

Earthquake Safety

You have learned that earthquakes can be destructive, but the damage and loss of life can be minimized. Although earthquakes cannot be predicted reliably, **Figure 19** shows where earthquakes are most likely to occur in the United States.

Knowing where large earthquakes are likely to occur helps in long-term planning. Cities in such regions can take action to prevent damage to buildings and loss of life. Many buildings withstood the 1989 San Francisco earthquake because they were built with the expectation that such an earthquake would occur someday.

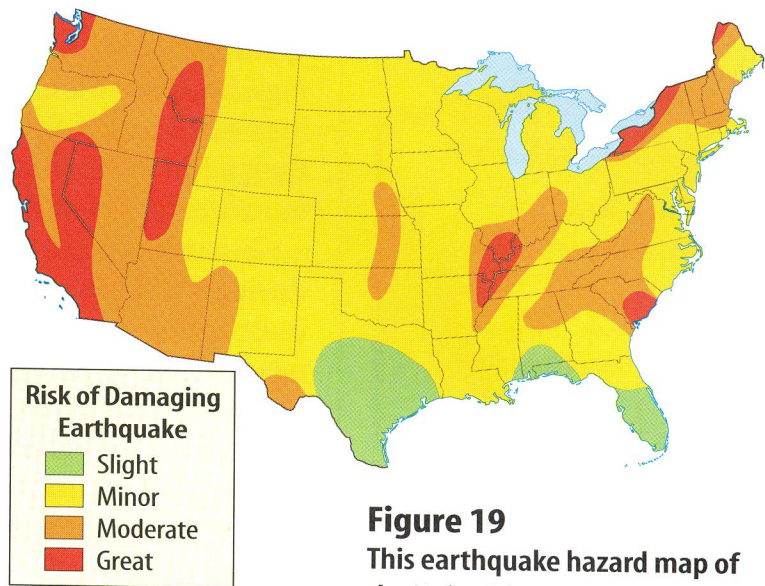


Figure 19
This earthquake hazard map of the United States shows where earthquakes are most likely to cause severe damage.

Math Skills Activity

Using Multiplication to Compare Earthquake Energy

Example Problem

The Richter scale is used to measure the magnitude of earthquakes. For each number increase on the Richter scale, 32 times more energy is released. How much more energy is released by a magnitude 6 earthquake than by a magnitude 3 earthquake?

Solution

- This is what you know:* magnitude 6 earthquake, magnitude 3 earthquake, energy increases 32 times per magnitude number
- This is what you need to find out:* amount of additional energy released
- This is the procedure you need to use:* Find the difference in magnitude numbers, then use that number of multiples of 32 to find the amount of additional energy released.
- Solve the equation:*
difference in magnitude = $6 - 3 = 3$
multiply 32 times itself 3 times: $32 \times 32 \times 32 = 32,768$
32,768 times more energy is released

Practice Problem

Calculate the difference in the amount of energy released between a magnitude 7 earthquake and a magnitude 2 earthquake.

For more help, refer to the **Math Skill Handbook**.