









# Revision Checklist – Restless Earth 2

	Revised for homework? (1)	Revised for homework? (2)	Revised in lesson?
Earthquake magnitude, focus, and epicentre.			
Primary and secondary effects of earthquakes.			
Immediate and long-term responses to earthquakes.			
Haiti earthquake effects and responses.			
New Zealand earthquake effects and responses.			
Haiti and New Zealand earthquakes similarities and differences.			
How wealth influences earthquake effects and responses.			
How relief influences earthquake effects and responses.			
Earthquake-resistant buildings.			
Geographical skills.			



<a href="#">Coordinates</a> 	<a href="#">OS maps</a> 	<a href="#">Grid references</a> 	<a href="#">Distance</a> 	<a href="#">Percentages</a> 	<a href="#">Averages</a> 	<a href="#">Writing tips</a> 	<a href="#">Revision tips</a> 
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# Knowledge Organiser – Restless Earth 2

## Earthquakes

### Knowledge

Earthquakes happen when the ground suddenly, intensely shakes.

Earthquakes happen because friction between jagged, moving tectonic plates causes pressure to build up. Eventually, the plates slip and the pressure is released as energy.

The **magnitude** of an earthquake is the amount of energy released as the ground shakes.

The **moment magnitude scale** measures how much energy is released as the ground shakes. Magnitude 0 earthquakes are weakest. Magnitude 10 earthquakes are strongest.

The **focus** of an earthquake is the place in the crust where energy is released.

The **epicentre** of an earthquake is the place on the surface directly above the focus.

### Revision Questions

What is an earthquake?

Why do earthquakes happen?

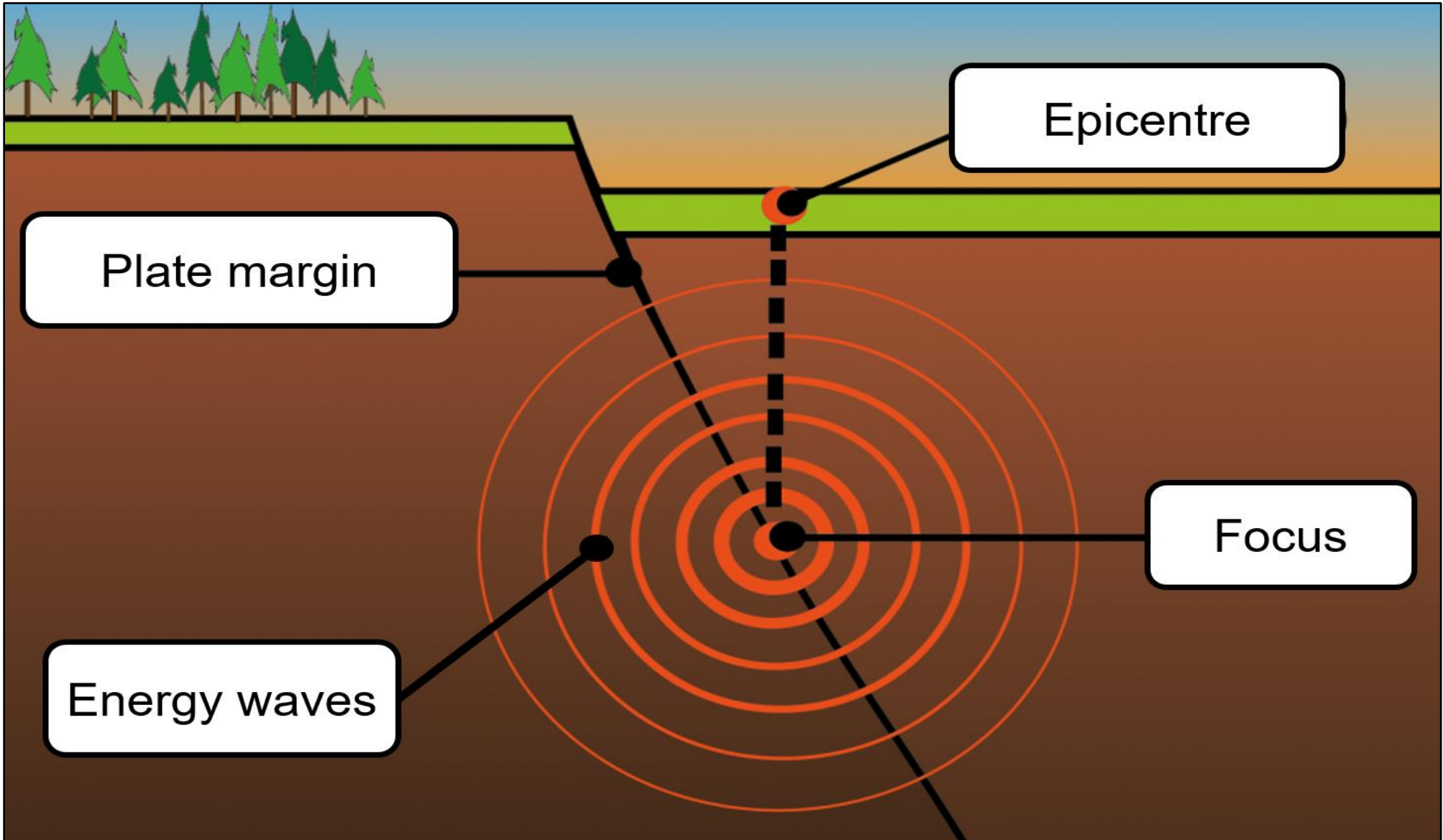
What is magnitude?

