| | Par | Impar |
|---|---|---|
| 1) | 1 | 1 |
| 2) | $n/2+1$ | $\frac{n+1}{2}+1$ |
| 3) | $n/2$ | $\frac{n+1}{2}$ |
| 4) | $\left(\frac{n}{2}\right)^2+n-\frac{n}{2}\left(\frac{n}{2}+1\right)$ / 2 | $\left(\frac{n+2}{2}\right)^2+n+1-\frac{\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)}{2}$ |
| 5) | $\left(\frac{n}{2}\right)^2+\frac{n}{2}-\frac{\frac{n}{2}\left(\frac{n}{2}+1\right)}{2}$ | $\left(\frac{n+2}{2}\right)^2+\left(\frac{n+1}{2}\right)-\frac{\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)}{2}$ |
| 6) | $n/2$ | $\frac{n+1}{2}$ |
| 7) | $\frac{n}{2}\left(\frac{n}{2}+1\right)$ | $\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)$ |
| 8) | $\left(\frac{n}{2}\right)^2$ | $\left(\frac{n+c}{2}\right)^2$ |
| 9) | $n/2$ | $\frac{n+1}{2}$ |

| | Instrucción | Costo |
|---|---|---|
| 1 | i ← 1 | $c_1$ |
| 2 | while i<=n | $c_2$ |
| 3 | k ← i | $c_3$ |
| 4 | while k<=n | $c_4$ |
| 5 | k ← k+2 | $c_5$ |
| 6 | k ← 1 | $c_6$ |
| 7 | while k<=i | $c_7$ |
| 8 | k ← k+1 | $c_8$ |
| 9 | i ← i+2 | $c_9$ |

while i<=n

n par: 1, 3, 5, 7, ..., n-1 — $n+1$ — $\frac{n}{2}+1$ — $n=8$ $\frac{8}{2}+1=5$

n impar: 1, 3, 5, 7..., n — $n+2$ — $\frac{n+1}{2}+1$ — $n=7$ $\frac{7+1}{2}+1=5$

Caso par

| i | c | k |
|---|---|---|
| 1 | 1 | 1 3 5 7 ... n-1 n+1 — $\frac{n}{2}+1$ |
| 3 | 2 | 3 5 7 .. n-1 n+1 — $\frac{n}{2}$ |
| 5 | 3 | 5 7 ... n-1 n+1 — $\frac{n}{2}-1$ |
| 7 | 4 | 7 n-1 n+1 — $\frac{n}{2}-2$ |
| 9 | 5 | ..... — $\frac{n}{2}-3$ |

| | |
|---|---|
| k ← i | $c_3$ |
| while k<=n | $c_4$ |
| k ← k+2 | $c_5$ |

n-3 $n/2-1$ n-3 n-1 n+1 3

n-1 $n/2$ n-1 n+1 2

$$\sum_{i=1}^{n} k = kn$$

c contando la iteracion

$\frac{n}{2}+2-c$ $\quad c=\frac{i+1}{2}$

c = 1 $\quad n/2+1$ $\quad c=n/2$ $\quad 2$

c = 2 $\quad n/2$

c = 3 $\quad n/2-1$

$$\sum_{c=1}^{n/2}\frac{n}{2}+2-c = \sum_{c=1}^{n/2}\frac{n}{2}+\sum_{c=1}^{n/2}2-\sum_{c=1}^{n/2}c$$

$$\left(\frac{n}{2}\right)^2+n-\frac{\frac{n}{2}\left(\frac{n}{2}+1\right)}{2}$$

$$\frac{n}{2}+1-c = \sum_{c=1}^{n/2} \frac{n}{2}+1-c = \left(\frac{n}{2}\right)^2 + \frac{n}{2} - \frac{\frac{n}{2}\left(\frac{n}{2}+1\right)}{2}$$

| i | k |
|---|---|
| 1 | 1 2 |
| 3 | 1 2 3 4 |
| 5 | 1 2 3 4 5 6 |
| 7 | 1 2 3 4 5 6 7 8 |
| ⋮ | ⋮ |
| n-1 | 1 2 3 4 .... n-1 n |

2 4 6 8 ... n

| | | |
|---|---|---|
| 6 | k ← 1 | $c_6$ |
| 7 | while k<=i | $c_7$ |
| 8 | k ← k+1 | $c_8$ |

$c \rightarrow$ $\underbrace{2}_{1} + \underbrace{4}_{2} + \underbrace{6}_{3} + \underbrace{8}_{4} + \ldots + \underbrace{n}_{n/2}$

$$\sum_{c=1}^{\frac{n}{2}} 2c = \frac{2\frac{n}{2}\left(\frac{n}{2}+1\right)}{2} = \frac{n}{2}\left(\frac{n}{2}+1\right)$$

$$\sum_{c=1}^{\frac{n}{2}} (2c-1) = \frac{n}{2}\left(\frac{n}{2}+1\right) - \frac{n}{2} = \frac{n}{2}\left(\frac{n}{2}+1-1\right) = \left(\frac{n}{2}\right)^2$$

$$\sum_{c=1}^{n/2} 2c - \sum_{c=1}^{n/2} 1$$

Impar

Valido

$i = 1, 3, 5, \ldots, n$ $\quad n+2$

K

| i | c | | |
|---|---|---|---|
| 1 | 1 | 1, 3, 5, ... n, n+2 | $\frac{n+1}{2}+1$ |
| 3 | 2 | 3, 5, ... n, n+2 | $\frac{n+1}{2}$ |
| 5 | 3 | 5, ... n, n+2 | $\frac{n+1}{2}-1$ |
| 7 | 4 | | ⋮ |
| ⋮ | | | 2 |
| n | $\frac{n+1}{2}$ | n, n+2 | |

| | |
|---|---|
| k ← i | $c_3$ |
| while k<=n | $c_4$ |
| k ← k+2 | $c_5$ |

$\frac{n+1}{2} + 1 + \frac{n+1}{2} + \frac{n+1}{2} - 1 + \ldots +$

$\frac{n+1}{2} + 2 - c \qquad c = 1, \ldots, \frac{n+1}{2}$

$$\sum_{c=1}^{\frac{n+1}{2}} \left[\frac{n+1}{2}\right] + 2 - c = \left(\frac{n+2}{2}\right)^2 + n + 1 - \frac{\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)}{2}$$

$$\sum_{c=1}^{\frac{n+1}{2}} \frac{n+2}{2} + 1 - c = \left(\frac{n+2}{2}\right) + \frac{n+1}{2} - \frac{\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)}{2}$$

n impar

| c | K |
|---|---|
| 1 | 1 2 |
| 2 | 1 2 3 4 |
| 3 | 1 2 3 4 5 6 |
| ⋮ | |
| n | $\frac{n+1}{2}$ 1 2 3 4 5 ... n, n+1 n+1 |

i: 1, 3, 5, ⋮, n

2, 4, 6

| | | |
|---|---|---|
| 6 | k ← 1 | $c_6$ |
| 7 | while k<=i | $c_7$ |
| 8 | k ← k+1 | $c_8$ |

$$\sum_{c=1}^{\frac{n+1}{2}} 2c \qquad 2 + 4 + 6 + \ldots + 2\left(\frac{n+1}{2}\right) = n+1$$

$$\chi \frac{\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)}{\chi} = \left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right)$$

$$\sum_{c=1}^{\frac{n+1}{2}} 2c - 1 = \left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1\right) - \frac{n+1}{2}$$

$$\left(\frac{n+1}{2}\right)\left(\frac{n+1}{2}+1-1\right) = \left(\frac{n+1}{2}\right)^2$$