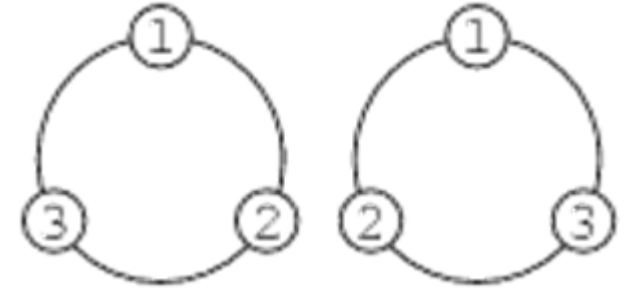
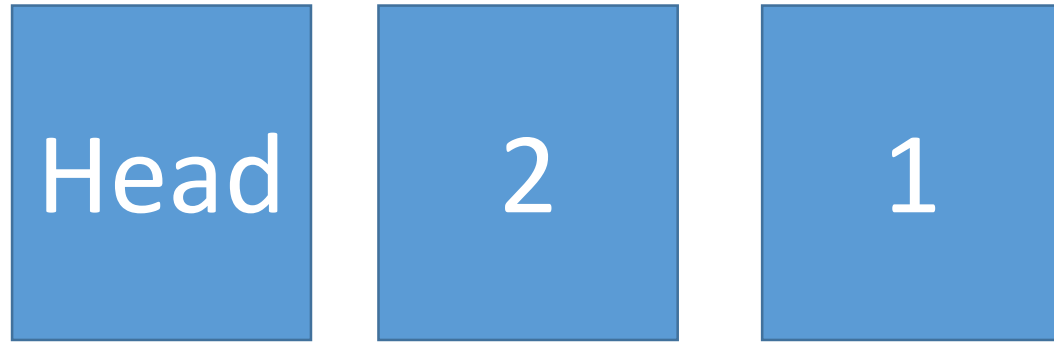


Circular Permutations

Fix something at the head and remove it from n .

How many ways can three shrubs be planted in a circle?



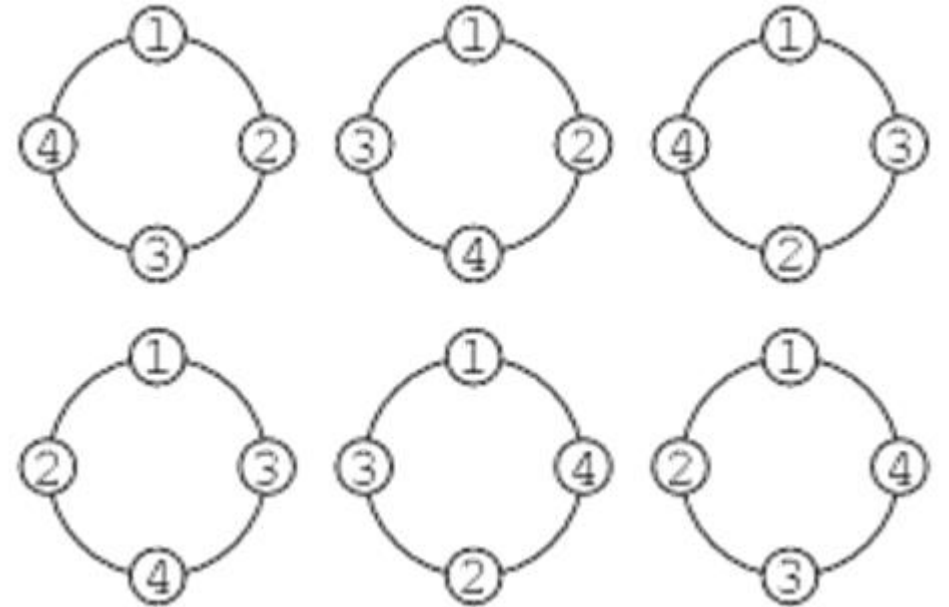
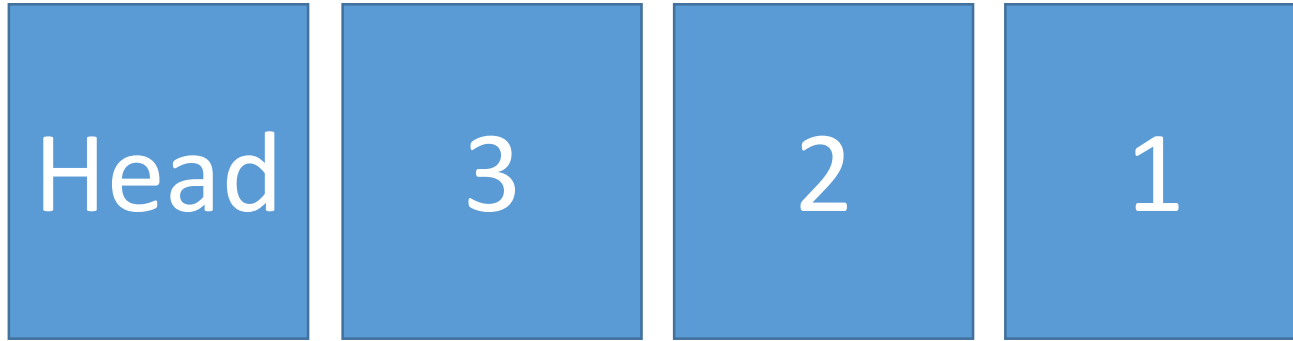
$$= (3-1)!$$

$$= 2!$$

$$= 2$$

Fix one thing at the head and move the remaining things around it.

How many ways can four turtles be arranged in a circle?



$$= (4-1)!$$

$$= 3!$$

$$= 6$$

Fix one thing at the head and move the remaining things around it.

How many
ways can
these 24 pens
be arranged?

23!



