

Language Arts Connection

Vocabulary Matching Game

Match the following vocabulary words, which you may have seen while reading about the Van Allen Probes mission, with their definitions. If you have trouble, the glossary on the Van Allen Probes webpage may be helpful to you: <http://vanallenprobes.jhuapl.edu/education/generalInfo/glossary.php>.

A. Radiation	_____ This is an adjective that describes something that can move close to a speed of 186,000 miles per second (the speed of light).
B. Density	_____ Disruptions or changes in the space environment caused by changes in solar activity.
C. Van Allen Radiation Belts	_____ How much mass there is in a given volume. Put simply, if mass is how much “stuff” there is, this is the measure of how much “stuff” is packed into a certain amount of space. (In this particular case, a measure of how many particles are in a radiation belt.)
D. Space Weather	_____ This word has various meanings, but when discussed here, it refers to electrically charged particles that move so fast that they cause damage when they hit other matter.
E. Ring Current	_____ Two donut shaped regions surrounding Earth where high-energy (i.e., fast moving), electrically charged particles are trapped by Earth’s magnetic field.
F. Relativistic	_____ A current of electricity that moves in a ring-like pattern through Earth’s radiation belts.
G. Geomagnetic	_____ Refers to the magnetism of Earth.

Communicating Research

An important aspect of scientists’ work is telling the story of their research. Scientists need to be good writers and speakers so they can share the new exciting things they have discovered with others.

Try It: Research James Van Allen and his team at the University of Iowa, who first discovered Earth’s radiation belts, and write a story about their work and about the radiation belts that were named for Van Allen. Some questions you might want to investigate are: How did Van Allen and his team discover the radiation belts? Why was their discovery exciting? Why do we

want to know more about the Van Allen radiation belts? Have there been other people who researched the sun’s influence on Earth and the space around it? Are there radiation belts around other planets or just ours?

Challenge: How many new vocabulary words can you use correctly in your story?
Bonus: BE BRAVE! Ask your teacher if you can tell your class the story of what you discovered so that you, like a scientist, can practice your oral communication skills!

To get started, check out: <http://vanallenprobes.jhuapl.edu>.

Toolbox of Resources

Van Allen Probes videos, animations, resources, and more:	http://vanallenprobes.jhuapl.edu
Hear about Van Allen Probes and what it’s like to work on space missions:	http://vanallenprobes.jhuapl.edu/mission/conversation/overview/index.php
Living With a Star Program:	http://lws.gsfc.nasa.gov
Space Math Problems and Solutions at Space Math @ NASA:	http://spacemath.gsfc.nasa.gov
Van Allen Probes instrument descriptions:	http://vanallenprobes.jhuapl.edu/spacecraft/instruments/index.php
Space Weather Center; student-friendly activities, games, and explanations in English and Spanish:	http://www.spaceweathercenter.org/
Kid-friendly description of sun–Earth connection science, including magnetic fields, space weather, auroras, and more:	http://spaceplace.nasa.gov/spaceweather/en/