

# Highschool Watering System



## 01

### TASK

*Extinguishing the school in case of fire*

The plan of our school has a certain shape, with fire hydrants located in three different areas of the building (Q, R and S). Which area is closest to each water intake and what is the greatest distance between a water intake and an established place in our school?

## 02

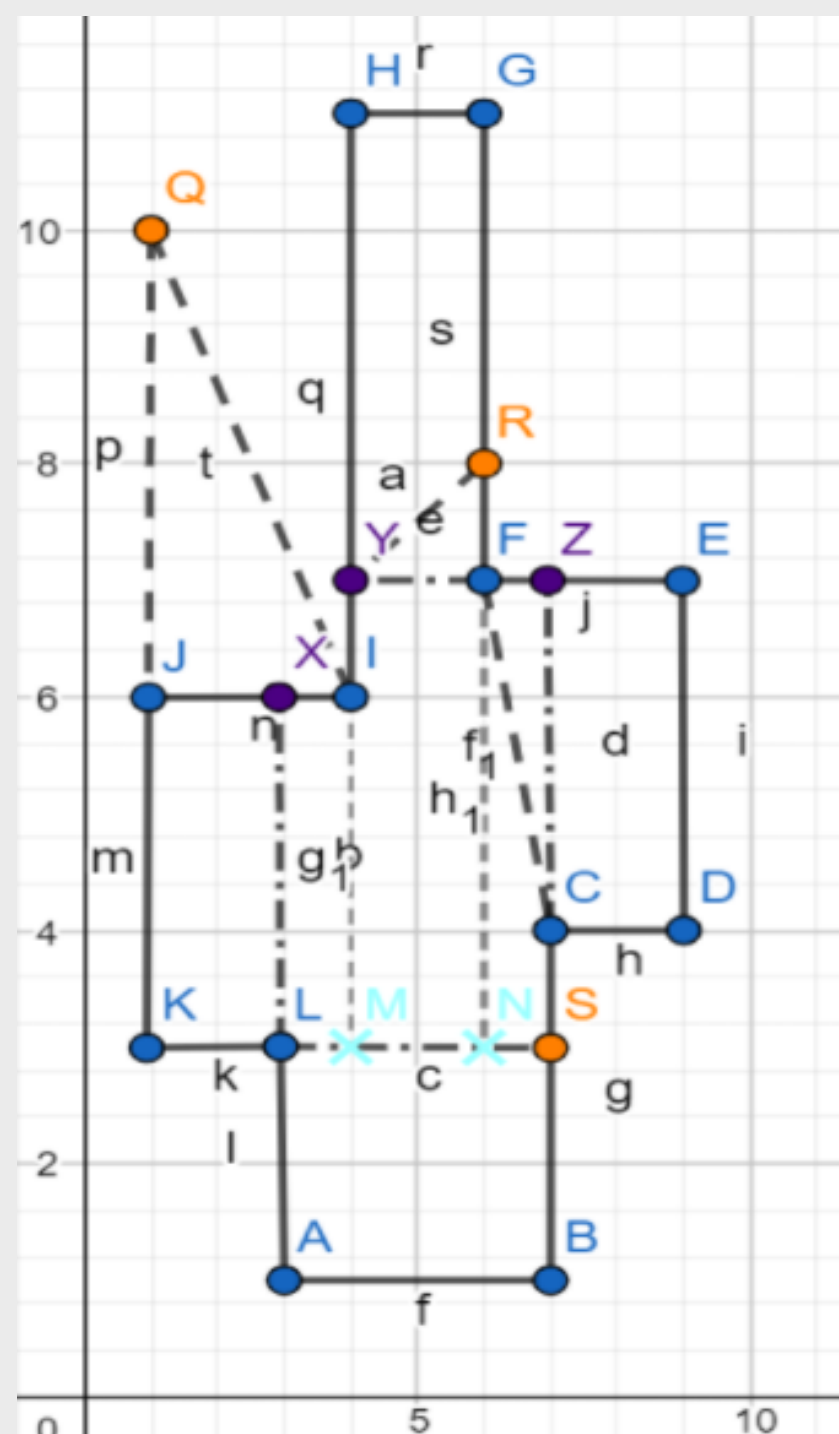
### Objective

Find out the optimum route from each hydrant to all the rooms created

## 03

### Methodology

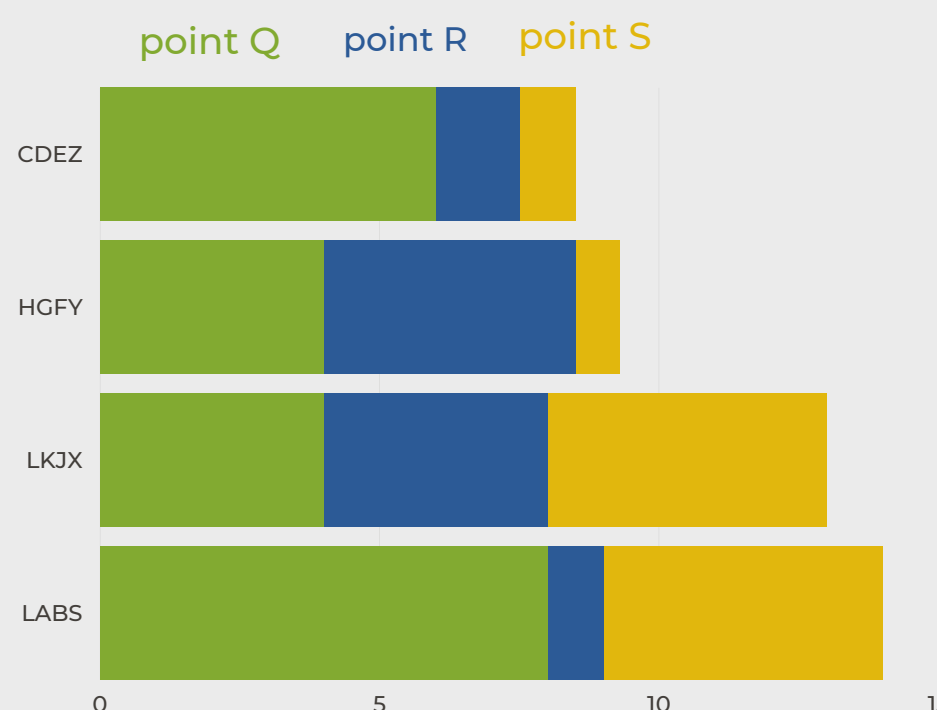
- Firstly, we drew the plan given in the task in a system of coordinate axes using the site Geogebra
- Using the OX and OY coordinate axes system, we calculated each length of the walls.
- The hydrants are the points Q, R, S
- We formed triangles so that one of the vertices is the hydrant.
- We did this in order to find the minimum distance from the hydrants to each room, using Pythagoras' Theorem.
- Since Q is positioned outside the building, we framed it in a triangle and using Pythagoras' Theorem, we found the minimum distance from Q to the building .ex. Triangle JQX.
- We built the rooms: LKJX, HGFY, CDEZ, LABS
- To facilitate the access to the building, we strategically positioned doors: I, J, L, M, N, Y, P, Z
- Because S is one of the points that forms the room LABS and is also a hydrant, we decided to put a door right next to the hydrant. Because the distance between the door and the hydrant is very small, we named the door S.



## 04

### Outcomes

Having calculated the distances between each hydrant (Q, R, S) to all the four rooms (CDEZ, HGFY, LKJX, LABS), we reached some conclusions regarding the minimum distance and the maximum distance as well. In the following diagram are represented the final results.

