



Lesson #17: Minimal Spanning Trees

Overview

Students will work on the Muddy City activity to learn how to use graphs such a minimal spanning trees to help solve problems.

Lesson Summary

- *Students solve the muddy city problem and discuss their solutions with their elbow partners, then the class. Students will need to be introduced to the problem in most cases. It will help to tell them that a road can be used more than once and that not all paths will be used. It is important that students know that you are looking for the shortest route (aka the least number of stones).*
- *After the class discussion, students will be asked to create their own spanning tree out of their own data from their final project research. They will then combine their data with their group members for their final projects (most likely in a different class period).*
- *Students will share their spanning trees and answer questions about their solutions.*

CS Content

*Unit 2 Day 17: Minimal spanning trees
CS Unplugged Activity 9: Muddy City*

Objectives

Students will be able to:

- Solve a minimal spanning tree.
- Create their own spanning tree complete with solutions.

Materials and Prep

- [Minimal Spanning Tree Activity](#)

Resources

Student Documents

- [Google Maps](#)

Video

- <https://youtu.be/YyLaRffCdk4>

Assessments

- Evaluate student's spanning trees

Notes

** Students will want some connection between this assignment and the real world applications besides the assignment they have been given.*