

Activity 6: Ranking the Rocks Worksheet

Now you are going to rank the rock types based upon the rock test data you collected in the previous activity. Engineers often create guidelines to help them compare potential solutions.

Remember that even though more than one right answer exists, *some answers are better than others!* For example, locations A and B may both be suitable cavern locations, but location A might cost less to construct and be closer to a major highway.

To rank the rocks, we will assign “desirability” points based upon the different rock properties. What are our preferred rock characteristics? Below is what we have learned about the importance of the different rock characteristics for building caverns:

Hardness: Very important! Caverns built in soft rock might collapse. But, really hard rock might be difficult to build in.

Color: Not important for design or construction but may be important for how it looks.

Granular: Important. Solid rocks are stronger than granular rocks.

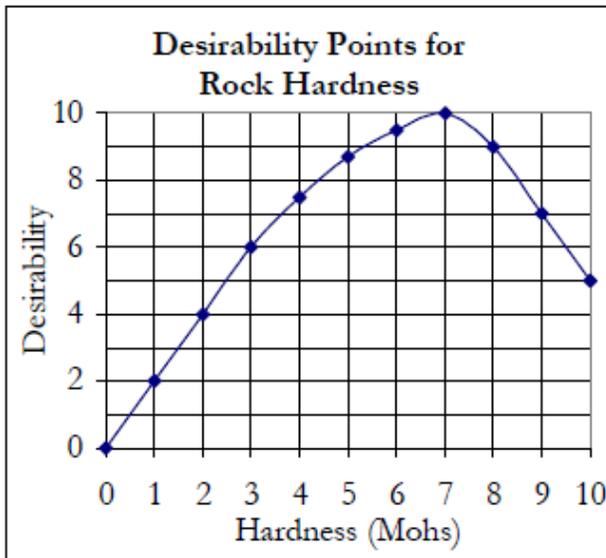
Porosity: Important. Rocks with holes permit water to penetrate and are usually not as strong.

Luster: Not important for design or construction but may be important for how it looks.

The graph and table below provide desirability points for 5 characteristics.

Using the graph, table and **ID flow chart**, fill in the desirability points table on the next page for the rocks you tested.

Desirability Chart



Rock Characteristics	Desirability Points
Hardness	See graph
Color	0
Granular	3 pts if solid; 0 if granular
Porosity	4 points if solid; 0 if rock has holes
Luster	0

Tips: Look at the **Rock ID Flow Chart** to identify a rock’s hardness.

Then look at the Desirability Chart and find its hardness.

Use the chart to assign desirability points by the line curve.

Desirability Points and Rock Ranking

Rock Type	Hardness	Color	Granular	Porosity	Luster	TOTAL POINTS	RANKING
limestone							
basalt							
obsidian							
pumice							
sandstone							
slate							
granite							
gneiss							

1. Based on desirability points, what are the most important and least important rock properties for designing and building caverns, tunnels and underground structures?

Most important rock property:

Least important rock property:

2. Look again at the top three locations you listed during Activity 3. Do your top three sites rank in the top three rock types? Fill in the table below with your site evaluation.

Location from Activity 3	Rock Ranking?	Good Choice?

3. Do you notice a highly ranked rock that did not make your top three potential locations? With this new information, if necessary, revise your top three potential locations in the table below.

Location	Explanation why