



Overview:

Snowfall and rainfall are both precipitation, but snowfall takes up much more room than rain. In this activity, students will discover just how much liquid water is in one inch of snow.

Objectives:

The student will:

- use the scientific method; and
- understand that both snow and rain are water in different forms.

GLEs Addressed:

Science

- [3-4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SA1.2 The student demonstrates an understanding of the processes of science by observing and describing the student's own world to answer simple questions.
- [4] SA1.2 The student demonstrates an understanding of the processes of science by observing, measuring, and collecting data from explorations and using this information to classify, predict, and communicate.
- [3] SD1.2 The student demonstrates an understanding of geochemical cycles by describing the water cycle to show that water circulates through the crust, oceans, and atmosphere of Earth.

Materials:

- Small bucket
- Ruler
- STUDENT WORKSHEET: "Snowfall Conversion"

Activity Procedure:

1. Remind students that precipitation is water that falls from the sky. Since both snow and rain are water in different forms, they are both precipitation. Scientists measure snowfall and rainfall to determine the amount of precipitation.
2. Ask students if they think 1 inch of snow has the same amount of liquid water as 1 inch of rain? Explain that when scientists are looking for the answer to a question they follow a set of steps called the scientific method. The scientific method starts with asking a question. Today, our question is: "Does 1 inch of snow have the same amount of liquid water as 1 inch of rain?"
3. Tell students that in this activity they are going to find out exactly how much liquid water is in snow. Explain that the next thing that scientists do is make a guess about the answer to their question.
4. Hand out the STUDENT WORKSHEET: "Snowfall Conversion." Ask students to fill in the hypothesis section of their worksheets by making a guess as to how much liquid water will be in the bucket after the snow melts.
5. Explain that the next thing that scientists do is test their hypothesis. Ask students how they would test their hypothesis. Explain that today the class is going to fill a bucket with snow and let it melt, then measure how much water there is. Take the class outside and fill up a bucket with snow up to 1 inch, use the ruler to measure. Bring the snow inside.

6. While the snow is melting, remind students that snow, rain, and ice are all water in different forms. Play the following game:
 - a. Explain the three different phases of water (solid, liquid, and vapor) and their characteristics, and have the students draw and describe the three stages.
 - b. Push all desks against one wall and use one wall as the start line and the opposing wall as the finish line. If the game can be played outside, create a start line and a finish line. Line students up on the start line. Explain that every time a student hears the teacher yell out a different phase of water, the student has to pretend to be that state of water. So, when the teacher yells out... - "solid!" students must be frozen solid and expand their bodies (by stretching arms and legs wide, sticking out chests, etc.) - "liquid!" students run towards the finish line - "vapor!" Students must do leaps up into the air like vapor rises, with very little forward movement.
 - c. If a student gets confused and does the incorrect movement, they must go back to the start of the line.
7. When the snow is melted, continue with the worksheet. Have each level 2 student measure the water in the bucket and record it on their worksheets. Assist students with completing their worksheets.

Answers:

Level I:

Hypothesis: Answers will vary.

Data: 1.) drawing should represent 1 inch

2.) Answers will vary, but should be the same for all students in the class

Conclusion: Line should connect the snow sample to the bottom cup of water

Further Questions:

1.) a, b, and c

Level II:

Hypothesis: Answers will vary.

Data: 1.) 1 inch

2.) Answers will vary, but should be the same for all students in the class

Conclusion:

1.) Line should connect the snow sample to the bottom cup of water

2.) Answers will vary.

Further Questions:

1.) a. solid, liquid, vapor

2.) Answers will vary.