How is magnitude measured?

What is the focus of an earthquake?

What is the epicentre of an earthquake?

# Knowledge Organiser – Restless Earth 2



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## Effects and Responses

### Knowledge

Earthquakes have **effects**. For example, houses collapsing and people being injured.

**Primary effects** of earthquakes are caused by the ground shaking. For example, houses collapsing, or gas pipes breaking.

**Secondary effects** of earthquakes are caused by the primary effects. For example, people becoming homeless, or fires.

People **respond** to earthquakes. For example, saving people from collapsed houses.

**Immediate responses** are only temporary. They happen in the hours or days after an earthquake. For example, using tents for shelter, or extinguishing fires.

**Long-term responses** are more permanent. They happen in the months or years after an earthquake. For example, rebuilding houses, or repairing gas pipes.

### Revision Questions

Give 1 example of an effect.

What are primary effects?

Give 1 example of a primary effect.

What are secondary effects?

Give 1 example of a secondary effect.

Give 1 example of a response.

What are immediate responses?

Give 1 example of an immediate response.

What are long-term responses?

Give 1 example of a long-term response.

# Knowledge Organiser – Restless Earth 2

## Haiti

Haiti is a country in North America. It is on an island in the Atlantic Ocean. Haiti borders the Dominican Republic.



## New Zealand

New Zealand is a country in Australasia. It is on two islands in the Pacific Ocean.



## Haiti Earthquake

### Cause:

- Conservative plate margin.
- North American Plate.
- Caribbean Plate.

### Earthquake:

- Time = 4:53pm.
- Focus = 12km deep.
- Magnitude = 7.0.

### Primary effects:

- 316,000 people were killed.
- 250,000 homes were damaged.
- 60% of government buildings collapsed, including a prison and the Presidential Palace.

### Secondary effects:

- Hospitals and morgues became full. Bodies piled up on the streets, causing diseases to spread.
- 1m people became homeless.
- 4,000 prisoners escaped.
- 1 in 5 people lost their jobs.
- People migrated to the Dominican Republic.

### Immediate responses:

- USA gave \$100m aid, EU gave \$330m aid.
- 1m temporary tarpaulin shelters set up.
- 4.3m people used food aid rations.
- Temporary schools created in aid camps.
- UN Peacekeeper soldiers were deployed to restore order.

### Long-term responses:

- “Food-for-work” schemes to clear rubble.
- US Army engineers have rebuilt water and sewage pipes.
- Clean water and sanitation have been restored for 1.7m people.
- In 2017, the Haitian Government began rebuilding the Presidential Palace.

