Name: _____ Period: _____ Date: _____

Exoplanets

Directions: *To answer the questions below go to:* https://exoplanets.nasa.gov/5-ways-to-find-a-planet/. *Use the "Next" button to navigate through the interactive activity.*

1. What is an exoplanet?

2. List and describe in your own words TWO of the four methods that astronomers use to find exoplanets.

   Method 1: Description:

   Method 2: Description:

3. Look through some of the exoplanets on the "extrasolar planet finder." What is the method that was used to locate the majority of the exoplanets?

To answer the questions below go to: http://www.planetary.org/exoplanets/list.php. Read the paragraph at the top of the page. In the pull-down menu below this paragraph, select "Show all".

* *IMPORTANT NOTE: All planetary masses are listed in terms of Jupiter's mass ("$M_J = 2.5$" means a mass two and one half times greater than the mass of the planet Jupiter), and distances are listed in astronomical units (AU). The average distance between the Earth and the Sun is 1 AU.*

4. How many exoplanets have been discovered so far? _____

5. Sort the planets by *semi-major axis*. Of all the exoplanets listed, give the name of the planet that orbits the farthest from its central star:

6. How far away is the planet from its star?

7. How does this most distant exoplanet listed compare to Jupiter in its mass and the distance from its central star? (Jupiter is about 5 AU from the Sun)

8. Sort the planets by mass. Of all the exoplanets listed, are any close to the Earth's mass? ($0.003\ M_J$).

9. Why do you think all the exoplanets listed have such large masses, compared to the Earth?

10. Do you think there are probably many exoplanets with low masses in our galaxy?

11. Sort by orbital period. Name the exoplanet that takes the longest to orbit its central star:

12. How long does it take to make a full revolution? Include proper units (move your cursor over the question mark at the top of the data column).

13. Calculate its orbital period in Earth years? Show your work.

14. Find exoplanet *WASP-19b* near the top of the data table. What is so strange about this exoplanet?

15. Name the exoplanet with the orbit shaped most like that of a comet.

16. How can you tell its orbit is similar to a comet's?

17. Name the exoplanet with the greatest mass: Planet: _____

Mass: _____

18. Name the exoplanet with the greatest size: Planet: _____

Radius: _____

19. Name the exoplanet closest to its star: Planet: _____

Distance: _____

20. Of all the planetary systems shown, which is most like our own solar system? EXPLAIN your choice. (*HINT: You only have Jupiter's information to compare to.*)