Name: _____

Level



Snowfall Conversion

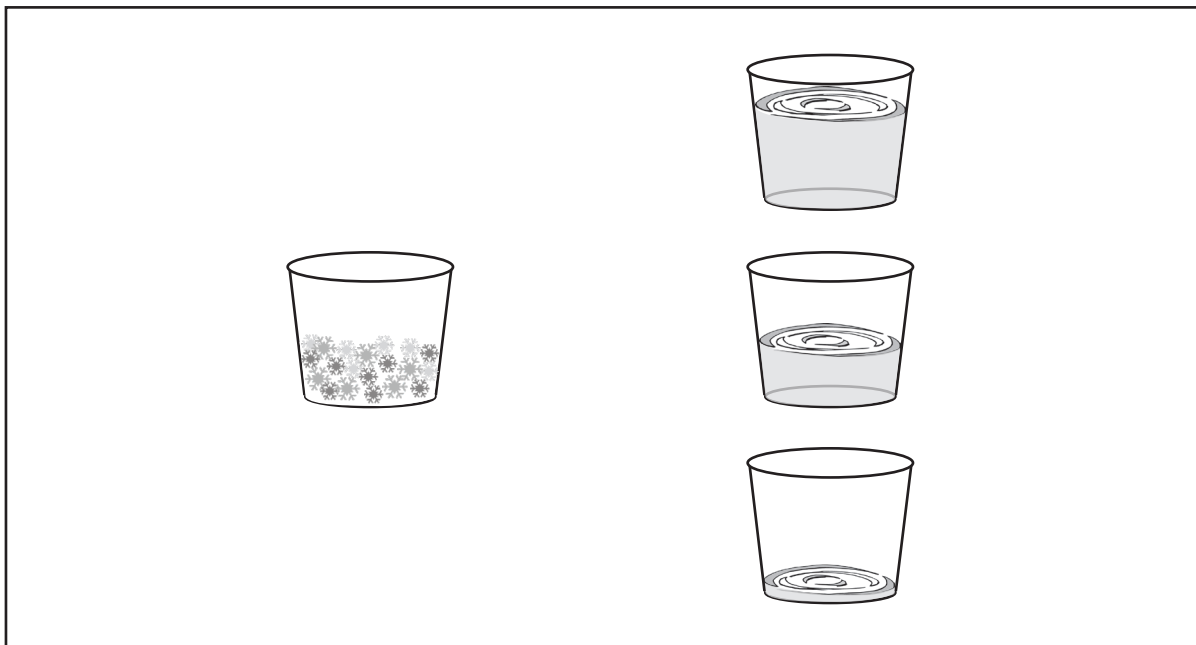
Student Worksheet (page 1 of 2)

Testable Question:

How much liquid is in 1 inch of snow?

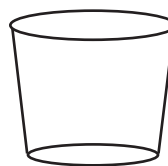
Hypothesis:

Draw a line to connect the snow bucket with the bucket that shows how much water will be there after the snow melts.



Data:

