

Volume of Snow and Water Worksheet

1. Follow the instructions listed below to collect and record the volume of snow and water.
 - a. Use the scientific tape and marker to record your name on the side of the container, being careful not to cover up the graduated marks for volume.
 - b. Go out into a designated area in the schoolyard to collect the snow.
 - c. Snow collection is a more delicate process than one would think because collecting the snow will cause the volume of the snow to change from the way it was laying on the ground. Therefore, you should follow the following directions.
 - i. Don't ever touch the snow with your hands
 - ii. Use the cup to scoop up a cup-full of snow from the ground without getting any soil or grass
 - iii. Put the lid on the cup if available
 - iv. Shake the cup side to side vigorously ten times to cause the snow to fill in the large air gaps in the cup.
 - d. Using the graduated marks on the side of the cup, record the volume in ml of snow in milliliters on the datasheet. It may be difficult to get an exact volume because the snow may settle in a pattern that is uneven on the top. Make the best estimate possible.
 - e. Set the cup aside, with the lid on, to wait for the snow to melt.

After allowing the snow in your cup to melt, the teacher will provide time to perform the second part of the experiment.

- f. The volume of water left will be less than the snow and easier to get accurate volume measurements, so a graduated cylinder should be used to be precise.
 - g. Pour your water from the cup into the graduated cylinder.
 - h. Read the volume in ml from the graduated cylinder and record it on your data sheet (water volume).
 - i. Dispose of the water in the sink after recording the volume.
2. Record the data collected in the spaces below

Snow Volume (ml) _____ Water Volume (ml) _____

3. Draw a picture of what you think the water molecules might look like when they are in the solid form and when they are in liquid form.

Solid

Liquid



4. Answer the following questions using the data from the experiment

- Which was greater, the volume of water or the volume of snow?

- What was the ratio between the volume of snow and the volume of water? (Hint – divide the volume of snow by the volume of water. Write the number you calculate followed by a colon and then the number 1. For example, your answer might look like 8:1, which means that if you have 8 ml of snow, it will melt to form 1 ml of water.)

- Why is the volume of snow so much more than the volume of water?

- Imagine it snowing 12 inches tomorrow. Use your snow:water ratio to figure out how much water will result from the melting of the 12 inches of snow. (Hint – Divide 12 by the first number in your ratio. (For the example, $12/8 = 1.5$ inches of water from 12 inches of snow))

- How much does the water you collected weigh? (Hint – 1 ml of water weighs 1 gram)

- Do you think the ratio you calculated will be the same for every snowstorm?

- If there were no air bubbles trapped inside a snowflake, would the volume of snow and water be equal?

- What is one question that you have after doing this experiment?