



**Scale Model Activity**  
**Planetary Size**  
*Accelerated Earth Science*

Name: \_\_\_\_\_ Hour: \_\_\_\_\_

Learning Targets: I can distinguish between the inner and outer planets based on composition, size, and location.  
 I can create a scale model based on planetary mass, size or distance.

Objective: To make a scale drawing of the 8 planets and 1 dwarf planet and compare their sizes.

Materials: Metric ruler, drawing paper, compass, and colored pencils.

Planet Data Table: *Planet Diameters*

Planet's Name	Diameter (km)
Mercury	4,878
Venus	12,104
Earth	12,756
Mars	6,794
Jupiter	142,800
Saturn	120,540
Uranus	51,200
Neptune	49,500
Pluto	2,200

Procedure:

1. Determine the **radius** of each planet by dividing each diameter by 2.

Mercury: \_\_\_\_\_ km      Mars: \_\_\_\_\_ km      Uranus: \_\_\_\_\_ km  
 Venus: \_\_\_\_\_ km      Jupiter: \_\_\_\_\_ km      Neptune: \_\_\_\_\_ km  
 Earth: \_\_\_\_\_ km      Saturn: \_\_\_\_\_ km      Pluto: \_\_\_\_\_ km

2. Determine the **compass setting** for each planet. Use a scale of 1 cm = 6000 km. Therefore, to find the compass setting for each planet, **divide each radius in question #1 by 6000.**

Mercury: \_\_\_\_\_ cm      Mars: \_\_\_\_\_ cm      Uranus: \_\_\_\_\_ cm  
 Venus: \_\_\_\_\_ cm      Jupiter: \_\_\_\_\_ cm      Neptune: \_\_\_\_\_ cm  
 Earth: \_\_\_\_\_ cm      Saturn: \_\_\_\_\_ cm      Pluto: \_\_\_\_\_ cm

3. Using the compass setting from question # 2, draw the 8 planets and 1 dwarf planet to scale on the paper provided. In order for all the planets to fit, place Jupiter and Saturn side-by-side and the other planets in the remaining empty space.

4. Lightly color each planet and include the following information next to or inside of each one:

- Planet's name
- Avg. Distance from Sun (in AUs)
- Time to orbit
- 1 interesting fact about that planet

\*\*An Astronomical Unit (AU) is the average distance from the Earth to the Sun. Using AUs instead of actual distances helps to give us a realistic idea of distances in Space.

Analysis Questions: Use your data table from this activity and your Earth Science book (p. 725-745) to help you answer these questions.

1. Which planet has a size that most closely resembles Earth?

2. Which planet is approximately half the size of Earth?
3. Which planet is 10 times larger than Mercury?
4. Which planet is 2 times larger than Pluto?
5. Which **two** outer planets are the closest in size to one another?
6. Which planet has the largest volcano in the solar system?
7. Which planet rotates and revolves in opposite directions?
8. Which planets are considered to be the “gas giants?”
9. Which gas causes Uranus’ blue-green color?
10. Which planet has a giant red “storm” that has been going on for over 100 years?
11. Which planet has a very low nighttime temperature compared to its daytime one?
12. Which planet has a thick “greenhouse gas” atmosphere?
13. Which planet is the only one to have life as we know it?
14. Which planet was once farther in its orbit than Pluto?
15. Which planet has a density less than one and can therefore “float” in water?
16. Which planet spins completely on its side?
17. Which planet is tilted on its axis, and therefore has “seasons?”
18. Which element makes Mars appear to be red?
19. Which 4 features do all the rocky/terrestrial planets have in common?
20. Why isn’t Pluto considered to be a regular planet anymore?