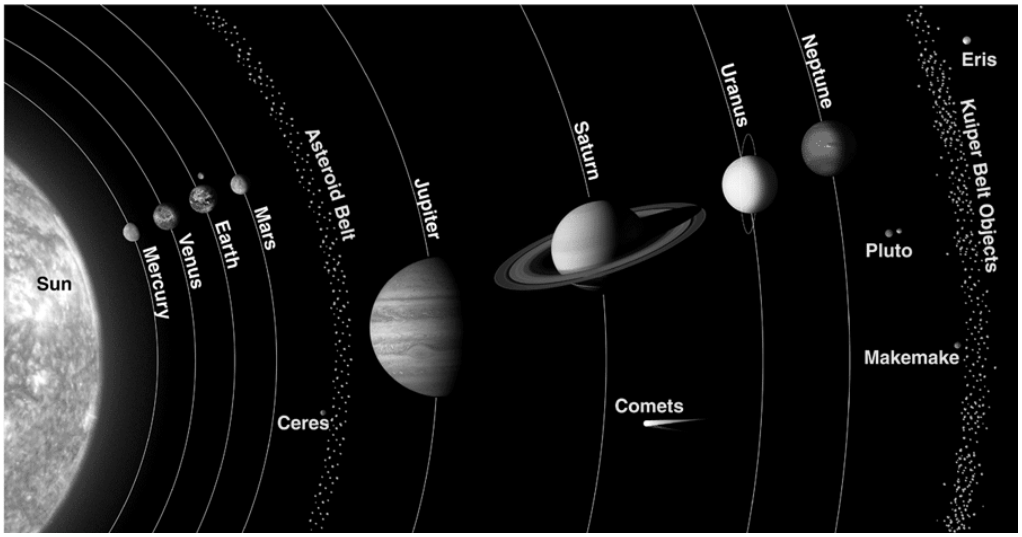
Solar System WebQuest
Name: _____ Date: _____



All web site links are available on the class website under "Solar System and Earth Formation". Open ***Google Chrome***. Go to each site and use the information to answer the questions.

Solar System Formation and Characteristics of Planets
http://www.nationalstemcentre.org.uk/elibrary/resource/1922/birth-of-the-solar-system
If you have headphones, use them to listen to the narration of this 3-minute video.

1. Explain why the inner planets are different from the outer._____
   _____
   _____

http://nineplanets.org/tour/
"Click the screen to run the model." Click on the symbol on the side that looks like a mini solar system select the heliocentric(sun-centered) view. Click the arrow at the bottom of the screen that looks like a "play" button. The planets will start to move around the Sun. Hold down the fast forward button to speed up the motion

2. In what direction do the planets revolve around the Sun?
   Circle: clockwise counterclockwise
3. Which planet moves the fastest around the sun? (You can use the zoom bar on the right side to zoom in or out on your view.) _____
4. *Click the button on the left for settings that looks like a cog. Click on the planet settings. Click on the two check boxes to show planet names. Slide the bars left to 100% to show true relative size and distance.* How does this change the view of the planets? (You can use the zoom bar on the right side to zoom in or out on your view.) _____
   _____
   _____
   Return the size of planets to 50%)
5. *Drag your mouse on the screen to look at the solar system from the side view*. How is Pluto's orbit different from the major planets? _____
   _____

*Go to **https://solarsystem.nasa.gov/planets/** At the menu on the top of the window click on solar system and the word **Sun***

6. a Click on "explorations" *Scroll down to the timeline. Scroll through the timeline.* Initially the solar system was thought to be geocetric (Earth centered) when was it proposed to be heliocentric (sun centered)?_____Who proposed it? _____

Click on"overview"near the top of the window. Scroll down to "10 things to know"

b. How much of the Solar System's mass is in the Sun? _____ While not stated, is this expected given the nebular theory?_____ What element is it mostly made of? _____

*Go to the menu at the top of the page. Click on Planets and choose **Mercury.***
click on "galleries" to look at pictures of Mercury then click the "in depth" tab and scroll down to the section in bold called"surface"

7. a What does its surface look like?_____

_____

b. Why does it look this way?_____

c. THINK (not stated) How might is surface appearance support the idea of how the planets formed?_____

_____

d. What is the day and night temperature like on Mercury?_____

_____

*Choose planets at the top and choose **Venus**. Click on the "10 things to know about Venus"*

8. a. What is unusual about Venus' rotation?_____

_____

b. What is the atmosphere like on Venus? _____

_____

c. What is the surface like?_____

d. What are its temperatures like?_____This is due to the gases in its atmosphere. Is this hotter or colder than Mercury?_____

*Go to planets at the menu at the top and choose **Mars***
*Rotate Mars at the top of the screen. Click on opportunity. What did Opportunity rover find?*___

_____

_____

Click on the blue eyeball or the "data graph" on the side of the image. Click on data. Click on topography. Then click to the left on the image.

