



Lawnmower in the Attic (Student Sheet #1a) Up on the Roof



Overview

Your team may have included vegetated (green) roofs in your plans for reducing stormwater during episodes of significant rainfall in the City of Lancaster, Pennsylvania. During this experience you will seek the answers to the following questions:

- Do green roofs really reduce or slow the amount of water that flows off of a building and into city storm sewers?
- If so, to what extent is the volume of water reduced?

Your team will design models using various roofing materials to discover which materials are the most effective in reducing or preventing runoff of rainwater.

Directions: Work with the members of your team to answer the questions below.

- I. What is the primary function of a building's roof?



- a. What other purposes does a roof serve?

 - b. What materials make up the surface of the roof on your school? How could you discover this information?
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2. List at least three (3) examples of roofing materials that you have heard about and predict which one may be the most effective at reducing rainwater runoff. Explain the reasoning behind your answer.



3. Many of the largest buildings in cities have roofs that are flat or only slightly pitched (tilted). These roofs have holes spaced at regular intervals around their raised edges that allow rainwater and/ or melting snow to drain into downspouts. The stormwater is then directed either onto the ground below or directly into the city storm sewer system.

Imagine that your team is the owner of a business in Lancaster and you plan to build a large building on the current property. A portion of your tax bill will depend on how much your building's roof runoff contributes to the city's stormwater during heavy rainfall. With your team design a test that will compare the capacity of different roofing materials to retain or slow the runoff of rainwater during a heavy storm. Your teacher has supplied the class with several different kinds of roofing materials. Describe your experiment in the spaces provided in Student Sheet #1b, then test your prediction.



Lawnmower in the Attic (Student Sheet #1b) Up on the Roof

Experimental Question

Does adding vegetation to a roof reduce the amount of runoff after a rainstorm?

Hypothesis (possible answer or explanation, including the reasons why you think so):

Procedure (test of hypothesis):

Materials:

What you will do:





Drawing of apparatus or setup:

Prediction (what you expect will happen if your hypothesis is correct):



Data table and graph:

Conclusion (address the following items):

- *Did your results match your prediction?*
- *Did they support your hypothesis?*
- *How will this affect your team's plans for including green roofs in your project for Lancaster?*