Combinatorics!

Fairview Elementary Math Club

https://kaplandm.github.io/FVE/

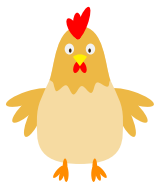
Bracelets

You are making bracelets. Each has five beads: three red, two blue. You wonder how many different sequences you can make. For example:
BBRRR
RRBBR

How many can you find? (How do you know there aren't more?)

Dancing

You have five animals





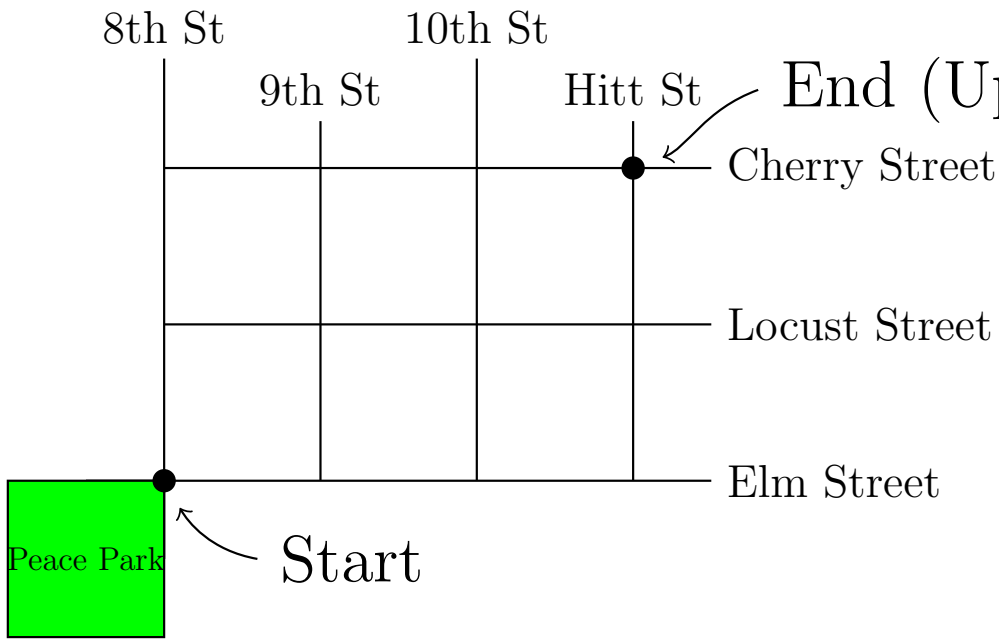
Chicken Owl Squirrel Bee Marmot

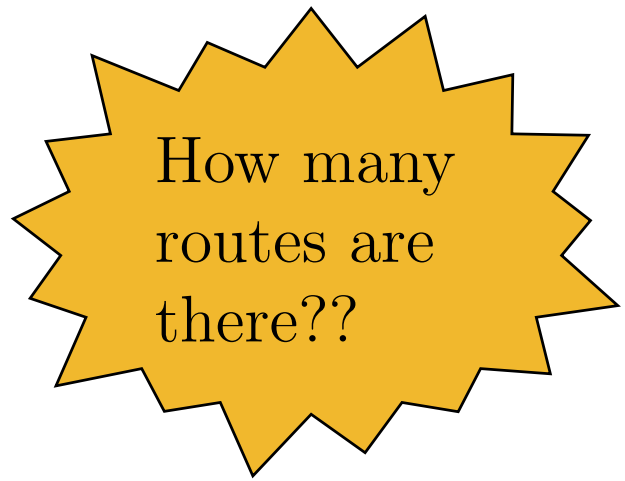
You want them to dance with each other, two at a time.


How many different pairs are possible?

Walking to lunch

You've enjoyed playing in Peace Park all morning, and now you're hungry for a slice of quiche from Uprise Bakery.

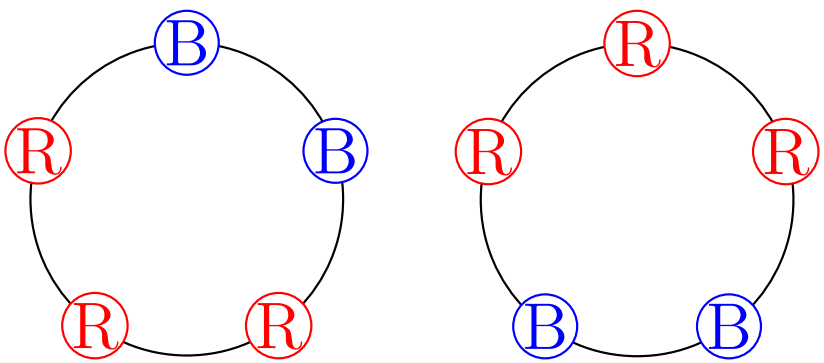




There are so many possible routes! For example: walk up (U) two blocks to Cherry, then right (R) three blocks to Hitt: UURRR. Or walk along Elm to 10th, then up to Cherry, then to Hitt: RRUUR.

Bracelets again

Earlier, we thought about how many "bracelets" could be made using three red and two blue beads, but we treated them as straight lines, when really bracelets loop around. For example, as a straight line, BBRRR and RRBBR differ, but when you put them around your wrist, they become the same! (The two red are next to each other; there is no "end" or "beginning" anymore.)



How many different bracelets are there after you put them on your wrist?

Dancing again

Remember your five animals?

Chicken Owl Squirrel Bee Marmot

This time, each pair has a "lead" dancer. So Bee dancing with Squirrel as lead is now different than Squirrel dancing with Bee as lead.

How many different pairs are possible now?