

Richter vs. Mercalli

Name _____

Date _____

Per _____ page _____

Objective: _____

Research:

Richter Scale: _____

a. _____

b. _____

A number 3 rating on the scale is 10 times more powerful than a number 2 earthquake on the Richter scale.

Mercalli Scale: _____

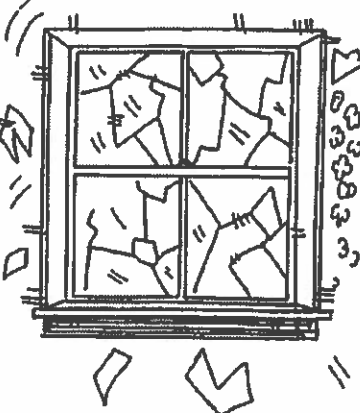

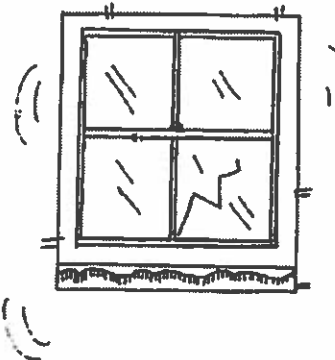
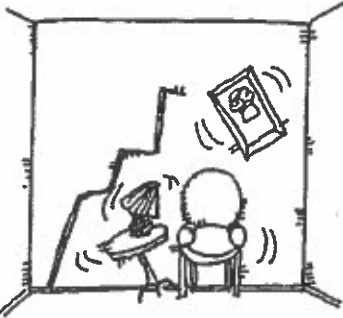

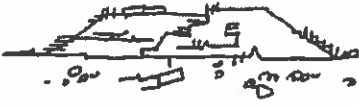
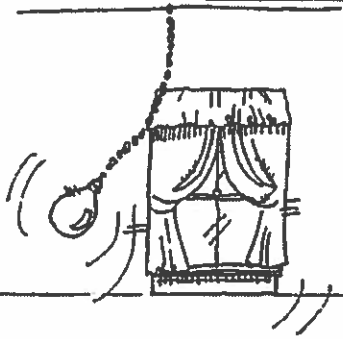
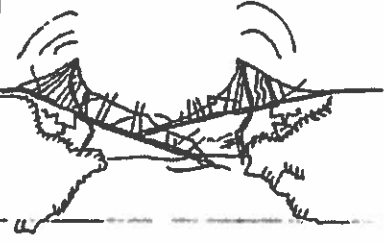
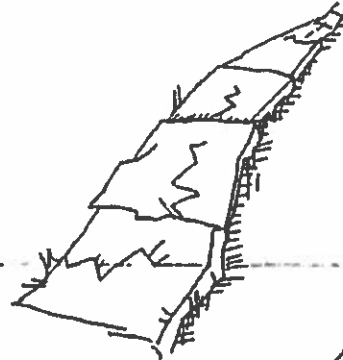
a. _____

Activity 1: Tabulating Earthquakes. Use the Richter Scale chart below to rate the pictures on the backside.

NUMBER	RESULTING EFFECTS
0	Smallest vibrations; detected only on the seismograph
1	Recorded on the seismograph but not felt by humans
2	Felt by some animals
3	Very weakly felt by some humans
4	Can be felt widely in homes and cars
5	Some shaking, breaking of windows, walls may crack, other minor damage
6	Strong tremors, pavements, swimming pools, tennis courts crack, walls begin to fall
7	Major earthquake, buildings and houses collapse, railways and bridges are destroyed
8	Great destruction and loss of life and property in populated areas
9	A catastrophe
10	Total destruction

Tabulating Earthquakes

Rate the following situations on the Richter Scale by circling the appropriate numbers.

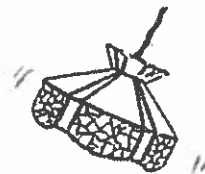
<p>1 2 3 4 5 6 7 8 9 10</p> 	<p>1 2 3 4 5 6 7 8 9 10</p> 	<p>1 2 3 4 5 6 7 8 9 10</p> 
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<p>1 2 3 4 5 6 7 8 9 10</p> 	<p>1 2 3 4 5 6 7 8 9 10</p> 	<p>1 2 3 4 5 6 7 8 9 10</p> 

Activity 2: How Big Was It? Write a Roman numeral from I to XII by each picture, with I being the least damage and XII the most damage.

How Big Was It?

Mercalli Scale

Number this column from I to IV.



A — Felt by some people. Hanging objects may swing.



B — Felt indoors. Vibration is like that caused by a passing truck.



C — Hardly felt by people. Detected by instruments.



D — Felt by many indoors and a few outdoors. At night some wake up. Dishes, windows and doors rattle.

Number this column from V to VIII.



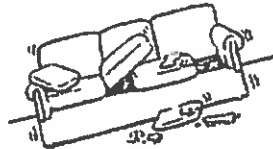
E — Most are alarmed and run outside. Well constructed buildings are damaged a little, and poorly constructed buildings are hurt more.



F — Specially designed structures show little damage. Ordinary ones show more damage. Poorly built structures show great damage.

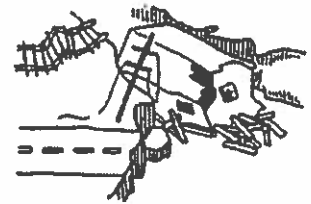


G — Felt by nearly all. Many wake up. Some dishes and windows break. Unstable objects overturn.



H — Felt by all. Many are frightened and run outdoors. Some heavy furniture moves. Some plaster falls.

Number this column from IX to XII.



I — Almost all buildings and bridges are destroyed. Railroad tracks bend. Broad cracks appear in the ground.



J — All buildings are damaged. Some buildings collapse. Underground pipes break.



K — Total destruction. Waves show up on the ground surface.



L — Many buildings are destroyed. Ground cracks apart. Landslides occur on steep slopes.

The Modified Mercalli Scale		Level Of Damage	The Richter Scale
1.0 - 4.0	Instrumental to moderate	No damage	≤ 4.3
5	Rather Strong	Damage negligible. Small, unstable objects displaced or upset; some dishes and glassware broken.	4.4 - 4.8
6	Strong	Damage slight. Windows, dishes, glassware broken. Furniture moved or overturned. Weak plaster and masonry cracked.	4.9 - 5.4
7	Very Strong	Damage slight-moderate in well-built structures; considerable in poorly-built structures. Furniture and weak chimneys broken. Masonry damaged. Loose bricks, tiles, plaster and stones will fall.	5.5 - 6.1
8	Destructive	Structure damage considerable, particularly to poorly built structures. Chimneys, monuments, towers, elevated tanks may fail. Frame houses moved. Trees damaged. Cracks in wet ground and steep slopes.	6.2 - 6.5
9	Ruinous	Structural damage severe; some will collapse. General damage to foundations. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground.	6.6 - 6.9
10	Disastrous	Most masonry and fram structures/foundations destroyed. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Sand and mud shifting on beaches and flat land.	7.0 - 7.3
11	Very Disastrous	Few or no masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service.	7.4 - 8.1
12	Catastrophic	Rails bent. Widespread earth slumps and landslides. Damage nearly total. Large rock masses displaced. Lines of sight and level distorted.	> 8.1