



Smithsonian

Mimicking Nature



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Playing with Plants

Have you ever climbed a tree? Have you used a stick to draw in the dirt? Have you blown fluff off a dandelion? If so, you know how to think like an **engineer**. You know how to use plants in new and different ways. A tree can be a jungle gym. A stick works like an artist's tool. And a dandelion can be a new kind of toy.

Engineers are **inspired** by nature too. When engineers work to make the world a better place, they often study plants for ideas. The inventions they come up with may surprise you.





Growing Greenery

Plants and people have more in common than you might think. Just like humans, plants need food and water to survive. Both need clean air and sunlight too. But plants need one more thing that makes them different from humans. They need healthy soil.

When plants have everything they need, they can grow. They use their roots to take in **nutrients** and water from the soil around them. They use sunlight to create their food.



Parts of a Plant



Flowers make seeds so new plants can grow.

Leaves take in sunlight to help make food for the plant.

Stems carry water and food through the plant.

Roots help the plant take in water and nutrients.

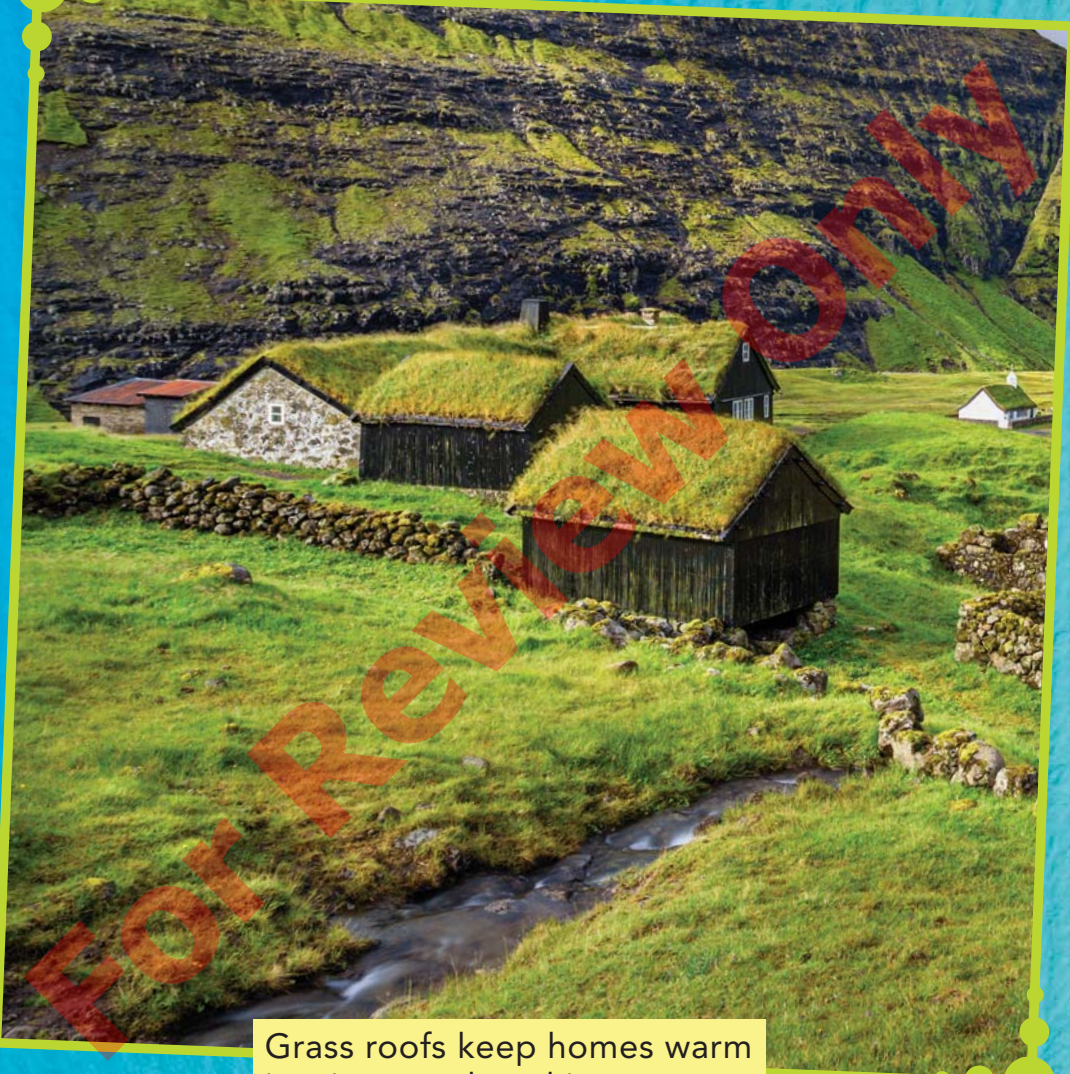
In a way, humans need healthy soil just as much as plants do. That is because people need plants to survive. Plants are more than pretty to look at. They provide food, shade, and shelter for people. Plants move and clean Earth's water. They also make the air we breathe. On top of all that, some plants can be used to treat diseases.



Science

Creative Cure

Can a plant cure people? Scientists think so. Parts of the Baikal skullcap (an herb) can get rid of some human **cancers**. Scientists are studying the plant. They hope to create medicines that can do the same.



Grass roofs keep homes warm in winter and cool in summer.



STEAM CHALLENGE

Define the Problem

You have been asked to build a model of a bridge. Your bridge must be built to look or act like something in nature. It must be able to stand on its own and support weight.



Constraints: Your bridge must only use things that are found in nature, such as leaves, flowers, and twigs.



Criteria: Your bridge must support five washers for one minute.





Research and Brainstorm

What is biomimicry? How has nature inspired new ideas? What natural items might make your bridge strong enough to support weight?



Design and Build

Sketch the design of your bridge. What purpose will each part serve? What materials will work best? Build the model.



Test and Improve

Place five washers anywhere on your bridge. Let them stay for one minute. Did your bridge work? How can you improve it? Improve your design and try again.



Reflect and Share

Which materials were the strongest? What items can you add to make your bridge more successful? How might your design change if it needed to be waterproof?