

Instructions: Show all work.

- How many ways can 4 coworkers to be chosen from 18 people in the office for the same business trip?

$${}_{18}C_4 = 3060$$

- Use the graph below and Nearest Neighbor algorithm to find an inexpensive Hamilton circuit.

I will start at K:

$$K-N-L-O-M-K$$

$$19 \quad 24 \quad 22 \quad 29 \quad 51 = 145$$

Starting at N:

$$N-K-L-O-M-N$$

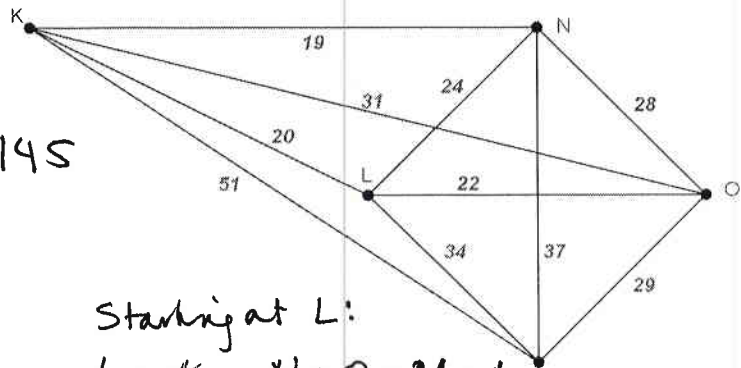
$$19 \quad 20 \quad 22 \quad 29 \quad 37 = 127$$

Starting at O:

$$O-L-K-N-M-O$$

$$22 \quad 20 \quad 19 \quad 37 \quad 29 = 127$$

you only need to do one.



Starting at L:

$$L-K-N-O-M-L$$

$$20 \quad 19 \quad 28 \quad 29 \quad 34 = 130$$

Starting at M:

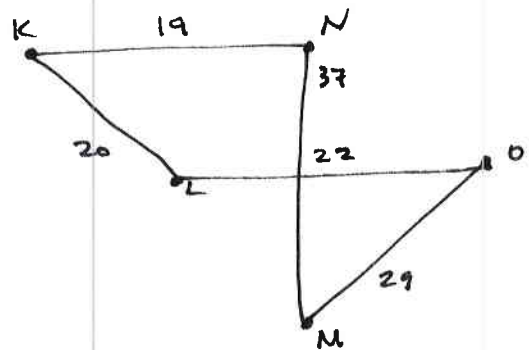
$$M-O-L-K-N-M$$

$$29 \quad 22 \quad 20 \quad 19 \quad 37 = 127$$

- Use the same graph to find an inexpensive Hamilton circuit by Cheapest Link.

$$19 + 20 + 22 + 29 + 37 = 127$$

$$K-N-M-O-L-K$$



- If we were to compute the optimal circuit by Brute Force, how many Hamilton circuits would we need to test?

$$\frac{(n-1)!}{2} = \frac{4!}{2} = 12$$