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Activity

Measuring earthquakes

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Read the Geographical Skills column in WIDELAND Vol. 32, No. 2. This activity sheet will consolidate your understanding of the Moment Magnitude and Mercalli scales, which are used to measure earthquakes.

Task 1

Look carefully at Figure 1 on p.4, which shows a graph of the Moment Magnitude Scale.

Describe the power and commonality of the 1995 earthquake in Kobe, Japan by including:

- The magnitude
- Energy release (equivalent kilograms of explosive)
- Number per year (worldwide) of earthquakes this size

Challenge: Bearing in mind that the Moment Magnitude Scale is a logarithmic scale, approximately how many times more powerful was the Chile earthquake of 1960?

Task 2

Using the Mercalli Scale, decide the intensity of each earthquake described in the table below. Now, use your map to answer the questions at the end of the article.

When you have completed them to the best of your ability, use the answers box to check and correct your answers.

Earthquake description	Intensity using the Mercalli Scale
Books fell off a shelf	
An electricity pylon fell to the ground	
Gentle shaking of the ground	
A whole neighbourhood was destroyed	
Tiles fell off a roof	
There was a landslide which blocked a road	
Cracks appeared in buildings	

Teacher notes

This sheet could be given as homework or used as a class activity. It aims to encourage students to apply their knowledge of the Moment Magnitude and Mercalli Scale and assess their understanding.

Answers

Task 1: The Kobe earthquake in Japan (1995) was approximately 6.6 on the Moment Magnitude Scale. This is equivalent to approximately 12,000,000,000 kilograms of explosive. This size of earthquake occurs approximately 20 times per year around the world.

Challenge: The Chile earthquake of 1960 was around 9.6 on the Moment Magnitude Scale, which is around 30 times more powerful than the Kobe earthquake in 1995.

Task 2:

Earthquake description	Intensity using the Mercalli Scale
Books fell off a shelf	VI
An electricity pylon fell to the ground	X
Gentle shaking of the ground	I to IV
A whole neighbourhood was destroyed	Over X
Tiles fell off a roof	VII
There was a landslide which blocked a road	X
Cracks appeared in buildings	VIII to X

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