

Plotting Earthquakes and Volcanic Eruptions Activity

In this activity, you will identify the locations of 30 earthquake epicenters and the sites of 9 volcanic eruptions on a world map. Then, you will compare these locations to the locations of the Earth's tectonic plate boundaries. The epicenter of an earthquake is the point on the Earth's surface directly above Earth's interior where earthquake energy is released.

Keep in mind that the U.S. Geological Survey National Earthquake Information Center registered over 200,000 earthquakes during a recent 12-year period and that there are approximately 600 active volcanoes in the world today!

A. Plot the Quakes:

1. Choose one color for earthquakes with magnitude 8.0 or greater and another color for earthquakes of less than 8.0 magnitude.
2. Color in the boxes of the key at the top of your earthquake map to show which color is which.
3. Use the list of significant earthquakes to plot each point on your gridded map. For plotting, the first coordinate is the 'x' and the second coordinate is the 'y'.
4. Be sure to write the **number** of the earthquake (from the list) next to the plotted point.
5. Color in each point with the color that reflects that earthquake's magnitude. If your map includes points that are plotted for you, look up the earthquake on your list and color in the dot with the correct color to show the magnitude.

B. Draw the Plate Boundaries:

1. When you receive a tectonic plate boundary map, place it beneath your plotted earthquake map.
2. Hold the papers up to a window and line up the continents. Carefully trace the tectonic plate boundary lines onto your earthquake map.
3. Be sure that you trace the easily-missed plate boundaries to the west of South America and on the Asian continent.
4. After you finish drawing the tectonic plate boundaries, make at least 3 observations about your map in the box below:

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

D. Plot the Volcanic Eruptions:

1. Use the list of significant volcanic eruptions to plot each point on your gridded map. Use a TRIANGLE as a symbol for the eruptions (▲). For plotting, the first coordinate is the 'x' and the second coordinate is the 'y'.
2. Be sure to write the **letter** of the eruption (from the list) next to the plotted point.
3. After you finish plotting, write at least three observations about your map in the box below:

E. Highlight the Ring of Fire:

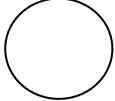
1. AFTER plotting the volcanic eruptions, watch the video clip at <http://bit.ly/3aPezPQ> up to about 1 minute (1:00). Pause the video here.
2. Locate the Ring of Fire on your map. Fold your map so that the Pacific Ocean on the left and right sides connect. Use a highlighter to highlight the Ring of Fire.
3. After you highlight the Ring of Fire, continue watching the rest of the video clip.
4. Look back at the Plate Boundaries Map and locate where the Ring of Fire is. Answer the questions below.

1. What type of plate boundary seems to be most common along the Ring of Fire?

 2. What do you think is happening at these plate boundaries that would explain why there are so many volcanoes here?



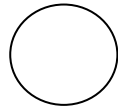
Historical Significant Earthquakes

 magnitude
8.0 or greater

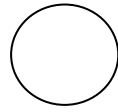
 magnitude
6.7 – 7.9

#	Place	Date	Magnitude	X	Y
1	Southern Alaska	11-30-2018	7.0	1.5	14.75
2	Kermadec Islands	7-6-2011	7.6	23.5	5
3	Tonga	5-3-2006	8.0	23.5	6.5
4	Kaikoura, New Zealand	11-13-2016	7.8	22.5	4
5	Bristol, Sandwich Islands	7-15-2013	7.3	8	2.5
6	Windward Islands	11-29-2007	7.4	6	10
7	Iquique, Chile	4-1-2014	8.2	5	6.5
8	Ismir, Turkey	8-17-1990	7.9	12.5	12.5
9	Yungay, Peru	5-31-1970	8.0	4.5	7.5
10	Messina, Italy	12-28-1908	7.1	11.5	12.5
11	Port-au-Prince, Haiti	1-12-2010	8.6	5	10.5
12	Valdivia, Chile	5-20-1960	9.5	5.5	3.5
13	Great Alaska Earthquake	3-27-1964	9.2	1	14.5
14	Northern Sumatra	12-26-2004	9.1	17.5	8.5
15	Tohoku, Japan	3-11-2011	9.1	20.5	12.5

Historical Significant Earthquakes, continued



**magnitude
8.0 or greater**



**magnitude
6.7 - 7.9**

#	Place	Date	Magnitude	X	Y
16	Kamchatka, Russia	11-4-1952	9.0	20.75	14
17	Maule, Chile	2-27-2010	8.8	5.25	5
18	Rat Islands	2-4-1965	8.7	23	13
19	Assam, Tibet	8-15-1950	8.6	17	12
20	Tangshan, China	7-28-1976	8.2	19	12
21	Southern Sumatra	9-12-2007	8.4	18	8
22	Arequipa, Peru	6-23-2001	8.4	4.75	7
23	Kathmandu, Nepal	4-25-2015	7.8	16.5	12
24	Kashmir, Pakistan	10-8-2005	7.6	15.5	12
25	Kobe, Japan	1-17-1995	6.9	20	12
26	Northridge, California	1-17-1994	6.7	2	12
27	Ashgabat, Turkmenistan	10-6-1948	7.3	14.5	12.5
28	Flores Sea	6-17-1996	7.9	19.5	7.5
29	Solomon Islands	4-1-2007	8.1	22	8
30	Southern Pacific Rise	10-9-2014	7.0	2.5	4.5

Historical Significant Volcanic Eruptions

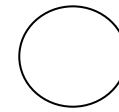
Use a triangle symbol (▲) to plot each volcanic eruption and write the letter next to the plotted point.

