**SELECTED EARTHQUAKE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TEACHER APPROVAL: \_\_\_\_\_\_\_\_\_\_**

**Expected Outcomes**:

* You and a partner will select one earthquake that you will be the center of your exploration.
* Your team will research your selected earthquake event and define features and characteristics that make it unique and explain the human impact of the event.
* Your team will design and construct an earthquake resistant structure using provided materials and guidelines.
* Your final task will be to test your structure in class and evaluate the effectiveness of your design.

**Research Components**:

* What is the name of the earthquake?
* Where did the earthquake occur? (Country and Nearest City)
* What type of boundary caused the event? (Plate Names & Boundary Type & Plate Types)
* Identify the bedrock in the area. Describe how this may have played a role in the event.
* Discuss the soil in the area. Is there a tie/correlation to geologic activity or bedrock?
* Describe the science (how and what scientifically happened) behind the event.
* Was the earthquake shallow or deep within the crust? Explain how this impacted the damage caused by the quake.
* What other negative occurrences are associated with the event? (mass movements, floods, fires, etc.)
* How was the environment affected by the event?
* How were humans affected by the event?
* Discuss if there was any warning? Were the people prepared? How was the disaster handled?
* Discuss if there was a history in the area of similar events.
* Discuss if plans were/have been made for the future.

**Building Components:**

* What type(s) of engineering designs are common in earthquake prone buildings?
* What design features will you incorporate in your structure?
* Materials will be provided. Additional materials will not be allowed in the build.
* Maximum amount of materials that can be used in construction: 30 toothpicks & 30 mini marshmallows
* If you destroy any materials and need new, you must provide yourself.
* Building must have four sides
* Buildings must be a minimum of 2 toothpicks high
* Buildings must contain at least 1 triangle in design
* After testing your structure, under what conditions did it perform best (p waves, s waves, surface waves)?
* What improvements could be made to increase the durability of your structures, still using the same materials provided?
* **Complete the attached forms to serve as your final report.**
* **You will turn in ONE completed packet and will receive a team grade.**
* **You may type up your research components.**
* **Make sure to use credible sources.**

**RESEARCH:**

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| **QUESTION** | **RESEARCH ANSWERS – Be very thorough and detailed *(Include diagrams, illustrations, and/or animations)*** | **SOURCES *( Ensure proper MLA Format)*** |
| *Name AND Date of the event* |  | *-------------- N/A --------------* |
| *Where did the event occur?* | *Country:**City:*  | *MLA:* |
| *What type of boundary caused the event?* | *Name of Tectonic Plates Involved:**Type of Boundary: (Choose one)* *Transform*  *Convergent Continental-Continental*  *Convergent Continental-Oceanic* *Convergent Oceanic-Oceanic*  *Divergent Continental-Continental*  *Divergent Oceanic-Oceanic*  | *MLA:* |
| *Identify the bedrock type in the area.* | *Name of Bedrock:* | *MLA:* |
| *Describe how the bedrock type may have played a role in causing the event.* | *Bedrock Role:*  | *MLA:* |
| *Research the soil type in the area.**Is there a tie or correlation to the geologic activity or bedrock?* | *Soil Type:**Tie/Correlation to geologic activity:* | *MLA:* |
| *Describe the science behind the event.* *(How and what scientifically happened)* | *This section should be very detailed and thorough! (In addition to the research, incorporate illustrations, animations, and/or diagrams to also convey the science behind the event)*  | *MLA:* |
| *Identify the type of earthquake as shallow or deep.*  | *:*  | *MLA:*  |
| *Explain how the type of earthquake related to the damage caused.* |  | *MLA:*  |
| *Were there other negative occurrences associated with the event?* | *Mass Movements:**Fire:**Flood:**Other:* | *MLA:* |
| *How was the environment affected by the event?**(Identify areas within each of the spheres that were affected)* | *Geosphere:**Hydrosphere:**Atmosphere:**Biosphere:* | *MLA:* |
| *How were humans affected by the event?* | *Injuries/Deaths:**Displacement/movement:**Access to Resources:**Other:*  | *MLA:* |
| *Discuss: Was there any warnings?* *Discuss: Were the people prepared?**Discuss: How was the disaster handled?*  | *Warning:**Preparation:**Response:**Recovery:* | *MLA:* |
| *Is there a history in the area of similar events? Discuss…* | *History:* | *MLA:* |
| *Were plans made for the future? Discuss…* | *Future Plans:* | *MLA:* |

**BUILDING:**

|  |  |  |
| --- | --- | --- |
| **QUESTION** | **RESEARCH ANSWERS – Be very thorough and detailed *(Include diagrams, illustrations, and/or animations)*** | **SOURCES  *Ensure proper MLA Format)*** |
| *What type(s) of engineering designs are common in earthquake prone buildings?* |  |  |
| *Explain what design features are incorporated in your structure?* |  | *-------------- N/A --------------* |
| *Sketch your structure design:*  |  | *-------------- N/A --------------* |
| *After testing your structure, under what conditions did it perform best (primary waves, secondary waves, surface waves)?* | *Address each condition your structure was tested under.*  | *-------------- N/A --------------* |
| *What improvements could be made to increase the durability of your structures, still using the same materials provided?* | *Include at least 3 changes/improvements you would make and explain why.* | *-------------- N/A --------------* |