

Mining

Concept: Mining is essential to our daily lives and activities.

Mining is the process of extracting mineral resources from the earth, so that they can be processed and used to create products that benefit our society.

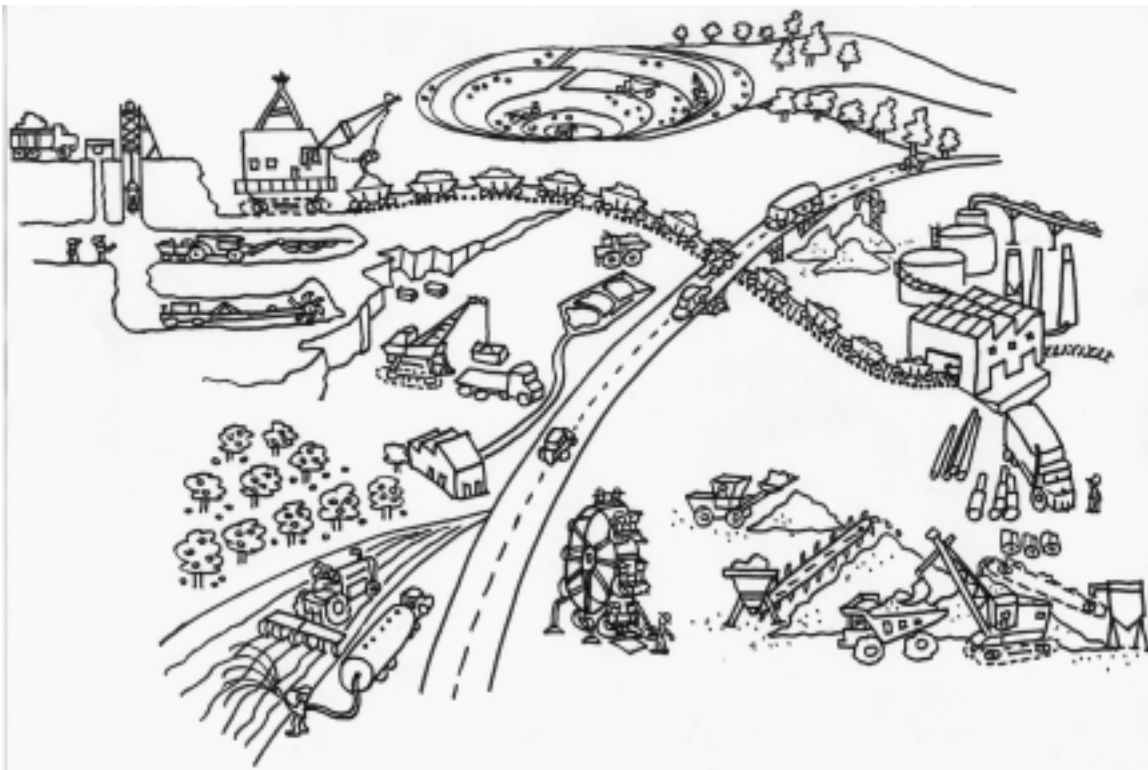
Why Mining?

Mining is essential to our daily lives. Our society's ability to support itself is sustained by the rock products (sand, gravel, stone, etc.), and metals industry. According to the Mineral Information Institute every American will use 3.7 million pounds of minerals, metals, and fuels in their lifetime. To maintain our current standard of living, mines must continue to operate in the most efficient manner possible.

How is it Done?

We need raw materials to produce goods that society demands and they must be either grown or extracted from the earth and sea. Some materials are used in the form they are taken from the earth, but others have to be refined to extract a specific element that can be used to create a desired product. The mining process consists of several important steps. Can you place the following mining steps in the proper order?

Fabrication	Exploration
Mine Planning	Extraction
Refining	Processing



In the picture, can you identify ways rocks and minerals are important in agriculture, industry, and recreation, and in the building of roads, bridges, and buildings?

Water and Mining

Water is an important part of the mining process. In leaching operations, minerals are removed from rock by running water or chemicals through the ore. Mining companies not only have to use water resources carefully, but are required to monitor all the water on, and leaving, the property. Much of the water that is used in the mining process is cleaned and recycled, which is both beneficial to the company as well as the state's water supply. (Label: Open pit mine Underground mine Sand and gravel mine Quarry, Industry, Recreation, Agriculture Leaching operations)

Explore More!

