

# CHOCOLATE CHIP COOKIE MINING WORKSHEET

## Background Information:

Coal is the compressed remains of ancient plants. For millions of years, buried plants were heated and compressed. They were converted to a material that is mostly carbon. Since coal is made from ancient forests, we call it a fossil fuel. Oil and natural gas are the other fossil fuels. Coal is more abundant than oil or natural gas.

All coal is not the same. The more heat and pressure it received while being formed, the more it changed. Some coal is not greatly changed from the original plants. That coal is soft and brown. It is called lignite. Two types that changed more are called sub-bituminous and bituminous. Anthracite is the name of the hard, black coal that changed the most. The harder coals make better fuels and are more valuable, but they are not as common.

Coal is widespread around the world. Coal is found in flat layers or seams, between the layers of rock, or sediments, that formed it. The coal seams may be narrow, from a few centimeters, to many meters. The rock sediments may be hundreds of meters thick. If mountain-building activity has folded and broken the land, the coal seams are folded and broken, too.

In this activity, the chocolate chips represent coal in the ground in mountainous areas where geologic forces have folded and broken the ground so that the layers of coal are no longer flat and continuous. This would be representative of the type of coal found in British Columbia rather than the type found in the central United States.

## Mathematically figure out your profit from mining the cookie.

\_\_\_\_\_ Calculate your total earnings. (number of chips X \$1000)

\_\_\_\_\_ Calculate your land damage cost. (\$200 per piece broken off)

\_\_\_\_\_ Calculate your profit (total earning – costs)

- ✦ Find the average amount of profit for each group. Graph that amount using a bar graph. Whose mine made the most profit? Why?