

Web Quest – Beyond Our Solar System

Name _____

The purpose of this web activity is to take you far beyond the reaches of our solar system and to discover the immense nature of our universe. You'll explore star clusters, nebulae, galaxies, pulsars, quasars, black holes, and dark matter.

Start your journey by visiting the *Sea and Sky* website.

<http://www.seasky.org/celestial-objects/celestial-objects.html>

Begin by clicking on the nebulae icon.

Describe what a nebulae is, and how large they are. _____

Why are nebulae referred to as the “building blocks” of the universe? _____

Describe what scientists can infer by observing the colors emitted by a nebula. _____

List and describe the 5 different types of nebulae.

1) _____ - _____

2) _____ - _____

3) _____ - _____

4) _____ - _____

5) _____ - _____

Explain how nebulae give rise to stars, planets, and solar systems. _____

Give an example of a nebula visible to the naked eye. _____

Take a quick look at spectacular photos of nebulas by visiting the Hubble website.
<http://hubblesite.org/gallery/album/nebula>

Return to the *Sea and Sky* website and click on the star cluster icon.

Give a short description of star clusters. Describe how they are held together, how old they are, and how astronomers categorize them.

What types of stars make up open clusters, and what is the fate of these stars? _____

Describe the cluster that includes our own Sun. _____

How do globular clusters differ from open clusters? _____

Two star clusters visible to the naked eye are _____

Visit the following website to see some great photos of star clusters.
http://www.astropix.com/HTML/K_MISC/CLUSTERS.HTM

Return to the *Sea and Sky* website and click on the galaxies icon.

What are galaxies, and what types of celestial objects do they contain? _____

Name and describe our own galaxy. _____

What famous astronomer came up with a classification scheme for galaxies? _____

List and describe the 4 different types of galaxies.

1) _____ - _____

2) _____ - _____

3) _____ - _____

4) _____ - _____

Scientists have undertaken an extensive project of mapping the location of galaxies. What have they found regarding the distribution of galaxies?

Check out the Hubble site and see examples of the 4 different types of galaxies.

<http://hubblesite.org/gallery/album/galaxy>

Return to the *Sea and Sky* website and click on the pulsars icon.

Pulsars are very unusual objects. What are they, and how did scientists first detect them?

What is the “lighthouse factor”? _____

How are neutron stars formed? Describe the density of these objects. _____

Click on the *Listen to a Pulsar* box to the right and see what a pulsar sounds like.

Return to the *Sea and Sky* website and click on the quasars icon.

What does the term quasar mean? _____

Describe the energy output of these mysterious objects. _____

How might quasars be related to black holes? _____

One theory suggests that quasars are the opposite of black holes. Explain this theory. _____

How many quasars are known to exist today? _____

Visit these two sites for pictures and more information on quasars.

<http://www.bbc.co.uk/science/space/universe/sights/quasars>

http://starchild.gsfc.nasa.gov/docs/StarChild/universe_level2/quasars.html

Return to the *Sea and Sky* website and click on the black holes icon.

What is a black hole? _____

How is light affected by a black hole? _____

Explain how a star may eventually become a black hole. What size star is required to form a black hole?

What do scientists look for in space that might indicate the presence of a black hole?

Do black holes pose a threat to us? Why, or why not? _____

Visit the NASA site for a short summary of black holes, and an artist's rendition of a black hole.

<http://www.nasa.gov/audience/forstudents/k-4/stories/what-is-a-black-hole-k4.html>

Return to the *Sea and Sky* website and click on the dark matter icon.

Describe the mystery known as "*dark matter*". _____
