

What are Terrariums?

Terrariums are container habitats for living things to grow. A "terrarium" refers to a place for organisms to live that would normally grow on land, whereas the word "aquarium" refers to a contained home for plants and animals that live in water. "Terra" in latin means "earth." People create terrariums in all sorts of containers of various sizes- jars, bottles, vases, and fish bowls- the possibilities are endless. You just need a clear container that will let light pass through.



Types of Terrariums

There are two types of terrariums: open and closed. Read about each type below to determine what kind of terrarium you want to create!

Open

An open terrarium doesn't have a lid or anything sealing it shut. The plants living in this type of terrarium will lose moisture faster and require occasional watering. If you want to create an open terrarium, choose plants that like a drier climate, like succulents, cacti, and air plants. Open terrariums are a great choice for areas with lots of sunlight.

Tip: For an open terrarium, you might want to place an additional thin layer of tiny pebbles on top of your potting soil to help hold moisture in the soil for your plants.

Closed

A closed terrarium has a lid or some kind of cover sealing it shut to that the terrarium is its own self-contained system. Closed terrariums are great because you don't have to water them, and you can observe how the water cycle works up close! Plants that like moisture and high humidity do best in closed terrarium systems. Examples of good plants for a closed terrarium are: moss, ferns, moisture loving tropical plants, and aquatic plants that can grow in moist environments. Closed terrariums should be placed in indirect sunlight, as direct sunlight can burn and damage plants in a closed container.

Tips: Closed terrariums should be opened for about 20 minutes once a month to allow the air inside to circulate. If you see mold forming in your terrarium, brush it off or remove any affected plants. If you plan to add a stick or other element from nature to your terrarium, you may want to sterilize it by boiling it in water first to avoid mold.

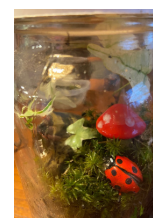


Open Terrarium



Closed Terrarium

Examples of Terrariums



Images courtesy of canva.com and Ashley Megquier

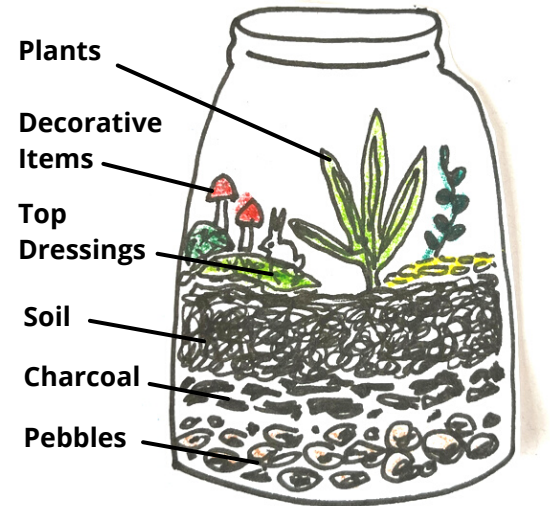
How to Make a Terrarium

Materials needed: a container, plants, small pebbles, activated charcoal, potting soil, and any decorative figurines, moss, stones, sticks, or gems you want to add to your terrarium

Making a terrarium is a fun, creative project! Whether you are making an open or a closed terrarium, follow these steps below:

1. Decide if you are going to make an open or closed terrarium, and find your container. You can simply find a jar that you like in your family's recycling bin and wash it really well, or see if there's a mason jar or other clear container around that would make a good home for plants.
2. Choose your plants. You can go out in your backyard, take a trowel, and dig up a patch of moss or some little ferns, or you can purchase plants with your family at a nursery. If you have succulent plants at home, you could also divide or take cuttings from those plants to start new ones in an open terrarium. Have an adult help you figure this step out.
3. Find some small pebbles, preferably something like pea gravel. Place these pebbles in the bottom of your terrarium jar (between 1/2"- 2" deep depending on the size of your container). The pebbles will create a drainage space for any excess water, keeping plant roots from getting too moist.
4. Layer some activated charcoal on top of the pebbles, just enough to cover the rock layer. The charcoal helps remove toxins that can build up in your terrarium over time and damage plants.
5. Next you'll need potting soil. Your terrarium should have a layer of soil deep enough for your plants to take root, usually about 2"-3".
6. Arrange your plants in the terrarium and cover their roots with soil. Having 1/2 to 2/3 of the terrarium be airspace for the plants to grow is ideal. Once plants are in place, you can also consider adding a moss layer over the exposed soil or a thin layer of pebbles.
7. Add decoration! This is an especially fun step-- use some figurines to create your mini world. You can also add cool stones, gems, pinecones, sticks, etc. to enhance your terrarium.
8. If you are building a closed terrarium, put the lid on to seal it up. Place your creation in a location that gets some sun, but not constant direct sunlight. Keep an eye on your closed terrarium to see if the soil and plants look dry. If so, you can open the lid and mist a small amount of water, but in general you should rarely need to do this. Condensation is normal, but if the terrarium is fogging, or you notice mold, open the lid for a while. You can also wipe out excess condensation with a cloth. If you are building an open terrarium, choose a sunny location and water every couple of weeks, or however often your specific plants require.

Terrarium Layers



Images from canva.com

Helpful Videos

How to Build a Tiny World:

<https://www.youtube.com/watch?v=0vu4wdHNo4Q>

Closed Terrarium Mistakes and How to Avoid Them:

<https://www.youtube.com/watch?v=HinE4ihpjDs>

How Can the Plants in a Closed Terrarium Live if You Don't Water Them?

A closed terrarium is a self-watering miniature ecosystem. To understand how this works and why you don't have to water the plants in a closed terrarium, it is helpful to understand the water cycle.

