The mayor of a small town is looking for volunteer firefighters. A map showing the possible volunteers’ homes and how they are connected by roads is shown below. The mayor’s goal is to ensure that every home in the town is either the home of a volunteer or is connected by a single road to the home of a volunteer.

**Problem 1:** The mayor’s goal outlined above can be achieved with only 3 volunteer firefighters. Find a group of 3 volunteer firefighters that will achieve the mayor’s goal. Use the online exploration to test different combinations of firefighters.

**Problem 2:** Find all possible groups of 3 volunteer firefighters that will achieve the mayor's goal. Explain how you know you have found them all.

**Problem 3:** Explain why it is not possible for the mayor’s goal to be achieved if there are only 2 volunteer firefighters.

**Extension:** A new road is built between two of the homes in the town and the mayor’s goal can now be achieved with only 2 volunteer firefighters. Between which homes in the town could this road have been added?

*This new road may be longer and take a less direct route than the other roads on the map.*

**More Info:**
Check the CEMC at Home webpage on Wednesday, May 13 for a solution to Volunteer Firefighters.