

Surrounded by Science and Math Session 2



E-Learning Connections, Inc.

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Surrounded by Science

Let's Review



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Required Unique Skills Include the Ability to:

- Differentiate between fact and opinion
- Read and carry out directions
- Perform a scientific experiment
- Organize ideas, understand relationships, draw appropriate conclusions
- Understand cue words (some, a few, many)
- Interpret graphs and visual materials
- Identify symbols, abbreviations, and formulas
- Use reading strategies

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Required Unique Skills Include the Ability to:

- **Understand patterns of organization**
 - **sequence**
 - **explanation of a technical process**
 - **directions for an experiment**
 - **detailed statement of facts**
 - **problem-solving**
 - **patterns of abbreviations and equations**
- **Understand the difficult technical vocabulary**
- **Use word roots, prefixes, and suffixes to determine the meaning of the polysyllabic specialized vocabulary**
- **Understand and retain many important details**

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The Scientific Method

- **Observation** – seeing, hearing, touching...
- Asking a **question** – why or how?
- **Hypothesis** – a fancy name for an educated guess about what causes something to happen.
- **Prediction** – what you think will happen if...
- **Testing** – this is where you get to experiment and be creative.
- **Conclusion** – decide which of your test results best matched a prediction, then communicate your results so others can learn from your work.



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SCIENTIFIC METHOD

THE STEP APPROACH

State your findings

Conduct an experiment to test your hypothesis

Design an experiment to test your hypothesis

Make a prediction (hypothesis)

Identify a problem or question

Observe nature carefully

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Scientific literacy is a mix of concepts, history, and philosophy that help people understand scientific issues.

Scientific literacy allows people to:

- Appreciate the world around them
- Make informed personal choices

Scientifically literate citizens possess the facts and vocabulary sufficient to comprehend the context of the daily news.

Doing science is different from ***using*** science; scientific literacy concerns only ***using*** science.

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**What students
need to know**



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WORDS, WORDS, WORDS **THE VOCABULARY OF** **SCIENCE!**

[Bill Nye Stormin Bill Nye the Science Guy - 50- Climates 1 3.avi](#)

<http://education.jlab.org/vocabhangman/index.html>

<http://sciencespot.net/Pages/kdztrivia.html>

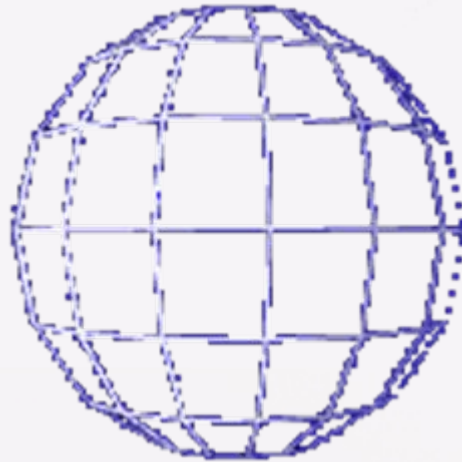


Earth's Vital Statistics

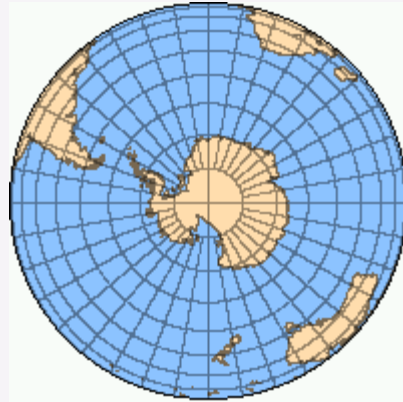
- Circumference at the equator: 40,031 km
- Diameter through N-S poles: 12,712 km
- Diameter at the equator: 12,755km
- Surface area: 509,917,488 km²
- Volume: 2,019,609 km³
- Average temperature: Night 32°F (0°C); Day 72°F (22°C)
- Fact: any given moment: 2,200 thunderstorms occur on the earth's surface
- Largest to smallest continent:
Asia...Africa...North America...South America...
Antarctica...Europe...Oceania
- Number of countries: 194 +/-

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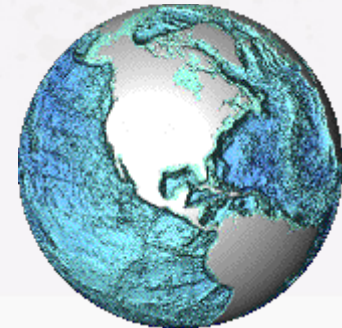
Earth and Space Science
20%



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Maps!



Maps, maps & more maps...

What are maps?

