




## Experiment: What happens when water freezes?

Have you noticed any potholes? Why are they there and what caused them? It's the same reason that big rocks crack down the middle. Water. Follow the directions below to see what happens when water freezes.

Materials:	Instructions:
<ul style="list-style-type: none"> <li>• 2 disposable plastic cups</li> <li>• Permanent marker</li> <li>• Plastic wrap or a plastic bag</li> <li>• Tape</li> <li>• Water</li> <li>• Measuring cup</li> <li>• Scale (optional)</li> </ul> 	<ol style="list-style-type: none"> <li>1. Fill each plastic cup with one cup of water.</li> <li>2. Use the permanent marker to draw a line at the top of the water around the cup, showing how full the cup is.</li> <li>3. Cover each cup with plastic wrap or a plastic bag. This is to prevent evaporation</li> <li>4. Tape the plastic wrap or bag around the top of cup to secure it.</li> <li>5. If you have a scale, find the mass/ weight of each cup and record it.</li> <li>6. Carefully place one cup in the freezer, standing up. Leave the other cup on the table or counter.</li> <li>7. Allow the water in the freezer to completely freeze.</li> <li>8. Take the cup out of the freezer and place it next to the unfrozen cup of water.</li> <li>9. Compare the water/ice level in both cups now. If it has changed, draw a new line.</li> <li>10. If you used a scale in step 5, take the mass/ weight again and record it.</li> </ol>

### Reflection Questions:

1. What did you notice about the water level after it froze?
2. If water were to get into small cracks in the ground or in a rock, what would happen to that water during the winter when it gets really, really cold? Will it act the same as the water in the cup?
3. When the water freezes and expands, what do you think it will do to the ground around it?

### Further discussion:

We learned that when water freezes, it expands. This will happen to water that is in the ground or even in a rock. Water is an extremely powerful force, when it freezes and expands, it is strong enough to break the rock. It can also break the street, causing a pothole to form. The freezing and expanding of water is a form of weathering, the breaking down or dissolving of rocks and minerals on the surface of the Earth. Erosion then occurs when it rains. Runoff washes these broken pieces of rock and soil into our storm drains and into our waterways. If we can help reduce the amount of runoff, we can reduce the amount of debris from weathering and erosion that ends up in our creeks, streams, and rivers.