

**Topics:** Astronomy, Solar System: Mars, Planetary Geography

### Materials List

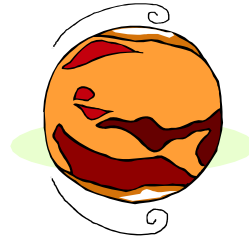
- ✓ Wooden Ball
- ✓ Acrylic paint (light orange, darker orange, & white)
- ✓ Paint brush
- ✓ Cotton swab or small dauber brush
- ✓ Ultra fine-tip permanent marker or ballpoint pen

This activity can be used to teach:

- Scale in the Solar System (Next Generation Science Standards: Middle School, Earth and Space Science 1-3)
- Orbiting objects in the solar system (Next Generation Science Standards: High School, Earth and Space Science 1-4)

# Mars: Our Next-Door Neighbor

## Mini, Wooden Globes of the Red Planet



Everybody loves Mars! These little globes of Mars are fun to make, and they introduce students to some of the main geographic features of the Martian surface.

### To Do and Notice

1. Paint the wooden ball with a coat of light orange paint and allow paint to dry.
2. Examine the maps on page 2 and notice that the Martian surface is far from smooth; it has volcanoes, valleys, highlands, craters, and many other features also found on the Earth.
3. Using the maps on page 2 as a guide, paint in the darker areas and features using a darker shade of orange. For the best effects, use a small dauber brush to paint the large, dark regions.
4. Depending on ability levels, students can also label the geographic features of the Martian surface. Use the ultra fine-tip permanent marker or ballpoint pen for labeling. (Note: Very small lettering is required.)

### The Science Behind the Activity

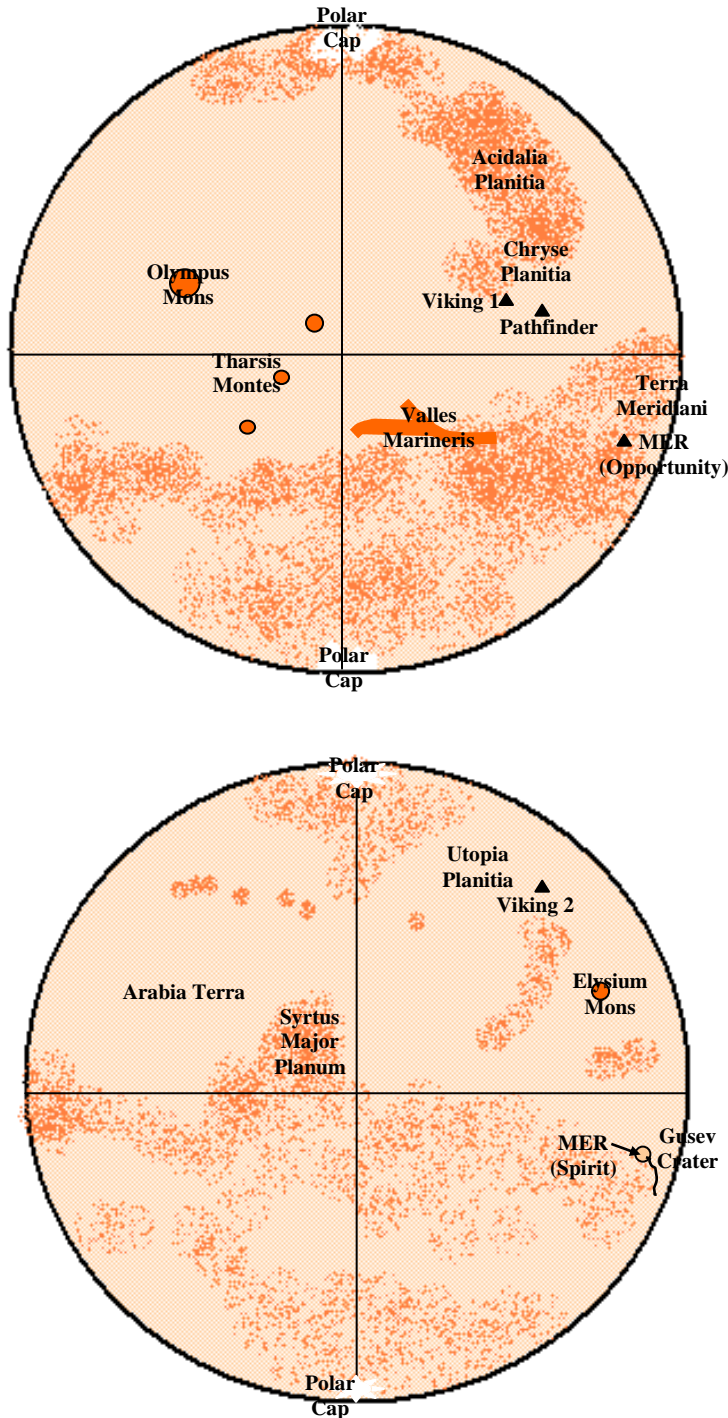
The fourth planet Mars, one of Earth's "next-door neighbors", is located 227,936,640 km away, on average, from the Sun. Human fascination with Mars is ancient, and the planet plays a prominent role in folklore and mythology from cultures around the world. Reflecting the Sun's light, Mars appears red in the night sky, and this bloody appearance is probably the source of Mars' association with war.

