

<p style="text-align: center;"><b>‘Geohazards Let’s Work it Out!’</b></p>	<p><b>Curriculum Area:</b> Mathematics and Statistics, <b>Level 3-4</b></p>	<p><b>Strand:</b> Number and Algebra</p>	<p><b>Background Pages:</b> All</p>
<p><b>Achievement Objectives:</b></p>	<p>Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>Conduct investigations using the statistical enquiry cycle: <i>(gathering, sorting, and displaying multivariate category and whole-number data and simple time-series data to answer questions).</i></p>		
<p><b>Learning Intention:</b></p>	<p>Students will be able to solve problems and conduct statistical investigations based on the <i>Geohazards</i> virtual Field Trip.</p>		

1. Each whole number on the Richter scale represents an earthquake that is 10 times more powerful than the preceding one. That is, a 2.0 earthquake is 10 times more powerful than a 1.0 earthquake. What number on the Richter scale is 100 times more powerful than a 2.0 earthquake? \_\_\_\_\_

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2. The Alpine Fault in the South Island is a place where the Australian and Pacific tectonic plates meet on land. The blocks of land on either side of the fault do not slide past each other smoothly. Instead, they build up stress and then slip every now and then, causing large earthquakes.

Major earthquakes have happened on the Alpine Fault in about the years 1100, 1450, 1620 and 1717.

3. Work out how many years it has been between each of these earthquakes:  
 1100 to 1450 = \_\_\_\_\_ 1450 to 1620 = \_\_\_\_\_ 1620 to 1717 = \_\_\_\_\_

4. What is the average number of years between the earthquakes in Question 2?

5. If we took the average number of years between earthquakes, when could we have expected another major earthquake on the Alpine Fault? \_\_\_\_\_

6. Why do you think there has not been an earthquake recently on the Alpine Fault and what do you expect to happen in the future? \_\_\_\_\_

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7. If 300 cars were damaged during ash fall after a volcanic eruption and they cost on average \$1500 to repair how much would the total cost be? \_\_\_\_\_

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8. A sprint running track is 100m long. Convert the following Geohazard measurements into the equivalent number of running tracks (round down to the nearest whole number):

a). The Tarawera eruption caused a rift in the mountain, 17 kilometres long or \_\_\_\_\_ running tracks

b). Mount Tarawera is 1111m or \_\_\_\_\_ running tracks.

c). When Mount Tarawera erupted in 1886 the eruption was heard as far away as Blenheim, over 500km away or \_\_\_\_\_running tracks.

9. In New Zealand there here have been about 10 tsunami higher than 5 metres since 1840. On average how many tsunami is that? (one per how many years?)

10. Go to the [Geonet](http://www.geonet.govt.nz) website and take a look at the 10 most recent earthquakes and put them in order from the biggest to the smallest in the table.

	Date	Location	Magnitude
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

11. Now graph these earthquakes;  
(Don't forget to work out a reasonable scale for the magnitude).

