SCENE 1:

After surviving the first night in the North Georgia mountains, the team awakens to find the following "Treemail."

Dear Survivor Team,

Your first challenge in the Survivor Mountain Series is to perform a community service for the townspeople of the quiet mountain town of Clayton, Georgia. Luckily, your team has obtained a map, so you will be able to find your way.

This morning Clayton experienced an event that has alarmed most of the townspeople. Many people believe it was an earthquake; however, others feel a bomb may have exploded somewhere nearby or something even stranger may have occurred! Unfortunately, several town officials including the seismologist are on vacation for the next two weeks. By the time they return, the town could be in chaos, so it is up to you to investigate the situation and report to the town of Clayton exactly what happened. It was a good thing Mr. Hooper, the local newspaper journalist is still in town. He interviewed 28 citizens of Clayton, and recorded what they experienced this morning during the event. Included with this treemail is a list of their statements. You may find it useful when determining the cause of the townspeople's alarm.

Good luck with your challenge!

Sincerely,
The Survivor Series Management

P.S. Please log any important information you find in your Confessional!! Your group may either make a recorded video of a live news broadcast or write a newspaper article to inform the people of Clayton.

SCENE 2:

The Survivor team journeys to Clayton, GA. Exhausted from traveling across the rough terrain, they head to the local newspaper located downtown. Mr. Hooper shows the Survivor team a table of eyewitness testimonies from 28 people in Clayton (attached).

Mr. Hooper is very relieved that the Survivor team will be helping out to inform the people of Clayton about the event. He suggests to the team, "Use an available method to rank the earthquake according to its intensity. Plot and contour the earthquake intensity data on the provided map. Finally, determine the location of the epicenter. This should be very helpful when you tell the people about what happened."

SCENE 3:

The Survivor team decides the Mercalli Intensity Scale (attached) will be their best bet to determine the earthquake intensity. Mr. Hooper agrees and offers even more valuable suggestions to the team (attached and entitled "Some Hints from Mr. Hooper").

Some hints from Mr. Hooper:

1. Obtain map of Clayton, GA.
2. Using an available method of measuring earthquake intensity and the descriptive data shown above, rank the intensity of the earthquake as it was felt at each person's location. Put the MI number in the proper block in the table above. Note that assigning an MI number is a subjective task. An earthquake report may not fit neatly in one category. You may rank an earthquake slightly different from someone else. That is ok, but just be sure to be consistent and follow the same procedure each time.
3. Fill in the color which corresponds to the intensity of the earthquake in the appropriate column in the table above.
   - White = earthquake not felt or heard
   - Blue = earthquake was heard only, no shaking (I and II)
   - Green = vibration felt, but no dishes reported to rattle (III)
   - Yellow = strong vibration or shaking; like truck striking building, dished or windows rattle, some awakened (IV)
   - Red = dishes or windows broken, cracked plaster, pictures move, objects overturned (
   - Purple = anything more severe

4. Locate the number on the map of Clayton that corresponds to each earthquake report.
5. Color in the white number on the map using the color which corresponds to the intensity of the earthquake.
6. Contour the data on the map by drawing lines to separate the different colors. Be sure to indicate outer limits of area where earthquakes were experienced. Note that their may be a few unusual data points here and there, due to differing home construction or how close to bedrock their houses sit, etc.
7. Your contour map should resemble a bull's eye pattern, with concentric circles of each color. The highest earthquake intensity will be in the center.

Mercalli Intensity Scale

MI #	***Description***
I	Not felt except by a few under especially favorable circumstances. Sound only; no vibrations
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Hanging objects swing. Vibration like passing of trucks. Duration can be estimated.
IV	Hanging objects swing. Sensation like heavy truck striking building. Walls creak. At night some awakened. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes.
V	Felt by nearly everyone, many awakened. Felt outdoors; direction can be estimated. Liquids disturbed, some spilled. Some objects moved overturned. Some dishes, windows, etc. broken. Doors swing open or closed. Pictures move on the wall. Pendulum clocks stop, start, change rate.
VI	Felt be all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Small objects (knickknacks, books, etc.) fall off shelves. Pictures fall off walls. Some heavy furniture moved or overturned. Some fallen plaster, and masonry or chimneys cracked. Damage slight. Small bells ring (church, schools). Trees, bushed shaken (visibly or heard to rustle).
VII	Everybody runs outdoors. Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage negligible in buildings of good design and construction. Slight to moderate damage in well-built ordinary structures. Considerable damage in poorly-built or badly-designed structures. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, etc. Waves on ponds; water becomes turbid with mud. Small slides caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII	Damage slight in specially-designed structures; damage considerable in ordinary substantial buildings with partial collapse; damage great in poorly designed structures. Steering of motor cars affected. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, columns, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX	General panic. Damage considerable to structures that are specially-designed, sometimes with complete collapse. Wood frame houses, if not bolted, shifted off foundations. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand blows, sand craters.
X	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Railroad tracks bent slightly. Ground badly cracked.
XI	Few, if any masonry structures remain standing. Bridges destroyed. Railroad tracks bent greatly. Underground pipelines completely out of service. Broad cracks or fissures in ground.
XII	Damage total. Waves seen on ground surface. Objects thrown into the air. Large rock masses displaced.

