

$$n = 3 \Rightarrow \{1, 2, \dots, 6\}$$

1 6 ~~3~~ 2 5 4

2n Consec Sum

$$10 = 1 \quad 6 \quad 3$$

$$11 = \quad 6 \quad 3 \quad 2$$

$$10 = \quad \quad 3 \quad 2 \quad 5$$

$$11 = \quad \quad \quad 2 \quad 5 \quad 4$$

$$10 = \quad \quad \quad \quad 5 \quad 4 \quad 1$$

$$11 = \quad \quad \quad \quad \quad 4 \quad 1 \quad 6$$

intuition: sequences (valid) are very limited

Either Pattern Problem or Constructive

pattern: generate all valid seq then observe  
hmm: may be hard to observe

Let's go constructive algo

Direct observation all sums must be  $X$  or  $X+1$

observation: if  $P$  is valid seq, any shifting  
is valid too

so fix first number (any)

'boundary thinking' = use 1 or 2n

let's fix first number to ①

Hint

Sliding window intuition

$$\textcircled{a} + b + c + d + e = X$$
$$b + c + d + e + \textcircled{f} = Y$$

$$Y = X - a + f$$

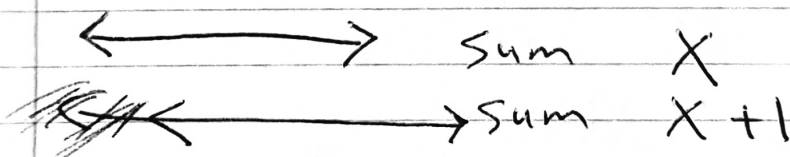
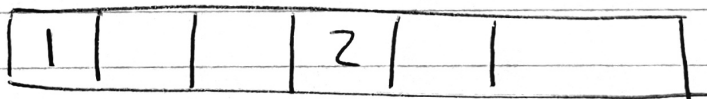
from Problem  $|X - Y| = 1$

observation

$$\text{if } a_i = 1 \Rightarrow a_{i+1} = 2$$

now we know  
2 values!

for  $n = 3$



our probse? next window sum  $X$ , then  $X+1$   
and so on

Remaining values (3,4) (5,6)  
whatever order just  $+1$  or  $-1$ ?

for  $-1$

put 4 & 3

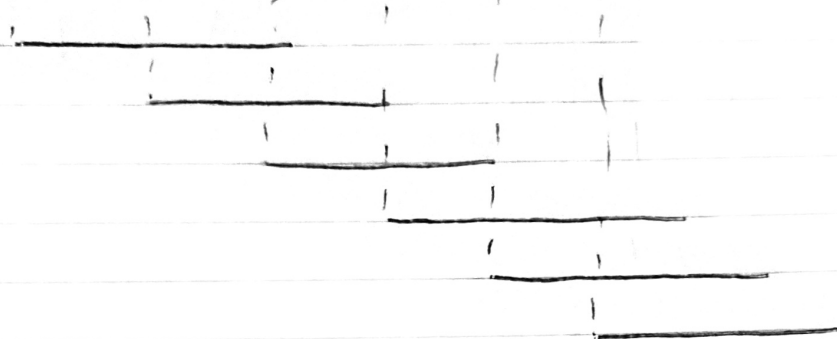
$$(-4 + 3 = -1)$$

then

5, 6

$$(-5 + 6 = 1)$$

1 4 5 2 3 6



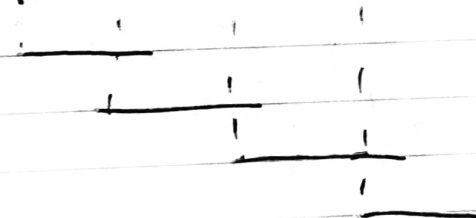
$(1, 2) = +1$   
 $(4, 3) = -1$   
 $(5, 6) = +1$   
 $(2, 1) = -1$   
 $(3, 4) = +1$   
 $(6, 5) = -1$

also valid: 1 6 3 2 5 4

what about even  $n$ ?

for  $n = 2$

1 4 2 3



$(1, 2) = +1$   
 $(4, 3) = -1$   
 $(2, 1) = -1$   
 $(3, 4) = +1$

} wrong

for  $n = 4$

1 4 5 8 2 3 6 7



$(8, 7) = -1$   
 $(2, 1) = -1$

even will never create

+1 -1 +1 -1 +1 -1 pattern