

# PUZZLERS

## #9 | RAIN GARDEN



### Puzzle

Create a rain garden.

### Standards & Connections

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

#### Background:

A rain garden is a garden planted with native shrubs, perennials, and flowers in a depressed area to encourage water collection. Rain gardens are most useful if they're situated downhill from rooftops and roads, as they are designed to collect runoff from those surfaces. Rain gardens are effective in removing up to 90% of nutrients and chemicals and up to 80% of sediments from the rainwater runoff. Compared to a conventional lawn, rain gardens allow for 30% more water to soak into the ground.<sup>1</sup>

### Suggested Materials:

Soil, native plants, shovels, gloves, water



#### 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](http://www.purpleplow.org).



**Encourage students to find a place at home where they can build their own rain garden.**

<sup>1</sup> The Groundwater Foundation. (2018). All about rain gardens. Retrieved from <https://www.groundwater.org/action/home/raingardens.html>