L	Place	Date	Death Toll / Ejecta	X	Y
A	Nevado del Ruiz, Colombia	11-13-1995	23,000 people	4.75	9
B	Mount Pelee, Martinique	5-8-1902	29,000 people	6	10.25
C	Mount Unzen, Japan	1792	14,500 people	19.75	12
D	Tambora, Indonesia	1815	80,000 people	19	7.5
E	Hekla, Iceland	1991	200 people	9.5	15.25
F	Santa Maria, Guatemala	1902	5,000 people	3.75	10
G	Novarupta, Alaska	1912	0 people 30 cubic kilometers	0.5	14.5
H	Arenal, Costa Rica	7-29-1968	80 people	4.25	9.5
I	Krakatau, Indonesia	1883	35,000 people	18.25	8

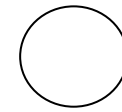
Name _____ Class _____ Date _____

Plotting Earthquakes and Volcanic Eruptions

Use the grid on the map below to plot some significant historic earthquakes and volcanic eruptions. Use one color for earthquakes with magnitude 8.0 or greater and another color for earthquakes of less than 8.0 magnitude. Color in the KEY to the right to show the colors that you will use.

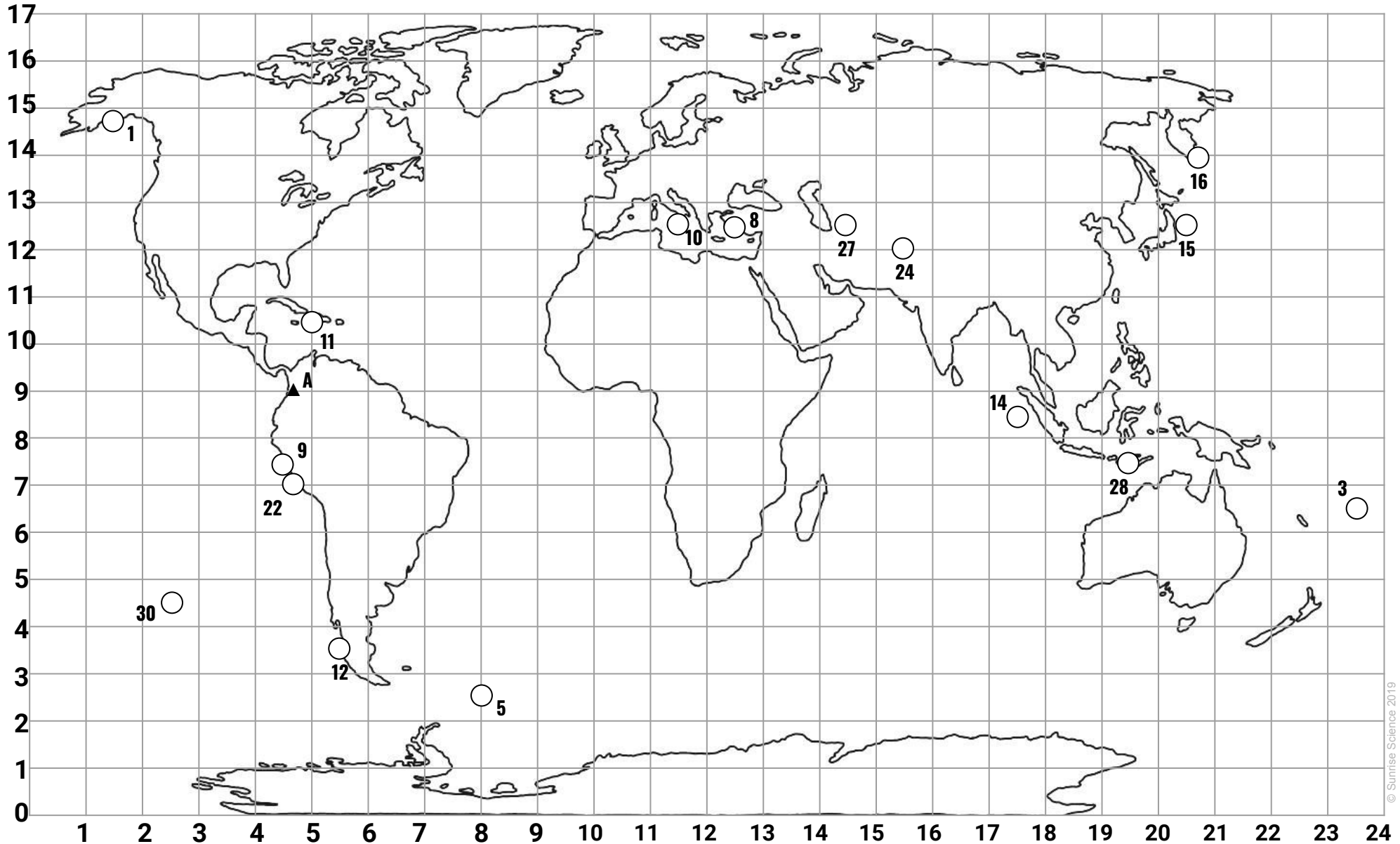


magnitude
8.0 or greater



magnitude
6.7 - 7.9

▲ = volcanic eruption



Tectonic Plate Boundaries

Place this tectonic plate boundary map beneath your plotted earthquake map. Hold the papers up to a window and line up the continents. Carefully trace the tectonic plate boundary lines onto your map.

