

NAME _____ CLASS ____

HAIL STONE IMPACT ACTIVITY:

INTRODUCTION/EXPECTATIONS

Upon completion of this activity, you should have an understanding of:

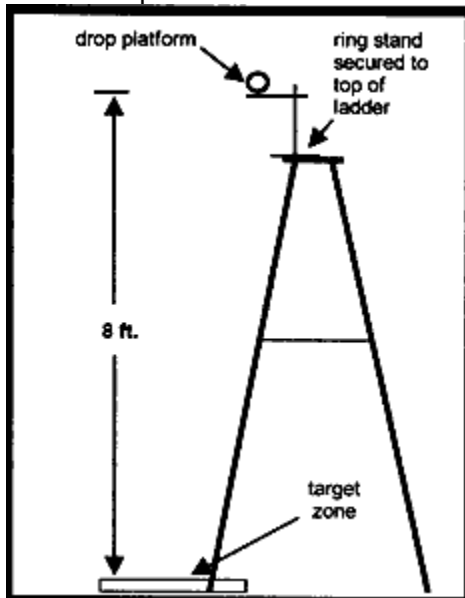
- How and why local convective, possibly severe, storms develop.
- How hailstones form and the conditions under which they form.
- The identification of and how to test the variables that may influence the damage caused by hail.
- How data for various sized hailstones is collected and analyze the impact damage with graphs.
- What atmospheric factors may affect the size of hailstones.
- How to compare and analyze insurance damage data for city/area/state.
- How to test several materials for their resistance to hail damage.
- The impact of a severe storm on a community, crops, economy, and wildlife.

ACTIVITY DESCRIPTION

In this activity, you will be working in teams of 2 or 3 people to study the affect of various sizes and masses of "mock hailstones" and their impact damage they might cause. Each team will be required to graph and analyze the collected data.

MATERIALS

- 5 to 10 mock hailstones of various masses, and diameters.
- Styrofoam block
- Aluminum foil to cover the block.
- Ladder with gravity drop apparatus (see drawing)
- Calipers or metric ruler
- Waterproof marker to label impact craters.



***Make certain you check the apparatus to insure all components are securely fastened together, and that the ladder is in good shape and sitting solidly on the floor without rocking or moving. Proper care should be taken to prevent accidents.**

PROCEDURE

- In this activity you will drop a spherical “mock hailstone” from a height of 6 to 8 ft., and determine its impact by measuring the depth and diameter of the impact crater created in the foam.
- Find the mass and diameter of your hailstones and record each one on your data sheet.
- Drop your hail stone(s) from the apparatus.
- Measure the diameter and depth of the impact crater in the foam board and record on your data sheet.
- Repeat the procedure 5 times with each hailstone given to you.
- When all data is collected, form a graph and spreadsheet (if a computer is available) for analysis.
- If time allows, set up another foam board and repeat the process with the board set at an angle as directed by your teacher.
- After you have performed the tests and recorded your data, construct a graph of the mass vs. crater depth and another graph of crater diameter vs. hailstone diameter.

RESULTS

1. Is there a relationship between mass and crater depth shown by your graph?

If so, what?

2. Is there a relationship between crater diameter and hailstone diameter?

If so, what?

3. Explain how this “mock hail” could compare with real hailstones and the damage they cause.

DATA SHEET

HAILSTONE MASS	DIAMETER	IMPACT DIAMETER	IMPACT DEPTH	
1	g	cm	cm	cm
			cm	cm
			cm	cm
			cm	cm
			cm	cm
2	g	cm	cm	cm
			cm	cm
			cm	cm
			cm	cm
			cm	cm
3	g	cm	cm	cm
			cm	cm
			cm	cm
			cm	cm
			cm	cm
4	g	cm	cm	cm
			cm	cm
			cm	cm
			cm	cm
			cm	cm
5	g	cm	cm	cm
			cm	cm
			cm	cm
			cm	cm
			cm	cm