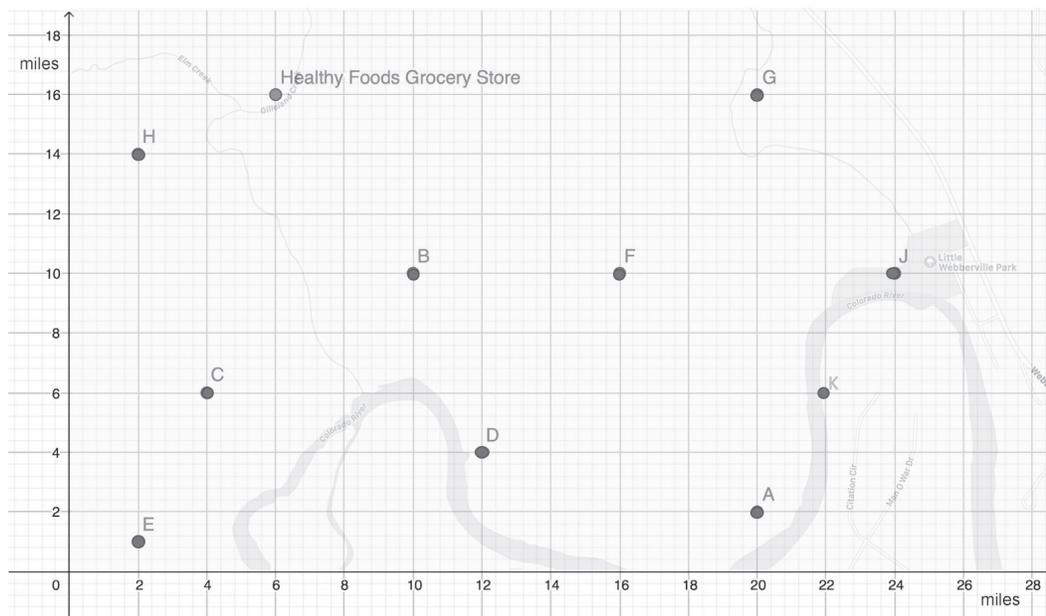


## The USDA Problem

“Food deserts” exist in areas where it proves to be extremely difficult for residents to access affordable, healthy foods. In order to expand the availability of healthy foods, the US Department of Agriculture (USDA) has developed a program to provide grants to states for funds to support the establishment and operation of grocery stores in underserved communities. In order to implement this program, the USDA needs a procedure for determining if a particular geographic region qualifies as a food desert.

The map below identifies the locations of ten randomly selected homes along with the grocery store that’s closest to each of them.

1. What questions do you have when looking at this map?
2. How long does it take you to get from your home to a grocery store that sells fresh foods?
3. Would you say Home G has easy access to the grocery store? How far is it?



Source: Map Data © Google 2020

4. The USDA has asked you to help them with their grant program by doing the following:
  - a. Develop a procedure for determining if this region qualifies as a food desert. Show how your procedure works for all ten houses shown on the map. Give details so that the USDA can check and employ your procedure to locate food deserts.
  - b. Develop a model that will help the USDA identify the optimal location for a new grant-supported grocery store in this area so that it is no longer classified as a food desert.
5. Write a letter to the USDA officials that explains how your two procedures work. Make sure the officials will understand how to use your procedures not just for the map in this problem but also for any map of a geographic area they wish to investigate.