Blue shows low lying flat areas. Some of these flat areas may have once been an ocean basin. Which hemisphere (N or S) likely had an ocean?_____

Click on "gallery" and look at the images. Then click on the "in depth" tab

a. What causes the red surface color of Mars?_____
b. What are some similarities between Earth and Mars? _____

_____

_____

c. Mars once had a thick atmosphere scroll down to "atmosphere" to describe what it is like today?_____

*Click on planets at the top menu and choose **Jupiter.** Rotate the image at the top of the screem*

10. a. What is its red spot?_____

_____

b. Click on auroras. How are Jupiter's auroras different from Earth's?_____

_____

c. Click on "*in depth*" and read "structure" what is its interior made of?_____

_____

d. scroll down to "atmosphere" What causes its stripes?_____

e. scroll down to "Moons" What is unique about its moons Io and Europa?_____

_____

Click on planets at the top menu and choose ***Saturn.***
Scroll through the images in the gallery then click on in depth and read the opening paragraphs

11. a. Which gases is Saturn made of?_____

b. What is unusual about Enceladus_____
and Titan_____

c. While all gas giants have rings, they are especially pronounced on Saturn. Scroll down to "rings." Describe what these are made of_____

_____

Click on planets at the top menu and choose ***Uranus***
Scroll down to 10 things to know about Uranus on the overview page

12. a. What is it composition (what is it made of)_____

_____

b. Astronomers think that when it was first forming it likely got hit by a large body. *Click on in depth and scroll down to "orbits"* What is unusual about its year/seasons and its rotation?_

_____

_____

c. *Click on galleries.* Describe its rings_____

_____

Click on planets at the top menu and choose ***Neptune***
Read the overview underneath then go below the overview to the timeline"

13. a. Describe what Neptune looks like _____

_____

b. *Click on "in depth"* How was Neptune found?_____

_____

c. *Scroll down to Atmosphere*. What is special about its atmosphere?_____

_____

_____

d. *Click on "by the numbers" Choose Earth from the drop down. Scroll down the page*.
How many times bigger than Earth is Neptune?_____Do the same for the other planets.
Which planet is most similar in size to Neptune?_____

*Click on the word "planets"from the menu. What three things must be true to be a planet?*_____

_____

_____

_____

_____

Planet Size Comparison ***http://sciencenetlinks.com/interactives/messenger/psc/PlanetSize.html***
Look at Earth compared to Mercury.
15. What is the ratio of diameters of Earth to Mercury? _____

Choose Venus from the drop down menu under Mercury. ***Click on the word "compare"*** *between the two planets.*
16. How does Venus compare to Earth in size? _____

Compare the sizes of the other 5 major planets to Earth. ***Each time you select a different planet from the drop down menu, and you MUST click on the word "compare".***
17. Which terrestrial planet is smallest? _____
18. Which 2 planets are largest compared to Earth?_____

Choose "Moon" and compare its size to Earth.
19. How do the sizes of the Earth and Moon compare? _____

Change Earth to "Pluto" and compare Pluto to the Moon.
20. How does Pluto compare in size to Earth's Moon?_____
_____

Change Earth to "Sun" and compare the size of the Sun to Jupiter.
21. How does the Sun compare in size to Jupiter? _____
_____
22. *Change Jupiter to Earth.* How does Earth compare to the Sun?_____
_____

http://amazing-space.stsci.edu/resources/explorations ***If needed click on the puzzle piece to run flash and hit ok.*** *Select "Planet Impact"* Run through all the different options – what's your angle?, step on it!, pick a comet – to see how different variables affect the comet's path.
23. How does angle influence the comet's ability to hit or miss the planet? _____
_____
_____

24. How does speed affect the comet's path? _____
_____

25. How does the comet's mass affect its path? (use the *pick a comet any comet* link to figure this out)? _____
_____

Now select *Target Practice*. Make several attempts and see how fast/slow the comet can go and still hit the planet. See how much the angle can change and still hit it.
26. List the settings you used that allowed you to hit the planet.

Speed (describe the picture)	**Angle**	**Hit? (Yes or No)**