

SEM MOBILE

Construct a moving mobile representing the orbits of the Earth around the Sun, and Moon around the Earth!

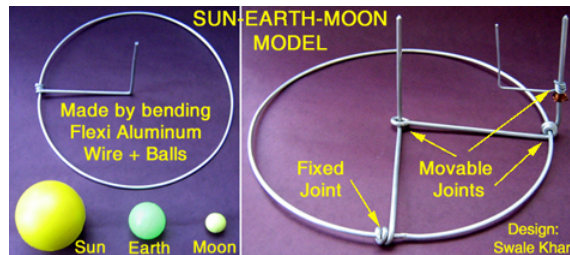
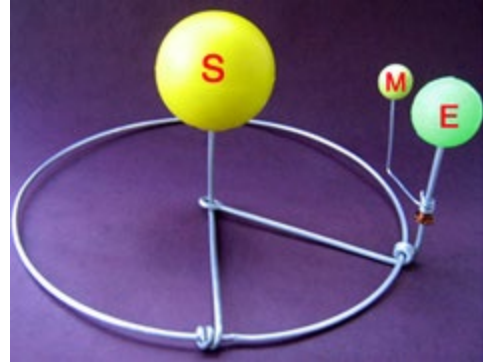
Materials

- 1 foot of bendable aluminum wire
- 1 large Styrofoam ball (2 inch diameter)
- 1 medium Styrofoam ball (1 inch diameter)
- 1 small Styrofoam ball (.5 inch diameter)
- Paint of various colors

Time – 1 hour

Instructions

1. Paint a large Styrofoam sphere yellow and orange to represent the Sun.
2. Paint a medium sized Styrofoam ball blue and green to represent the Earth.
3. Paint a small Styrofoam ball white and grey to represent the Moon.
4. Form a large circle by bending wire around a round object. Wrap wire around itself to secure.
5. Create a fixed joint protruding into the center of the circle for the Sun. See picture below.
6. Create movable joints connecting the center rod to the outer ring again; wrap the wire around the outer circle twice and create the rod for the Earth.
7. Wrap wire halfway up the Earth's rod protruding out to the side and up again for the Moon.
8. Place the dry Sun, Earth, and Moons onto their appropriate positions.



Background Information

Everyone knows the moon orbits the Earth and that the Earth orbits the Sun. But what about the path of the moon around the Sun? What does that look like? This is a difficult thing to show because of scale. Below are some values for the sizes of these things.

- Radius of the Sun: 6.95×10^8 m.
- Radius of the Earth: 6.38×10^6 m.
- Orbital radius of the Earth around the Sun: 1.5×10^{11} m.
- Radius of the moon: 1.7×10^6 m.
- Orbital radius of the Moon around the Earth: 3.48×10^8 m.

References

<http://www.arvindguptatoys.com/toys/sunearthmoonmodel.html>