Descriptive Data from persons who experienced the Tate City earthquake:

Data Point	MI Number	Color	Earthquake report or description
1			Big jolt. Boom and immediate shaking. Rattles windows and dishes. Awakened. Walls do not creak. First felt like car hit brick pillar on porch.
2			Started very early. Continued and intensified. Definitely awakened. Moved bed back and forth. Windows rattled. Like dynamite blast. Jolt like truck hitting the building. Nothing broken.
3			Two small pictures fell off the wall. Dishes, windows, everything shakes and rattles. Little things fall. At some points, sound only. At other points, whole house shakes. Felt best in kitchen, which rests on bedrock. Like an explosion. Boom. Started noticing early in morning and it intensified.
4			Like a sonic boom followed by ground shaking. Thought it was a space shuttle going over. Awakened very early. Some very loud, some minor. Could tell it was coming from underground., not the air. Began calling police to look for blasting. There is a quarry nearly, but no action there early in morning. Fire marshal said it was "systematic displacement." Maybe due to the creek water seeping into the ground. Sometimes a minor pop and a little shake or just noise. No dishes rattle, but the neighbors' dished did.
5			Started about 3 or 4 a.m. Very loud sounds. Two sounds: KA-BOOM! The first sound is low and muffled. The second sound was a loud boom. Awakened at 5:45 a.m. They don't occur just one at a time. 3-6 at a time every 2-4 hours. Called police and fire marshal and newspaper. One was so strong, it shook dished, china crystal. Whole house shook. Others like a soft thud, like a soft sound against the wall.
6			Heard but not felt. Like blasting or thunder. No shaking.
7			Sounded like loud explosion, hanging objects swung out of place. Windows rattled.
8			Sounded like loud explosion. Small objects moved or overturned. Building shook slightly. Awakened. Windows rattled. Felt or heard 5 of them.
9			Sounded like explosion off in distance, hanging objects swung out of place. Building shook strongly, awakened, dishes and windows rattled. A window cracked in the front of the house. There were a lot of explosions followed by a very large one.

10			Sounded like loud explosion, small objects moved or overturned. Building shook slightly, dishes and windows rattled, no damage but small stuff overturned. Scared me. I didn't know what was happening. I was just lying on my bed and all of a sudden, I felt the bed shake. Only felt it once.
11			Heard sound only, no vibration. Like explosion, off in distance.
12			Awakened. Sounded off in distance. Windows rattled.
13			Sounded like loud explosion, off in distance. The center wall inside and part of the ceiling is cracked.
14			Sounded like loud explosion, nearby. Building shook slightly. No damage. Felt 4 times
15			Building shook slightly. Felt and heard less than 5 times. One time early in the morning and one time later in the morning.
16			Early morning. No windows rattle. Little tremble and soft sound, then louder. Not awakened.
17			Sounded like a loud explosion, off in distance. Building shook slightly. Awakened. Windows rattled. Felt 3 of them.
18			None heard or felt.
19			None heard or felt.
20			None heard or felt.
21			Sounded like loud explosion. Building shook slightly. Windows rattled. Thought it was dynamite at quarry. No damage. Heard/felt many times.
22			Sounded like loud explosion. Heard of felt 2-3 times.
23			Sounded like a loud explosion. Building shook slightly. Awakened. Dishes and windows rattled. Felt ground shaking. Felt many times.
24			Sounded like a loud explosion. Building shook slightly. Awakened. Dishes and windows rattled. Felt ground shaking. Felt a lot.
25			Felt vibration. Heard sound. Building shook slightly. Awakened. Dishes and windows rattled. No damage. Felt approximately 12 times.
26			None heard or felt.
27			Sounded like loud explosion off in distance. Building shook slightly. Windows rattled. Thought it was a big bomb.
28			Sound only, no vibrations. Sounded off in the distance. Building shook slightly. Windows rattled. Felt three times.

***Adapted from the Dacula, GA Earthquake Intensity Exercise by Pamela J.W. Gore, Georgia Perimeter College*

Vocabulary List:

1. Earthquake
2. Destructive force
3. Constructive force
4. Strike-slip fault
5. Normal fault
6. Reverse fault
7. Interplate earthquake
8. Intraplate earthquake
9. Stress
10. Shearing
11. Tension
12. Compression
13. Seismic waves
14. Magnitude
15. Intensity
16. Epicenter
17. Mercalli Intensity Scale

Self-Evaluation

Name_____

1. What did you contribute to solving the case?

2. What do you feel you did well when solving the case or completing the group assignments?

3. What do you think you could do better?

Peer Evaluation

Name of the peer (fellow student) being evaluated:_____

1. What did your peer contribute to solving the case?

2. What do you think your peer did well when solving the case and completing group assignments?

3. What do you feel they could do better?

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Peer Evaluation

Name of the peer (fellow student) being evaluated:_____

1. What did your peer contribute to solving the case?

2. What do you think your peer did well when solving the case and completing group assignments?

3. What do you feel they could do better?