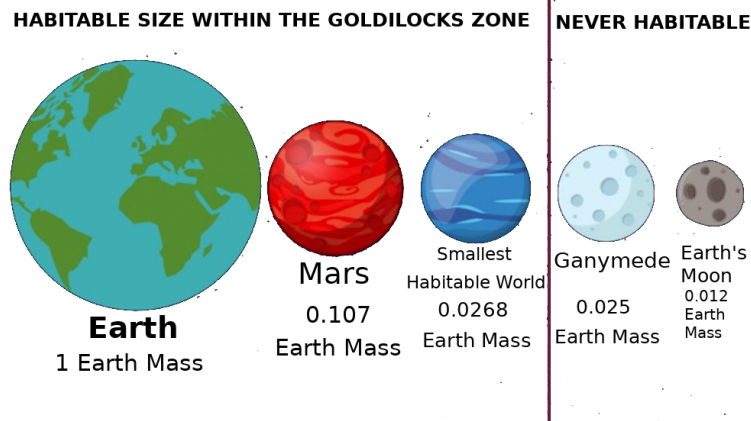


DIG DEEPER into Planets: How do planets form?

All videos and activities online at: carbondalepubliclibrary.org/png

Scientists think planets, including the ones in our solar system, likely start off as grains of dust smaller than the width of a human hair. They emerge from the giant, donut-shaped disk of gas and dust that circles young stars. Gravity and other forces cause material within the disk to collide. If the collision is gentle enough, the material fuses, growing like rolling snowballs. Over time, dust particles combine to form pebbles, which evolve into mile-sized rocks. As these planetesimals orbit their star, they clear material from their path, leaving tracks of space empty but for fine dust. At the same time, the star gobbles up nearby gas and pushes more distant material farther away. After billions of years, the disk will have totally transformed, much of it now in the form of new worlds.

Watch NASA's "What is a Planet?" and "How Planets are Born"



What makes a planet livable?

What is life? What does life need in order to survive? Do you think that a planet has to be exactly like Earth in order to support life?

Watch PBS's "Ingredients for Life: Water" and "Caves: Extreme Conditions for Life"

Then do the **HABITABLE CONDITIONS** Activity!



DIG DEEPER into Planets: Plan-a-Planet!

Use your new planetary knowledge to design a planet!

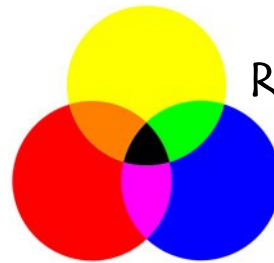
PLANET BASE LAYER

- Divide your clay into 4 pieces. 1 piece will be your base layer. **COVER CLAY NOT CURRENTLY IN USE!** It will dry out quick. Use some wax paper or plastic wrap.
- Take a piece of clay and flatten it out on a piece of wax paper.
- Take a paint stick and dip it into the black food coloring gel. Spread some gel into the middle of the flattened piece of clay.
- Fold the clay over; split in two, combine and repeat. Keep folding like this until the color is mixed into the clay. Add more color as desired.
- Flatten the piece of clay again, then mold it over the Styrofoam ball, making a base layer to build the rest of your planet on.

Your hands will get color on them if you don't wear gloves. But it's okay, it'll come out! Wash your hands between mixing different clay colors.

BUILD YOUR PLANET

- **PLAN FIRST:** What is your planet made of? Do you need blue for water? Green for plants? Red for lava? Purple for gas? White for clouds or waves?
- Color your clay pieces using the same process as you did for the base layer.
- Attach your clays to your planet. Wet your finger to help attach if needed.
- Add sand to texturize your planet **ONLY AFTER** you have added all your clay.
- Let dry 24-48 hours.



Red—Yellow—Blue

Color Model

RYB

More detailed color guide and
DEMO VIDEO at
carbondalepubliclibrary.org/png

SHARE YOUR PLANET STORY!

Send an email to Liz
(ehartman@carbondale.lib.il.us) that includes:

- A picture of your planet
- A few sentences about your planet:
 - How did it form?
 - What kind of star does it orbit?
What is your planet's orbit like?
 - Does it support life? Why or why not?

You can also send a video instead!

We'll share all our planet stories on our website!

