

Activity 1: What's the Problem? Worksheet

Your engineering team will design caverns for the people in the fictional state of **Alabraska**. Approximately 10 million people live in Alabraska and your team will save them all!

Your teacher will give you two maps. The **General Map** shows the elevation or topography of Alabraska and the locations of major cities, rivers, airports and railroads. The **Geology Map** shows the different rock types present in the terrain of Alabraska.

The first task that all engineering teams do when faced with an important project like this is to carefully **define and understand the problem**. Working in your team, discuss each question below to help you better understand and define the problem. These questions have *no wrong answers* so feel free to share your wild ideas with your team and work together.

1. How big does the cavern need to be? — The size of the entire state, half the size of the state, one-tenth the size of the state? When answering this question, think about how long 10 million people have to live in the caverns.

2. What information on the General Map might help you with your decision about possible cavern locations?

3. What “natural features” of the Earth should you be concerned about when designing the caverns?

4. Should you design and build more than one cavern? What are the pros and cons? List some reasons for building only one cavern and some reasons for building more than one cavern.

5. If the asteroid has a diameter of 1 mile, how deep do you think a safe cavern needs to be?

6. List the information your engineering team needs to gather before you can design the size and location of your cavern(s). List three pieces of information that would be helpful to know.
