

When you add 5, 7 etc. consecutive numbers:

Simple formula \Rightarrow middle number \times number of numbers
e.g. $3+4+5+6+7 = 5 \times 5 = 25$

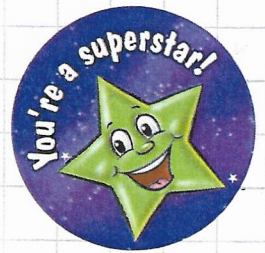
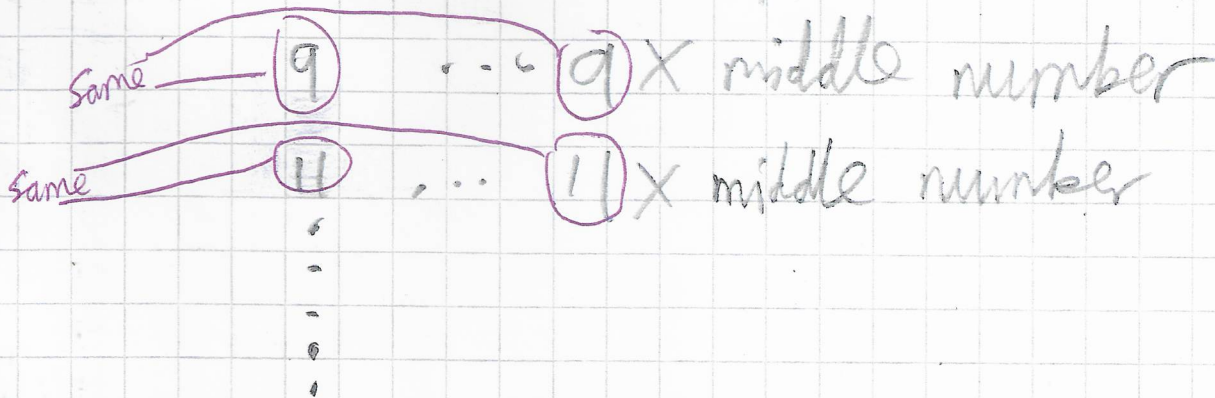
$$\begin{array}{r} + n-2 \\ + n-1 \\ + n \\ + n+1 \\ + n+2 \end{array}$$

$N = \text{MIDDLE NUMBER}$

$$\frac{n+n+n+n+n}{5n} \quad \underbrace{-2-1+1+2}_0$$

$5n + 0 = 5n$ so $5 \times$ number in the middle

If 7 numbers $\rightarrow 7 \times$ middle number



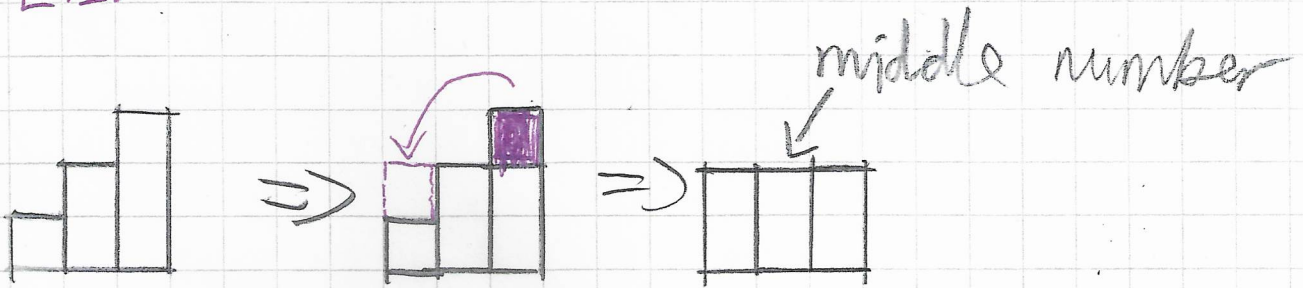
SUM OF EVEN NUMBER OF CONSECUTIVE NUMBERS:

$$\frac{\text{Number of numbers}}{2} \times (\text{1st number} + \text{last number})$$

\Downarrow
number of pairs

\Downarrow
one pair of numbers
e.g. $a+b+c+d+e+f$

Liz:



Charlie:

$$\begin{array}{l|l} 6 & 6 \\ 6+1+1+1 & 9 \\ 6+1+1+1+1+1+1 & 12 \\ 6+1+1+1+1+1+1+1+1+1 & 15 \end{array} \quad \begin{array}{l} \text{all multiples of } 3 \\ 6+3a = 3(a+2), \text{ definitely} \\ \text{a multiple of } 3 \end{array}$$

Claire:

$$\left. \begin{array}{l} n \\ n+1 \\ n+2 \end{array} \right\} \text{sum: } 3n+3 = 3(n+1), \text{ is a multiple of } 3$$

also: $\left. \begin{array}{l} n \\ n+1 \\ n+1+1 \end{array} \right\}$, same as Liz