

# Panning for Gold



This activity center is part of the **Water Attitudes** theme.

## What's the purpose of this activity?

To teach participants the basic prospecting method for placer gold, i.e. a gold deposit formed by moving water. Participants will learn about minerals and mineral properties, sediment textures, and how moving water concentrates gold.

## Key messages:

- Sandy sediment typically found in streams and on beaches contains the minerals quartz, feldspar and mica. Other heavier minerals, such as magnetite are usually present in smaller quantities.
- Mineral grains can be identified based on colour, shape, response to panning and magnetism.
- Panning works for finding gold because of gold's extremely high **specific gravity** (weight compared with the weight of water).

## Materials:

- Gold pan – a steel 9 inch pie plate works very well
- Magnet
- Magnifying glass – a geologist's hand lens (10X) is best for seeing mineral grains. Gem and mineral shops will have these; a graphic artist's loupe also works well.
- A supply of sand and water
- Posters:
  - Making Rock
  - Mineral ID
  - Moh Scale

## Activity Set Up:

1. A lake shore, stream bank or other exposure providing a supply of sand-textured sediment is preferred as a natural setting but even a child's sand box will suffice.
2. Usually the water required for panning is simply taken from the lake or stream where the activity is

held. If, for health reasons, this source is unsuitable, a five-gallon pail or tub from an available drinking supply can substitute.

## What will I be doing?

You will be teaching participants how to pan for gold. The technique takes advantage of the extreme specific gravity (SG) of gold (SG of gold = 19, SG of water = 1, this means that gold is 19 times as heavy as water). Of course, it is unlikely that gold will be found (although not impossible!) but participants must realize that they are being given a skill which can be used as a recreational activity.

1. Place a small hand-full of sand in the pan with just enough water to cover the bottom of the pan.
2. Remove any larger granules, pebbles or plant debris as these inhibit the swirling action required to concentrate the heavier minerals.
3. The pan is held on opposite sides and tilted in a circular motion to cause the water to circulate as shown by the arrows. This action will concentrate heavier minerals around the edge of the sand.



4. If the water is turbid because of silt, rinse the sediment two or three times with fresh water so that you can see the sand.
5. After half a minute or so of swirling, a black accumulation will form that is the mineral magnetite. This can be picked up with a magnet (allowing another mineral property, **magnetism**, to be tested), verifying the identity of the mineral. Gold prospectors look for this 'black sand' because it is where gold, if it is present, should also appear.

### **Additional Background Information:**

Mica is often present, appearing as shiny, silvery flakes. These flakes show this mineral's tendency to break into thin layers, an example of the mineral property called **cleavage**. This and other minerals can be identified with a hand lens according to **colour**. Quartz appears as vitreous, transparent or translucent grains, feldspar as opaque white or pink grains.

Participants can be asked about where they think the sand has come from. At Camp Kinark, the sand along the lake shore and on the bank immediately inshore is likely a glacio-fluvial deposit. This means that the sand was deposited by meltwater from thawing glacial ice. This kind of deposit is common in southern Ontario as countless small deltas that built out into temporary ponds and lakes that existed along the edge of the retreating ice sheet.

### **Clean Up Procedures:**

Remember to dry off the pie plates – they rust very easily, especially if they are stacked after use.