

PUZZLERS

#43 | RAIN BARRELS



Puzzle

Create a rain barrel for your school or home.

Standards & Connections

NGSS. 3-5-ETS1-3, NGSS.MS-ETS1, NGSS.MS-LS2-5

Background:

As soon as rain hits our roofs, it begins its journey to our lakes and oceans. Along the way, it collects chemicals, fertilizers, trash, and other pollutants. Collecting rain runoff from our roofs is one way to conserve and limit the amount of runoff that flows from your home or school. This water can be collected and stored in a rain barrel for future use!

Suggested Materials:

Plastic barrels, garden hose, mesh, spigot, Teflon tape



IDENTIFY

Share the background information with the students, then share the puzzle to be solved. Determine constraints (e.g., time allotted, space, materials provided, etc.) and divide students into small groups.



IMAGINE

Ask a series of questions to help students brainstorm solutions to the puzzle. Encourage students to list all ideas – don't hold back! Before moving on, make sure each group selects a solution that fits within the constraints.

Ask: How can you solve this puzzle? Which of your ideas can you build a prototype for given the constraints?



DESIGN

Students diagram the prototype, identify the materials needed to build the prototype, and write out the steps to take. Students describe the expected outcomes.

Ask: What steps will you take to create your solution? What do you expect your solution to look like and be able to do?



CREATE

Students follow their design plan and build their prototypes. Monitor their progress and remind them about how much time they have.



TEST & IMPROVE

Students evaluate their creation and compare it with the expected outcomes. Students seek areas of improvement and make changes where needed.



SHARE

Students share their solution to the puzzle and communicate lessons learned.

Ask: What was your biggest takeaway? What would you do differently?

Additional Resources:

For more background information on this topic, please visit www.purpleplow.org.



Investigate how to filter rain barrel water to improve its quality and what your local community has already done as a way to purify our runoff.

¹ <https://www.epa.gov/soakuptherain/soak-rain-rain-barrels>