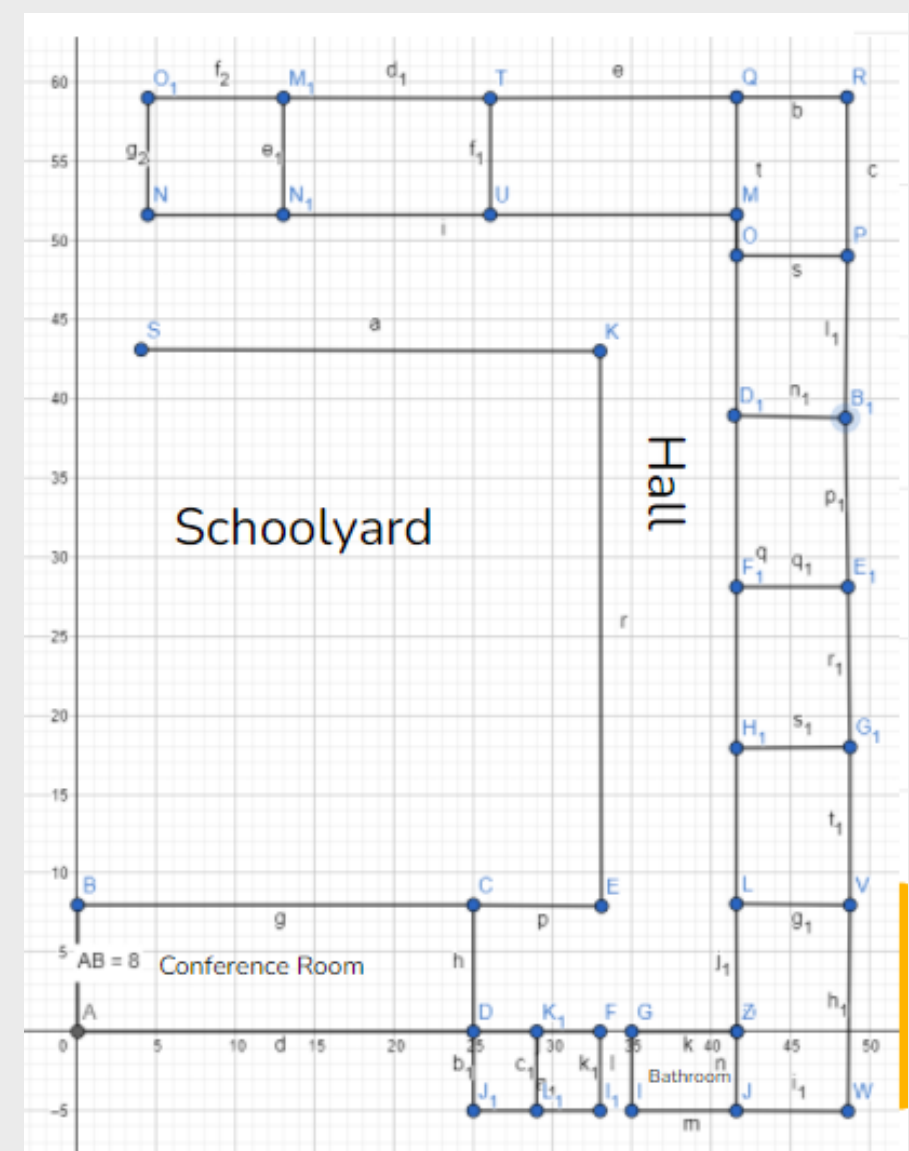


Each color conveys the distance from the exact same hydrant to every room. For instance, the color green is linked to hydrant Q, blue to hydrant R and yellow to S. According to the results, Q is nearest to the room LKJX and farthest to the room LABS, R is nearest to the room LABS and farthest to the room HGFY, S is nearest to the room HGFY and farthest to the room LABS.

## 06

### Our school

- We measured with other teams the hallways with the app Measure which has a high rate of accuracy.
- All our research took place only on the first floor.
- We tried to use the plan of school but besides our efforts the school is not allowed to give us the original plan.
- So, we decided to build one on our own



**The measurements:**  
**BC=25 m**  
**AB=8 m**  
**EL=3 m**  
**KE=34.5 m**  
**OQ=10 m**  
**OP=7 m**

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