WorldWide Telescope Scavenger Hunt

Name_____

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Mac Web Client version

This Scavenger Hunt is designed to help you learn how to navigate around and research objects in the night sky using the WorldWide Telescope Web Client.

You and your partner(s) will search within WorldWide Telescope for various items, and answer questions about the things that you find.

Getting started:

1. Open web browser
2. Go to
   http://www.worldwidetelescope.org
3. Click on the button to the right that says "Run Web Client."

Some Tips:

"Home" settings.

If, on your explorations, you find yourself in a state where what you see doesn't match up with what's described in this sheet, please verify that the settings are as follows:

1. Along the top row, click "View." (note that you should click the top part of the button, not the lower part with a little downward pointing triangle in it.)
   a. In the lefthand box: uncheck everything except "Constellation Figures," "Ecliptic Overview," and "Constellation Boundaries."
   b. In the 2nd box from the left, check "View from this location".
   c. In the 2nd box, press "Setup" and enter your location.
      i. Data Set -> "US Cities"
      ii. Region -> "Massachusetts"
      iii. -> "Lexington"
      iv. Click "OK"
   d. In the last box, click "Now."
2. Along the top row, click "Settings." Uncheck everything except "Smooth Panning."
3. Just above the bottom row of thumbnails:
   a. Look At -> "Sky"
   b. Imagery -> "Digitized Sky Survey (Color)."

"Progress Bar"

The data and images you're looking at come to your computer through the internet, very much like information you get on a web browser. Sometimes it takes a while to load all the data at the highest resolution. Below the rectangle on the lower right hand corner of the screen is **a blue "progress bar" that tells you if WWT is still loading your data.** If objects in your field of view look particularly fuzzy, check the progress bar. You could still be loading data.

Happy Exploring!

The Sun:

1. Locate the Sun in WWT.
   If you're having trouble finding it, use "Search" and type in "Sun," wait a few moments for the thumbnails to appear, and then click on the image with the yellow sun.
2. Pull up the "Finder Scope" to get more information on the sun.
   Shift-click on the sun to bring up the finder scope.
3. "Research" to see what Wikipedia can tell you about the sun.
   Click "Research" -> "Information" -> "Look up on Wikipedia."
4. Answer these questions:
   If you're having trouble locating the answers, click *command-f* in the browser window and search for the relevant text by entering some key words from the questions.

> How long does it take for light to travel from the Sun to the earth?
>
> _____
>
> In what part of the visible spectrum does the sun emit most of its light?
>
> _____
>
> The sun is a "main sequence" star. What does this mean?
>
> _____

5. Return to the WWT window.
6. Close finder scope
   Click "close." If you can't see the "close" button, you may have to drag the finder scope higher up into the window, so you can see all the available options.
7. Zoom out all the way, so you can see more of the background stars.
   Sweep downward on the trackpad with 2 fingers until you can't zoom out any further. The number just above the rectangular box in the lower right hand corner should say "60:00:00."

   a. Watch how the sun moves with time.
      The WWT shows how objects in the sky move in real time, and you can change how time progresses.

      Along the top row, click "View." The menu box on the far right has controls that look like buttons on a CD player. These buttons control time in the WWT.

      Things appear to move really slowly in real time, but you can speed things up by clicking on the button that looks like ">>." Every time you press this button, things move faster by a factor

of 10. Press the button until you can noticeably observe the sun moving around the sky.

If you've sped things up too much, you can slow them back down by clicking on the "->" button. (If you click the button with the arrows going to the left, you'll run time in reverse, which is interesting too!)

What path does the sun follow?

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(If the answer to this isn't quickly obvious, you may have to check the settings under "View." In the menu to the far left, make sure the little box next to "Ecliptic" is checked.)

There are an object that moves around very close to the sun's path.

What is this thing?

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(It might help to pause time - click the button with the " symbol - and then use the finder scope - "shift click" - to identify the objects.)

Constellations:

8. Follow the Sun through its path around the "ecliptic." Observe the names of the constellations that the Sun passes.

   The names of the observed constellations are listed above the rectangular box in the lower right hand part of the screen.

Bonus: Do you notice anything special about the particular constellations that the Sun passes? (Hint: "What's your "sign"?)

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(Be careful not to confuse "astronomy" with "astrology!" They do have some common origins, and ancient astrologers were adept at observing and calculating the paths of the planets, sun, and moon among the stars – but few Western astronomers today believe in the predictive powers of objects in the heavens.)

What constellation is the Sun in on December 21?

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(You can enter in the date in the time control settings under "View" by clicking on the date bar).

What does this constellation look like to you?

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9. Research the constellation.

Along the bottom of the screen, there are little thumbnail images of all the objects of note that are in your field of view.

Click on the thumbnail for the constellation you're looking at.

This highlights the thumbnail in yellow and puts an upside down yellow triangle on the bottom of the border.

Click on that yellow triangle to bring up the research options.

Click "Information" -> "Look up on Wikipedia."

What is this constellation supposed to look like?

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What special part of our Milky Way Galaxy is in the direction of this constellation?

_____

Big Dipper:

10. Go to the Big Dipper.

What constellation is the Big Dipper a part of?

_____

Bonus: The Big Dipper itself is NOT a constellation. Do some research to find out what a grouping of stars like this is called.

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The two stars on the far right of the "bowl" part of the dipper are called "pointer stars." What important part of the sky do they point to?

_____

The second star in from the end of the dipper's "handle" was commonly used to test vision in ancient societies. How many stars do you see?

_____

Research the star to see how many stars are really there.

_____

Mercury:

11. On the Bottom row, in the "Look at" drop down menu, select "SolarSystem."

12. Navigate to a point where you can see Mercury's orbit.

13. Press >> and speed up the orbit

Is Mercury's orbit elliptical during a year? Make sure to really speed up time. In the lower right corner you can adjust the size of the planets, but it is better to keep Mercury small.

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In its yearly motion, Mercury deviates from the ellipse due to Venus and the fact that the Sun is not perfectly spherical. In what ways in the orbit deviating from an ellipse?

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Speed up time even more, do you see the precession of Mercury? Research about it. Which is the main theory that explains the precession of Mercury? Does WWT include this theory in its calculations?

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