

**1 - Using Latitude and Longitude (3:14)**

Answer the following questions from the video link above. Not all the answers below will be used.

<i>latitudes</i>	<i>minutesseconds</i>	<i>tropics</i>	$0^\circ$	<i>3 miles</i>
69 miles	23 ½°N 23 ½°S	66 ½°N	66 ½°S	

1. Parallel lines that run east and west are called \_\_\_\_\_. Each latitude degree line is about \_\_\_\_\_ apart. Each degree is broken into 60 \_\_\_\_\_ and each of those is broken into 60 \_\_\_\_\_ .

Write the latitude for each of the following. Include NORTH or SOUTH where appropriate.

2. Tropic of Cancer \_\_\_\_\_

3. Equator \_\_\_\_\_

4 Tropic of Capricorn \_\_\_\_\_

5. Arctic Circle \_\_\_\_\_

6. Antarctic Circle \_\_\_\_\_

7. The area between the Tropic of Cancer and the Tropic of Capricorn is called the \_\_\_\_\_

8. Describe the climate and environment of the area described in question 7.

9. Describe the climate and environment the area between the tropic & the arctic lines.

10. Why can't the narrator say how far apart the longitude (meridian) lines are from each other?

\_\_\_\_\_

**2 - More Latitude and Longitude (8:16)**

Use some of these terms to answer the following questions.  
*ellipsoid • Greenwich, England • prime meridian • spheroid • Winslow, AZ • 45° • 90° • 135°*  
*-3, 5 • 5, -3 • -5, 3 • 3, -5*

11. At 58 seconds in the video, the coordinates for that red dot are \_\_\_\_\_, \_\_\_\_\_

12. The true shape of the earth is not a \_\_\_\_\_ but a \_\_\_\_\_

13. All longitude measurements start from the \_\_\_\_\_ which passes through \_\_\_\_\_

14. Traveling 90°E is the same as traveling \_\_\_\_\_ °W

15. If an evil GLG110IN professor made you walk from 15°W to 30°W, would you rather do that at the poles or at the equator? Why?

16. Are longitude lines parallel? YES / NO
17. Are all longitude lines about the same circumference? YES / NO
18. Do longitude lines run pole-to-pole? YES / NO
19. Would a cut through a longitude line go through the center of the Earth? YES / NO
20. Why can't you go 110° North? What is the maximum north or south latitude you can go?
21. Are latitude lines parallel? YES / NO
22. Are all latitude lines about the same circumference? YES / NO
23. Do latitude lines run pole-to-pole? YES / NO
24. Would a cut through any latitude line go through the center of the Earth? YES / NO

### 3 - Using Latitude and Longitude

*Using [this map](#), record the latitude & longitude (in that order) for each of the following.*

EXAMPLE	LATITUDE	LONGITUDE
Southampton, Eng	50 ° N	0 ° W

LOCATION	LATITUDE	LONGITUDE
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- |                           |         |   |         |
|---------------------------|---------|---|---------|
| A. San Fran, CA           | _____ ° | & | _____ ° |
| B. Kilauea Volcano, HI,   | _____ ° | & | _____ ° |
| C. Capetown, S Africa     | _____ ° | & | _____ ° |
| D. Colombo, India         | _____ ° | & | _____ ° |
| E. Freemantle, Australia  | _____ ° | & | _____ ° |
| F. Pago Pago, Am. Samoa   | _____ ° | & | _____ ° |
| G. Simpyville, Antarctica | _____ ° | & | _____ ° |
| H. Phoenix, AZ            | _____ ° | & | _____ ° |
| I. New York, NY           | _____ ° | & | _____ ° |
| J. Athens, Greece         | _____ ° | & | _____ ° |

*Go to [Google Maps](#) and enter Grand Canyon National Park, Arizona in the Google Map search window. (Not the browser bar.) Once there, look in the browser's top URL window. Scroll to the right. You'll see a bunch of numbers. We're looking only for something that looks like longitude & latitude, in this case, 36.091105 and -113.4035038. The 36.091105 means about 36° North of the equator and the -113.4035038 means 113° West of Prime Meridian. A negative latitude is south of the equator. A positive longitude is east of Prime Meridian. Enter the names of the following important places into the Google camp window and record the latitude to the nearest degree.*



25. What is the relationship between the quake positions and the outline of the continents?

26. Describe how the locations of quakes are related to plate boundaries.

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### 5 - Recent Earthquakes

A. Open the [USGS \(United States Geologic Survey\) Earthquake Map](#). This web page maps all earthquakes > M 2.5 in the last day. That time period is too short.