1. Draw how much snow was put in the bucket.



2. Draw how much water there was after the snow melted.



Name: _____

Level

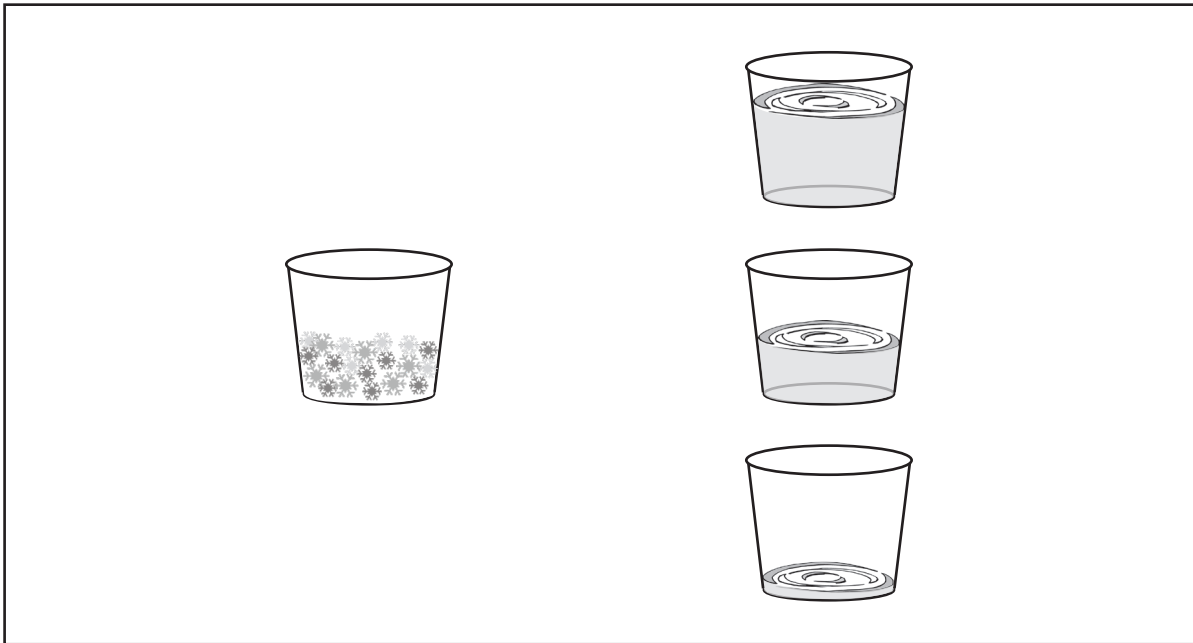
Snowfall Conversion

Student Worksheet (page 2 of 2)



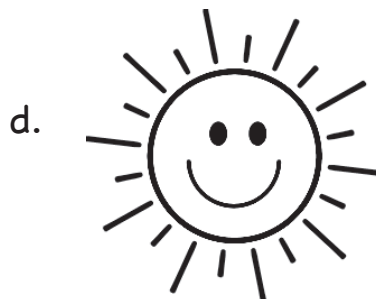
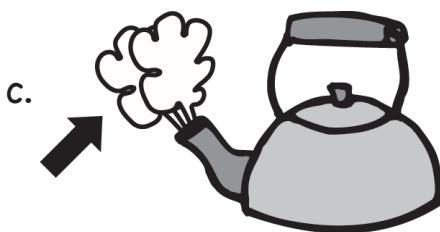
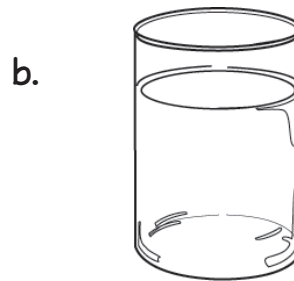
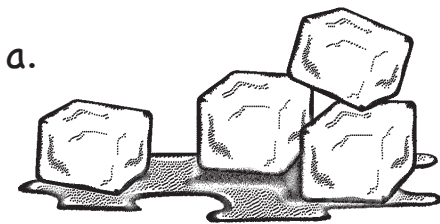
Conclusion:

Draw a line to connect the snow bucket with the bucket that shows how much water there was after the snow melts.



Further Questions:

1. Circle the pictures showing the three phases of water.



Name: _____

Level

Snowfall Conversion

Student Worksheet (page 1 of 3)

