular Number

Relationships Between Numbers

- ▶ **Example:** Square numbers can be subdivided by a diagonal line into the sum of two triangular numbers.
 - ▶ Square number 25 = triangular number 10 + triangular number 15.



Square Numbers



$$1^2$$

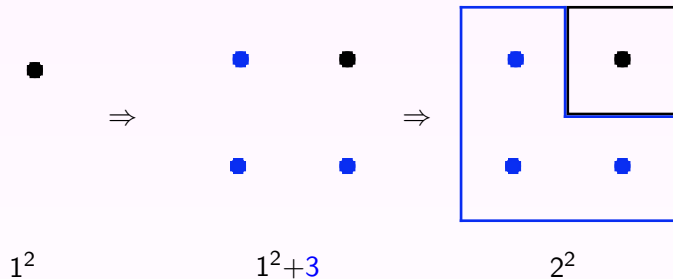
Square Numbers



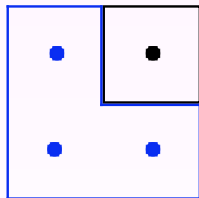
1^2

$1^2 + 3$

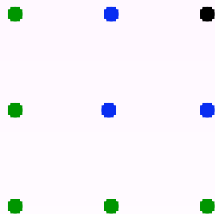
Square Numbers



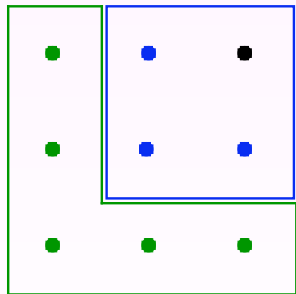
Square Numbers



$$2^2$$

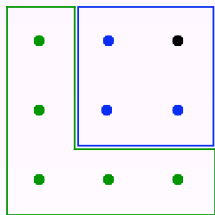


$$2^2 + 5$$

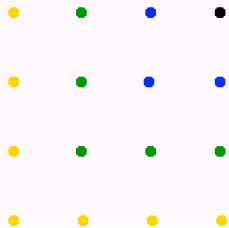


$$3^2$$

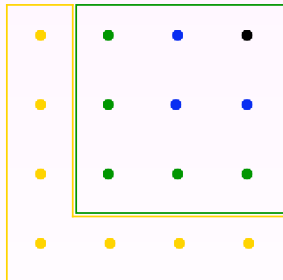
Square Numbers



$$3^2$$

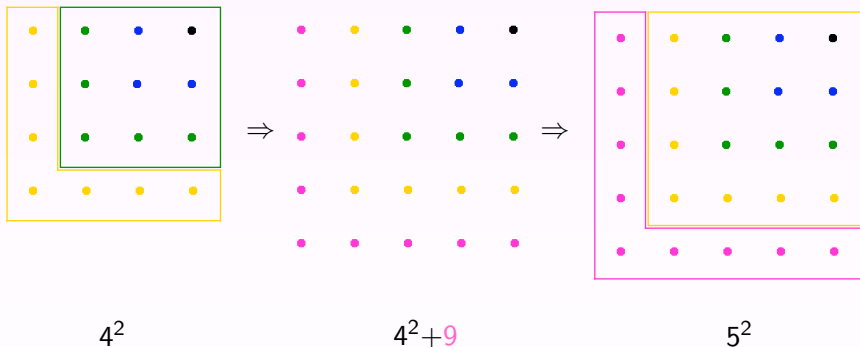


$$3^2 + 7$$



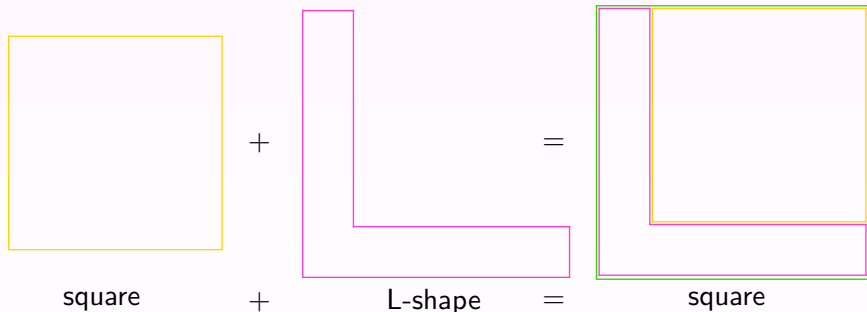
$$4^2$$

Square Numbers



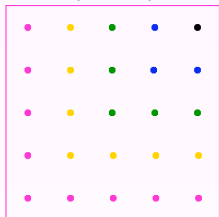
Square Numbers, continued

In each case,



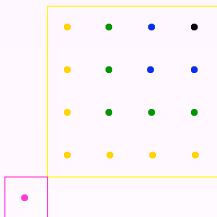
Why $(n + 1)^2 \neq n^2 + 1$, in pictures!

$$(n + 1)^2$$

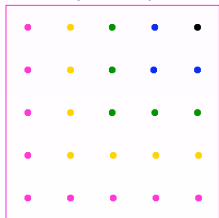


\neq

$$n^2 + 1$$



$$(n + 1)^2$$



$=$

$$n^2 + 2(n) + 1$$