B. Using the GEAR tool in the top right, chose 30 Days, Magnitude 2.5+ U.S. (Change settings if you want. Play around.) Dragging the map will refresh the EQ list and cause more earthquakes to appear.

27. There are several regions on Earth where earthquakes most often occur. Describe two of those regions.

a)

b)

28. What are those red lines all over the place? What do they represent? Are there any in Arizona? Why not?

27. In relation to the plate boundaries, where do earthquakes occur most frequently?

29. In relation to the plate boundaries, where do earthquakes NOT occur frequently?

C. Open the earthquake list by clicking the icon that looks like this  or click on a large EQ circle. Arrange by size.

D. Find an earthquake with magnitude of 5.5 or greater.

30. My magnitude \_\_\_\_\_ quake occurred on \_\_\_\_\_ (DATE) at \_\_\_\_\_ (SITE).

E. Look around the web. Find information about your quake.

31. The two plates that meet to form my quake were the \_\_\_\_\_ & \_\_\_\_\_ plates and the damage caused by my quake was...

F. Use GEAR tool to select SATELLITE VIEW. Look around. Notice where quakes occur.

32. Besides plate boundaries, 2 physical features that often occur near earthquake areas that you can see on the satellite view are... (If in a face-to-face class, check with your instructor to make sure you get this before going on.)

A

B

33. WHY might those 2 features be related to quakes? Think. You can do this!

G. On the EQ map main page, use GEAR to select STREET VIEW. Zoom in on the USA until you see state names.

34. If you are afraid of quakes, 3 US states where it will be good to live safely according to this map are...

A

B

C

35. Two states where you would WANT to live if you like earthquakes are...

A

B

36. Why do major quakes not occur in the states in answer #34 but do occur in the states in #35? Write a general rule.

37. Zoom in on Oklahoma. Wait a minute... Describe what you observe regarding quakes and why this seems odd.

38. Look around the web. Find out why EQs are occurring on Oklahoma. Is this natural? Explain.

39. One student really claimed, "Every time there is an earthquake anywhere in the world, every month or two, my ears ring!" When her ears would ring every two months, she would immediately go on-line and check for an earthquake. Yes, there HAD been an earthquake in the last few hours somewhere in the world. She said this proved that her ears could detect earthquakes. Is she right? Why? Explain.

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## 6 - Causes & Parts

40. Using a drawing and words, explain what causes earthquakes. Use Wikipedia if you need.

41. Draw & label a normal fault with the hypocenter (focus) & epicenter. Find your own links or use [this](#).

42. Why do quakes occur mostly in the *lithosphere* and not in the *asthenosphere*? (Think of cookies vs. cookie batter.)

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## 9 - Effects

Three causes of death from earthquakes include liquefaction, building collapse, & tsunamis. (Disease & fire are other causes.) View the videos/photos to explain what happens in each.

43. Liquefaction - [Japan Liquefaction \(3:07\)](#) / [Palu Liquefaction \(3:05\)](#)

44. Tsunami - [Tsunami - Palu \(6:26\)](#)

[Aceh Tsunami Destruction](#)

[NatGeo Tsunami \(3:34\)](#)

45. [Taiwan Building Collapse \(1:27\)](#)

[Building Sway & Liquefaction \(4:50\)](#)

[Mexico Building Collapse \(1:22\)](#)

Summary - List three things you learned, questions you still have or a suggestion for improving this lab or a combination.

46.

47.

48.