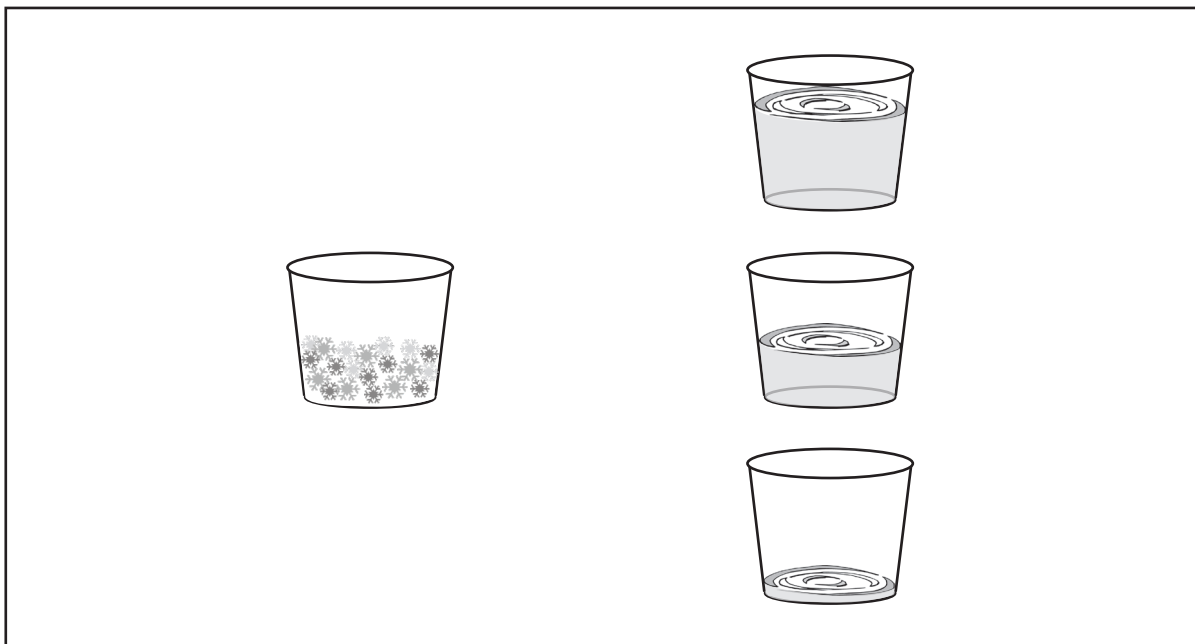


Testable Question:

How much liquid is in 1 inch of snow?

Hypothesis:

Draw a line to connect the snow bucket with the bucket that shows how much water will be there after the snow melts.



Procedure:

1. The teacher will take the class outside and put 1 inch of snow in a bucket.
2. The class should let the snow melt.
3. The teacher will pick a student to measure the level of water in the bucket after the snow has melted.
4. Complete the worksheet.

Name: _____

Level



Snowfall Conversion

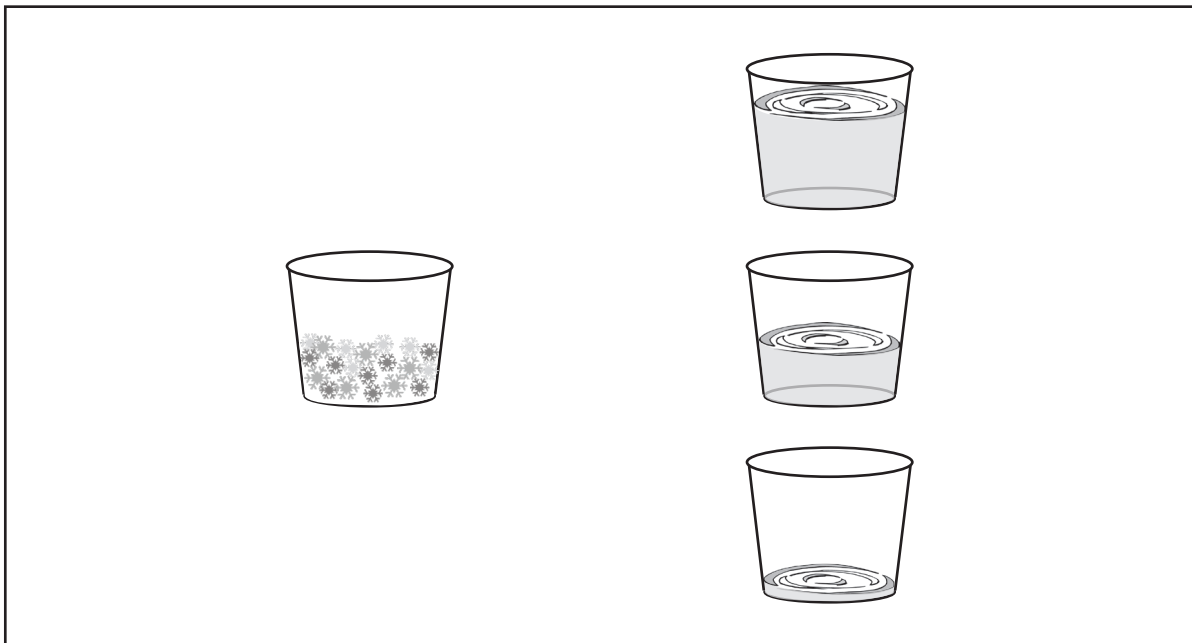
Student Worksheet (page 2 of 3)

Data:

1. How much snow was put in the bucket? _____ inch
2. How much water was there after the snow melted? _____ inch

Conclusion:

1. Draw a line to connect the snow bucket with the bucket that shows how much water there was after the snow melts.



2. How do you know?

Name: _____

Snowfall Conversion

Student Worksheet (page 3 of 3)

Level



Further Questions:

1. What are the three phases of water? (circle one)
 - a. solid, liquid, vapor
 - b. solid, liquid, snow
 - c. rain, snow, hail
 - d. ice, snow, rain

2. If this experiment was repeated on another day, would you get the same result? Why or why not?
