1. Les administrations de trois
2. villes voisines: A, B et C ont décidé
3. De construire un aéroport et de diviser les coûts de ce
4. Projet.
5. L’endroit que convient le plus est
6.celui dont la somme les distances entre chaque
7. Ville et l’aéroport est la plus petite
8. possible. Les experts qui sont responsables
9. de ce travail, ont développé un modèle
10. Pour avoir une première idée où cet aéroport
11. Pourrait être placé. Il peuvent utiliser
12. des clous und anneau grand et une
13. corde longue.
14. Expliquez comment les experts peuvent utiliser
15. ces matériaux pour trouver une approximation
16. de l’endroit optimal pour l’aéroport. Imaginez
17. que les villes sont situées
18. aux angles d’un triangle
19. qui est évidemment dessiné à l’échelle
20. dans cette figure. Ceci est une possibilité:
21. La roue commence au premier clou,
22. va dans l’anneau, Puis va autour l’autre clou
23. , autour le dernier clou,
24. Et encore dans l’anneau et maintenant on peut tirer
25. la corde pour trouver l’endroit
26. qu’on cherche. Pour y arriver,
27.il faut déplacer la corde un peu,
28.Parce qu’il y a de la résistance à cause des
29. Matériaux qu’on utilise, mais
30. à la fin, vous arriviez à la position,
31. De laquelle l’anneau ne bouge plus,
32. qui est plus ou moins celle-ci.
33. Vous voyez bien que les angles destrois distances
34. Entre les clous et l’anneau
35. sont plus au moins égaux à 120 dégrées
36. Ce qui est 1/3 de l’angle plein.
37. Ceci est l’endroit qu’on a cherché:
38. -40. La somme minimale des distances entre les villes et l’aéroport.
41. Musique

I added 25 seconds to each timing to correct for the intro song -john argentino

**The airport problem - subtitles:**

1

00:00:00,000 --> 00:00:40,000

The administrations of three

2

00:00:40,000 --> 00:00:44,000

neighboring cities: A, B and C decided

3

00:00:44,000 --> 00:00:46,000

to build an airport dividing the costs of

4

00:00:46,000 --> 00:00:48,000

implementation. The condition on the

5

00:00:48,000 --> 00:00:50,000

choice of the most suitable place is

6

00:00:50,000 --> 00:00:53,000

that the sum of the distances from each

7

00:00:53,000 --> 00:00:55,000

city to the airport is as small as

8

00:00:55,000 --> 00:00:57,000

possible. The team of experts in charge

9

00:00:57,000 --> 00:01:00,000

of the work has created a model to get

10

00:01:00,000 --> 00:01:02,000

a preliminary idea of where to place the

11

00:01:02,000 --> 00:01:05,000

structure. At their disposal there are

12

00:01:05,000 --> 00:01:08,000

some snails a big metal ring and a long

13

00:01:08,000 --> 00:01:09,000

string.

14

00:01:09,000 --> 00:01:12,000

Explain how the team can manage to use

15

00:01:12,000 --> 00:01:14,000

the materials to tell approximately the

16

00:01:14,000 --> 00:01:17,000

ideal location of the airport. Imagine

17

00:01:17,000 --> 00:01:19,000

that the cities are placed at the

18

00:01:19,000 --> 00:01:20,000

vertices of a triangle which is

19

00:01:20,000 --> 00:01:22,000

obviously reproduced in scale as

20

00:01:22,000 --> 00:01:34,000

shown in figure. This is one possible

21

00:01:34,000 --> 00:01:37,000

setting the rope starts from one nail,

22

00:01:37,000 --> 00:01:40,000

goes inside the ring, goes around the

23

00:01:40,000 --> 00:01:42,000

other nail, the third nail, inside the

24

00:01:42,000 --> 00:01:45,000

ring again and now you can just pull the

25

00:01:45,000 --> 00:01:48,000

rope in order to find the point that

26

00:01:48,000 --> 00:01:54,000

you're looking for. In order to reach the

27

00:01:54,000 --> 00:01:56,000

point, we have to move the rope a bit

28

00:01:56,000 --> 00:02:00,000

because there is some resistance caused

29

00:02:00,000 --> 00:02:03,000

by the materials that we are using but

30

00:02:03,000 --> 00:02:07,000

after a while you'll reach a position from

31

00:02:07,000 --> 00:02:08,000

which the ring doesn't move anymore,

32

00:02:08,000 --> 00:02:12,000

which is more or less this one. And as

33

00:02:12,000 --> 00:02:16,000

you can see the three distances

34

00:02:16,000 --> 00:02:20,000

between the ring and the nails are

35

00:02:20,000 --> 00:02:24,000

placed more or less 120 degrees from one

36

00:01:24,000 --> 00:02:27,000

another which is 1/3 of a circumference,

37

00:02:27,000 --> 00:02:30,000

and that's the point that we're looking

38

00:02:30,000 --> 00:02:34,000

for: the minimum distance between the

39

00:02:34,000 --> 00:02:36,000

nails and the airport when you sum it

40

00:02:36,000 --> 00:02:37,000

Together

41

00:02:37,000 --> 00:02:40,000

[Music]