The water cycle is happening all of the time, all over the earth. All of the water that we have on our planet is continuously getting recycled through the water cycle. Sunlight causes water to evaporate (change from a liquid to a vapor, or gas) into the atmosphere. The water vapor rises and condenses as clouds, until they eventually fall to earth again as rain, snow, or ice. This is known as precipitation. Precipitation seeps into the ground and becomes part of the earth's groundwater, or runs down mountains and hillsides to be taken up by plants or to join bodies of water like lakes, rivers and streams, and the ocean. The cycle continues as the sun warms the water and plants and causes evaporation of water droplets back up into the sky.

In a closed terrarium, you can observe the water cycle in action on a much smaller scale. In the diagram below, you can see that as sunlight hits the terrarium and warms the soil and plants inside, evaporation happens. Water that was stored in the plants and soil is converted to vapor (#1). The vapor condenses into water droplets on the top and sides of the terrarium until they are too big and they fall back into the soil to water the plants again (#2).

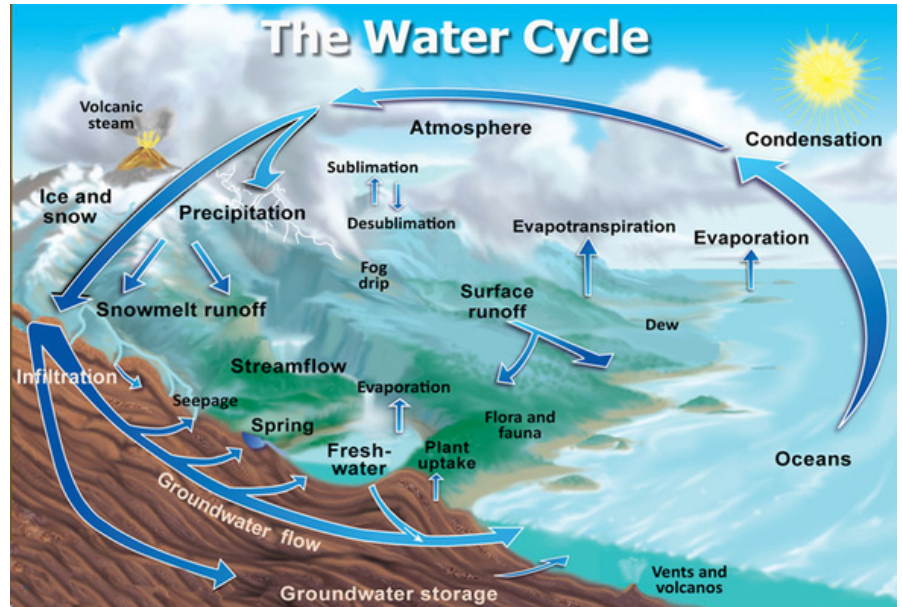


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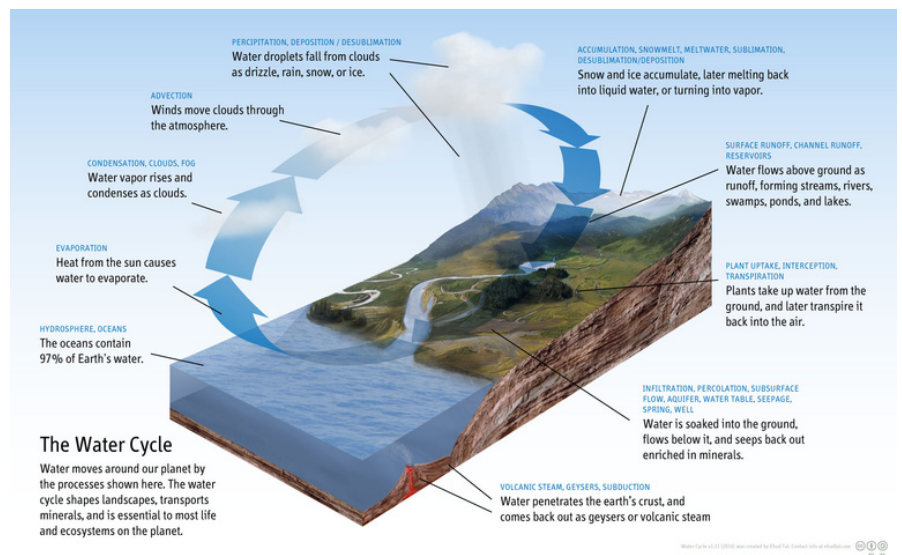


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Ecosystems

What are ecosystems? How is a terrarium a miniature ecosystem?

An ecosystem is a community of interacting organisms and their environment. Healthy ecosystems have many different kinds of organisms living in them. The needs of each plant or animal must be met in order for them to survive in the ecosystem. For an ecosystem to work well, its parts need to be in balance with one another. Sometimes, when a new species is introduced by humans to the environment, it can throw off the balance of the ecosystem and cause problems. These species are called invasive species.

A terrarium is a contained environment that shows us how plants, soil, water, and sunlight work together to create a self-sustaining ecosystem. When you have the right balance of each element, this ecosystem can thrive for years. The plants rely on sunlight, the nutrients in the soil and the stability it provides to keep it growing upright and the air and water in the terrarium to survive. When parts of the plants in the terrarium die, they fall to the soil and are decomposed by bacteria. This adds nutrients back into the soil for continued growth, just as the water keeps cycling around to sustain life inside this tiny ecosystem.

Plan Your Terrarium Ecosystem

Use the space below to brainstorm and sketch out some examples of container shapes, plants, decorative items (like sticks, rocks, gems, etc.), and figurines you might want to include in your terrarium! How will these things depend on each other?



A desert, a coral reef, and a rainforest are all examples of ecosystems.

Images from canva.com