Mars is an exciting place for astronomers for several reasons. In many ways, Mars is like Earth, with a rocky surface, almost same length of day, polar caps, and familiar geographic features (i.e. - volcanoes and valleys). Mars contains water, like a few other objects in the Solar System, including Earth, Earth's Moon, and the Jovian satellite Europa). Even more exciting, there is evidence that Mars may have had abundant flowing water at some point in the past. No humans have ever set foot on Mars, but scientists have almost completely mapped its surface and have sent several landers to the planet, including 3 mobile robots: Pathfinder (Sojourner) and the Mars Rovers (Spirit and Opportunity). Other than the Moon, there is no other space object that we know more about. In 2004, the United States announced plans to send a manned mission to Mars in the future.

No other place has inspired more imaginative stories of extra-terrestrial life; Martians often depicted as evil invaders. Artists, writers, and astronomers all seem enamored by the possibilities of intelligent life so close to home. Astrobiologists hope to find evidence that life did exist at some point in Martian history. However, the big-eyed, green-skinned Martians of science fiction films of the 20<sup>th</sup> century are just that: fiction. If life ever existed on Mars (or exists today), microbes are all scientists expect to find. However, even microbes would be a HUGE and exciting find!

**Web Resources** (Visit [www.raft.net/raft-idea?isid=214](http://www.raft.net/raft-idea?isid=214) for more resources!)

- Detailed Mars exploration information can be found at: <http://marsrovers.jpl.nasa.gov/home/index.html>
- For information on the Solar System, visit JPL’s main website: <http://www.jpl.nasa.gov>
- More maps of Mars- <http://www.wired.com/2014/07/new-geologic-map-mars-usgs/>  
[http://pubs.usgs.gov/sim/3292/pdf/sim3292\\_map.pdf](http://pubs.usgs.gov/sim/3292/pdf/sim3292_map.pdf) & <http://www.google.com/mars/>

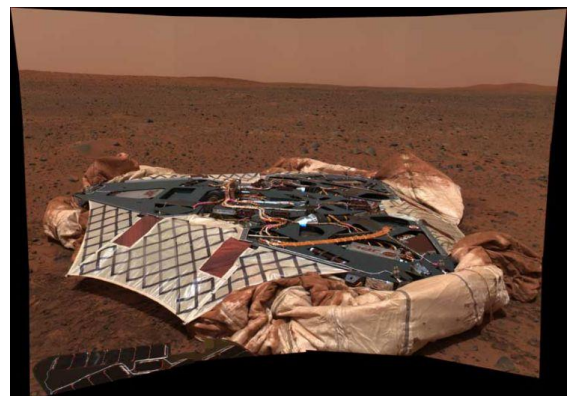


**Mars Facts:**

Diameter:	6,794 km
Distance from Sun:	227,936,640 km
Orbital Period:	1.88 years
Rotational Period :	24 h 37 m
Namesake:	Roman God of War
Moons:	Phobos (fear) Deimos (panic)
Mass:	0.11 of Earth’s
Density:	3.94 g/cm <sup>3</sup>
Gravity:	0.38 of Earth’s
Atmosphere:	95% Carbon Dioxide
Temperature Range:	-143°C to +17°C
Life:	None confirmed...yet

**Mars Fiction:**

Martian Chronicles:	Book, 1950 Ray Bradbury
War of the Worlds:	Book, 1898 H.G. Wells Radio Show, 1938 Orson Welles
Total Recall (movie)	Movie, 1990
Attack from Mars:	Movie, 1988
“Face” on Mars:	Natural geographic feature
Mars and Its Canals	Book, 1906 Percival Lowell “Canals” just an optical illusion



NASA Photo from the surface of Mars.  
Sent from the Spirit Rover