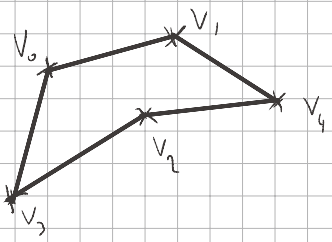
TD 1 — mz@labri.fr



P | 0 | 1 | 4 | 2 | 3 |

sortie = permutation de {0, 1, ..., n-1}

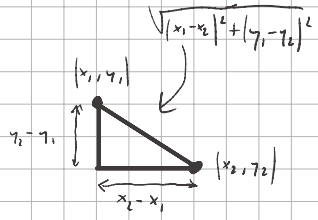
n (n-1) (n-2) .. (1)

n!

pour 26 villes: 26! non raisonnable

Question 1

$dist(A,B) = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$




```
double dist (point A, point B) {
    return sqrt((B.x - A.x)**2 + (B.y - A.y)**2);
}
```

Question 2

Pour n = 5 :

V ↓

V[0].x	. . .	V[4].x
V[0].y		V[4].y

P ↓

0	1	2	3	4

0	1	2	3	4	0 2 1 3 4
0	1	2	4	3	.
0	1	3	2	4	.
0	1	3	4	2	.
0	1	4	2	3	.
0	1	4	3	2	.

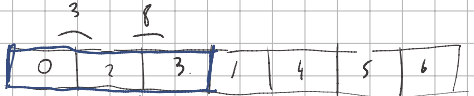
```
value (point *V, int n, int *P) {
    double distance = 0;
    ⋮
    // boucle
    distance += dist(V[P[i]], V[P[i+1]]);
```

Question 3

```
double tsp_brute_force (point *V, int n, int *Q) {
    // 1. initialiser P à P[i] = i
    // 2. boucle où on calcule d = valeur (V, n, P)
    //    si d < dmin, dmin = d
    //    recopier P dans Q
```

recalculer

dmin = 10 :

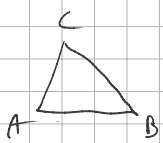


0 2 3 6 5 4 1

3 + 8 = 11 > 10
donc on ne calcule
toutes les permutations qui commencent par 0, 2, 3

Question 4

inégalité triangulaire :



$AB \leq AC + CB$

Question 5

Question 6