

Chapter 9

Use with Section 3

ENRICHMENT

● Destruction by Earthquakes

Earthquake Intensity

In addition to the magnitude of an earthquake, seismologists also try to determine the intensity of an earthquake. Intensity is the damage caused on the surface by an earthquake. In 1902, Italian seismologist Giuseppe Mercalli developed an intensity scale. The scale has since been modified. The scale uses Roman numerals to designate the amount of damage caused by an earthquake.

Study the Modified Mercalli Scale and then answer the questions.

Modified Mercalli Scale of Earthquake Intensity

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| <p>I. Not felt except by a very few under especially favorable circumstances. Birds and animals uneasy. Delicately suspended objects may swing.</p> <p>II. Felt only by a few persons at rest, especially on upper floors of buildings.</p> <p>III. Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Parked cars may rock slightly. Vibrations like the passing of light trucks. Duration of shaking can be estimated.</p> <p>IV. Felt indoors by many, outdoors by few. If at night, some awakened. Dishes, windows, doors disturbed. Walls creak. Sensation like the passing of heavy trucks. Parked cars rock noticeably.</p> <p>V. Felt by nearly everyone. Some dishes, windows, etc., broken. A few instances of cracked plaster. Unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.</p> <p>VI. Felt by all. Many frightened and run outdoors. Some heavy furniture moved. Books knocked off shelves, pictures off walls. Small church and school bells ring. A few instances of damaged chimneys. Otherwise, damage is slight.</p> <p>VII. Everybody runs outdoors. Difficult to stand up. Negligible damage in buildings of good design and construction; slight to moderate in well-built ordi-</p> | <p>nary structures; considerable in poorly built or badly designed structures; some chimneys broken.</p> <p>VIII. Damage slight in specially designed structures; partial collapse in ordinary buildings; great damage to poorly built structures. Panel walls thrown out of frame structures. Chimneys, factory stacks, columns, monuments, and walls fall. Heavy furniture overturned. Some sand and mud ejected from cracks in the ground. Changes in well water.</p> <p>IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; partial collapse of substantial buildings. Buildings shifted off foundations, ground cracked. Serious damage to reservoirs and underground pipes. General panic.</p> <p>X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed. Ground badly cracked. Rails bent slightly. Considerable landslides from river banks and steep slopes. Shifted sand and mud. Water splashed over banks.</p> <p>XI. Few masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines out of service. Earth slumps and land slips in soft ground. Rails bent severely.</p> <p>XII. Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.</p> |
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1. At what intensity is there considerable damage to poorly built buildings? _____

2. If you are on the first floor in a building, are you likely to feel an intensity II tremor? _____

3. If the pendulum of a clock in your home stops during an earthquake, at least what intensity is the earthquake in your area? _____

4. During the Lisbon earthquake in 1755, a second shock wave hit. It caused the river to pull back from its banks and then the water surged forward. What intensity do you think the second shock wave was? _____