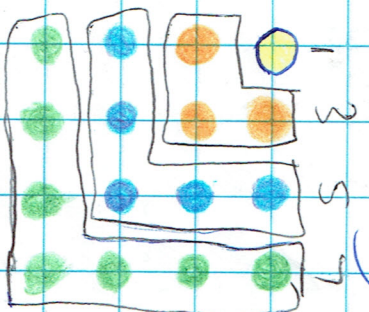


Picturing Square Numbers



$$1+3+5+7=16$$

$$T_1+T_2+T_3+T_4=4^2$$

First 30 odd numbers

$$T_1+T_2+T_3+\dots+T_{30} = 30^2$$

(900)

First 60 odd numbers

$$T_1+T_2+T_3+\dots+T_{60} = 60^2 = 3600$$

Can you make 3249 by adding odd numbers this way?

$$\sqrt{3249} = 57$$

$$T_1+T_2+T_3+\dots+T_{57} = 3249 \quad (57^2)$$

$$1+3+\dots+149+151+153$$

USING METHOD IN BLUE BOX

$$153 = 2 \times 77 - 1$$

∴ There must be 77 terms

$$T_1+T_2+T_3+\dots+T_{77} = 77^2 = 5929$$

$$83+81+\dots+5+3+1$$

$$83 = 2 \times 42 - 1$$

∴ There are 42 terms

$$T_1+T_2+T_3+\dots+T_{42} = 42^2 = 1764$$

The formula for We know that
the formula for odd numbers
is $2n-1$

So we can also say that

$$7 = 2 \times 4 - 1$$

$$T_n = 2n-1$$

$$51+53+55+\dots+153 ?$$

$$2n-1 = 49 \quad \therefore n = 25$$

$$(1+3+5+7+\dots+49) + (51+53+55+\dots+153)$$

$$25^2$$

$$77^2 - 25^2 = 77^2$$

$$77^2 - 25^2 = (77+25) \times (77-25)$$

$$= 102 \times 52 = 5304$$