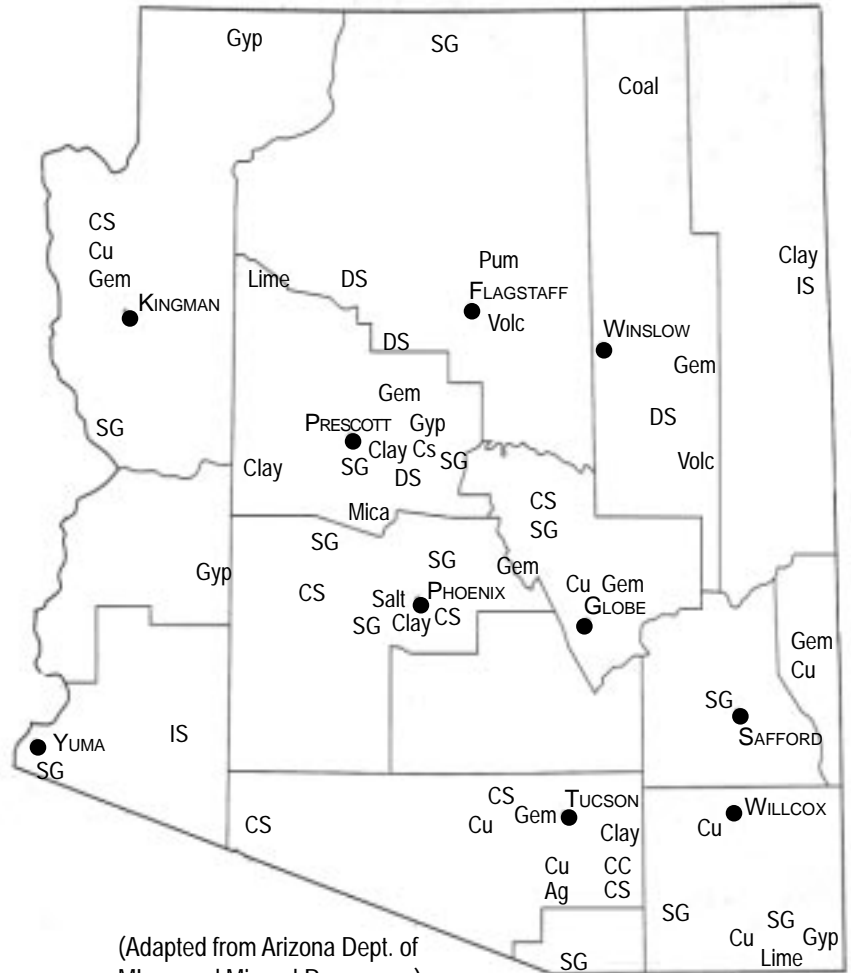
Using the Activity Mines Map of Arizona, find a mine in your areas. What are they mining/producing? What natural occurrences took place to form that deposit? How could you find out?

- | | |
|------------------------|----------------------|
| Ag - silver | Gyp - gypsum |
| Au - gold | IS - industrial sand |
| CC - calcium carbonate | Lime - lime |
| Cem - cement | Mica - mica |
| Clay - clay | Mo - molybdenum |
| Coal - coal | Per - perlite |
| CS - crushed stone | Pum - pumice |
| Cu - copper | Salt - salt |
| DS - dimension stone | SG - sand & gravel |
| Gem - gemstones | Volc - cinders |

Mining and the Future

Large mineral deposits have been discovered on the ocean floor, and continue to be created by unique geologic forces at work. However, extracting deposits at great ocean depths will be no easy task. Scientists are currently working on ways to overcome these challenges. In addition, NASA is working on projects that would allow ships to land on asteroids and drill for minerals. It may seem like science fiction, but it may soon become reality!

Some Principal Mineral Producers in 2002



From the Mine to Your School...

Windows: sand and feldspar

Shingles colored by: silicate materials

Door knobs, locks and hinges made of: steel or brass, with copper, zinc, and iron

Playground equipment made of: steel and molybdenum

Roof: asphalt

Wallboards made of: gypsum

Bricks made of: clay

Blackboard made of: slate particles

Paint contains: zinc

Playground surface made of: asphalt or cement

Plumbing is: copper and zinc or stainless steel made of: iron, nickel, and chromite

Insulation made with the minerals: vermiculite, silica, and feldspar

Concrete foundation made of: clay, shale, gypsum, and limestone

Gutters of galvanized steel made with: iron and zinc

Toilets made of: porcelain, clay and feldspar

Sewer pipes made of: clay or iron

Which rock products and minerals are mined in Arizona?

- | | |
|------------------|----------------|
| Answers: | |
| 1. Exploration | 4. Processing |
| 2. Mine Planning | 5. Refining |
| 3. Extraction | 6. Fabrication |