- “A map is a symbolized representation of a space/place which highlights relations between features.” (Wikipedia)
- “A map is the world expressed through the medium of cartography...maps re-describe the world. What we read on a map is as much related to an invisible world and to ideology as it is to phenomena seen and measured in the landscape. (Stanfords)
- “Maps are description of the way things are. It is a purposeful selection from everything that is known, bent to the map maker’s ends. Every map serves a purpose. Every map advances an interest.” (Wood et al)

World - Physical





Latitude

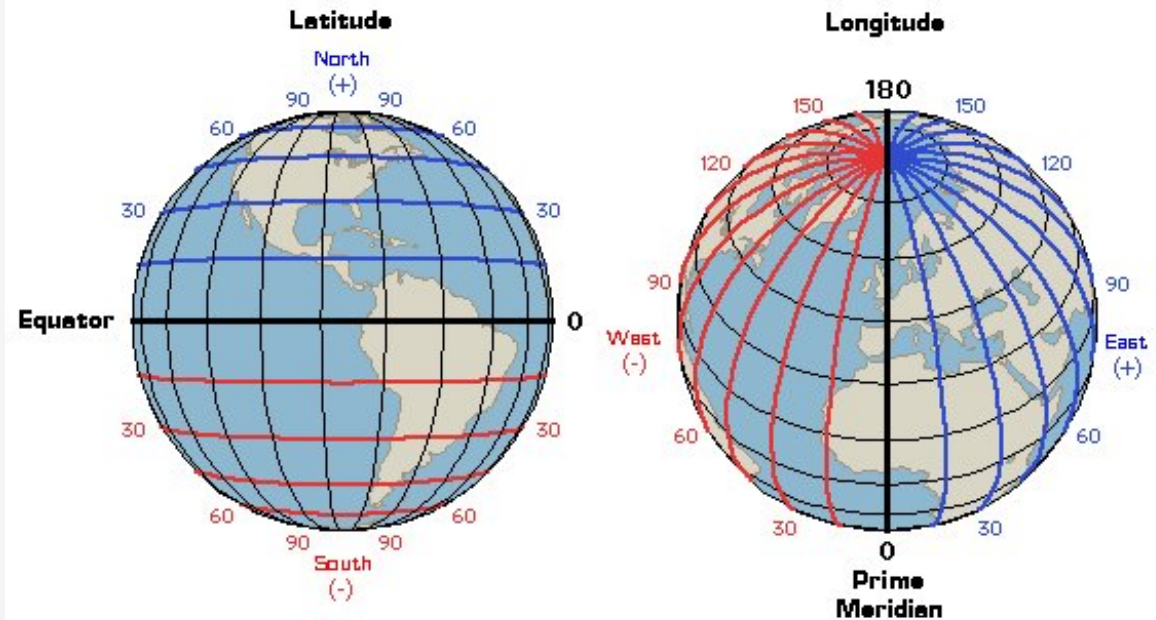
Longitude

Latitude and Longitude



Latitude (parallels)

- Each degree – approx 69m (111km) apart
- Numbered 0° - 90° N and S
- 0° = the Equator, dividing N and S hemispheres
- The poles = 90° N/S



Longitude (meridians)

- Each degree – approx 69m (111km) apart.
- Numbered 0° - 180° E and W
- Where they meet (180) – International date line
- 0° = Greenwich, London (Prime Meridian), dividing E and W hemispheres
- The poles = 90° N/S

Latitude and Longitude



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Let's Apply!

**Let's incorporate
math with
cartography (map-
making)!**



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On the Web!



**Science Videos – They’re
Everywhere!**

[http://www.abc.net.au/science/
broadband/](http://www.abc.net.au/science/broadband/)

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On the Web!



PBS – Magnificent Science

[http://www.pbs.org/wgbh/nova/
elegant/media2/3012_r_02.ht
ml](http://www.pbs.org/wgbh/nova/elegant/media2/3012_r_02.html)

Exploring the Environment

<http://www.cotf.edu/ete/>

<http://www.cotf.edu/ete/modules/modules.htm>

1

Select a module and explore. Identify the science and math skills needed to complete the module.

Biomes

<http://www.cotf.edu/ete/modules/mseese/earthsflr/biomes.html>

The Space Educator's Handbook

Lots of activities, plus the math of space!

<http://er.jsc.nasa.gov/seh/seh.html>

Jetstream – Online School for Weather
National Weather Service

<http://www.srh.weather.gov/jetstream/matrix.htm>

Jetstream – Lesson Plans

<http://www.srh.weather.gov/jetstream/append/lessonplans.htm>

Forecast at a Glance
National Weather Service

<http://www.srh.weather.gov/jetstream/webweather/4castglance.htm>

National Oceanic and Atmospheric Administration
(NOAA)

<http://www.noaa.gov/wx.html>

Weather Underground

<http://www.wunderground.com/>

Dan's Wild Wild Weather Page (games and activities)

<http://www.wildwildweather.com/>

Discovery Storm Chasers (including storm chase game)

<http://dsc.discovery.com/tv/storm-chasers/storm-chasers.html>

The Science Spot – Kidz Weather

<http://sciencespot.net/Pages/kdzweather.html>

Weather Songs by Nick Walker, The Weather Dude

<http://profile.myspace.com/index.cfm?fuseaction=user.viewprofile&friendid=100742427>

Tropical Cyclone Tracker (animated)

[http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/hurr/hurtrack/index.html](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/hurtrack/index.html)

Health and Life Science Resources

Resources on CD

Florida Healthy Literacy Student Resource Book and Teacher Guide

Virginia Adult Education Health Literacy Toolkit

The El Paso Collaborative Health Literacy Curriculum

On the Web

Ask a Biologist – Arizona State University

Includes articles on a variety of topics, comprehension questions, puzzles

<http://askbiologist.asu.edu/>

ETC

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