## New Zealand Earthquake

### Cause:

- Conservative plate margin.
- Australian Plate.
- Pacific Plate.

### Earthquake:

- Time = 12:51pm.
- Focus = 5km deep,
- Magnitude = 6.3.

### Primary effects:

- 181 people were killed.
- 2,000 people were injured.
- 50% of buildings in central Christchurch collapsed (e.g. Canterbury Television Centre).
- Cathedral remained standing, but its spire fell.
- 100s of km of water and sewage pipes damaged.
- NZ\$40 billion worth of damage.

### Secondary effects:

- 80% of Christchurch was without electricity.
- Rugby World Cup games could not be hosted in Christchurch.

### Immediate responses:

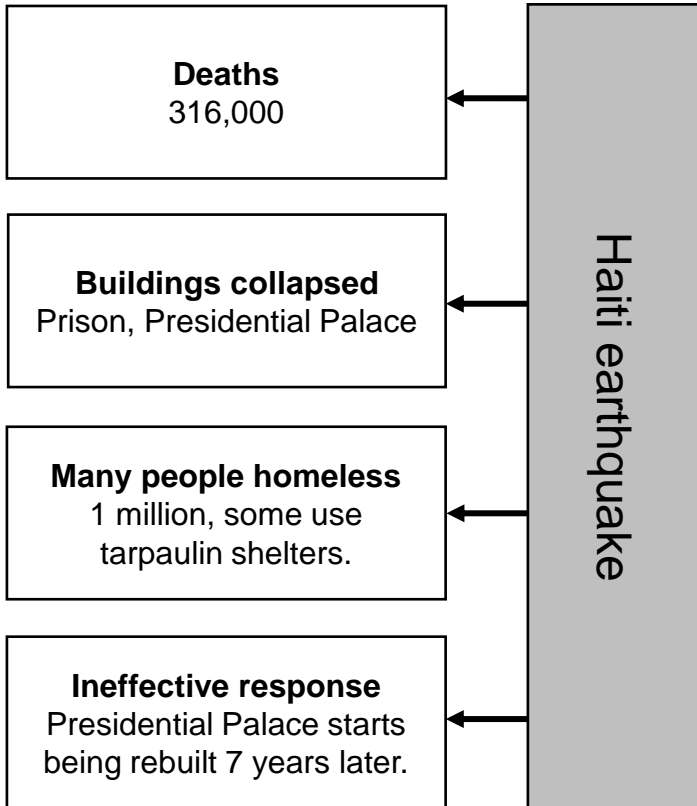
- Christchurch Council funded temporary housing and chemical toilets for 30,000 people.
- NZ\$7m aid from other countries.
- Some aid came as resources. For example, the UK sent a victim identification police team.

### Long-term responses:

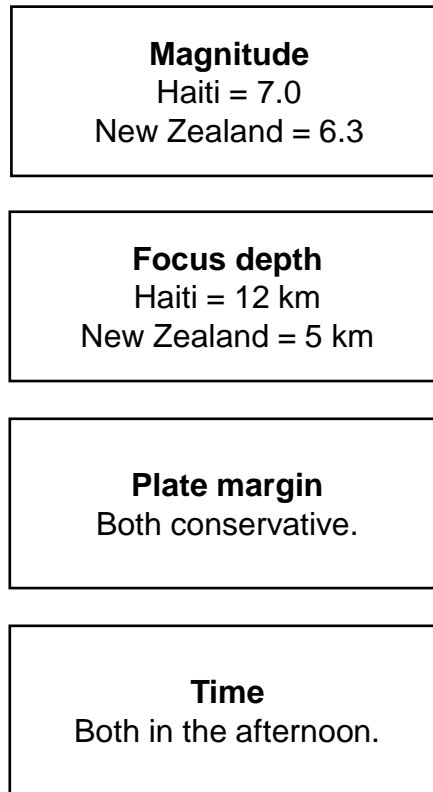
- By August, 80% of roads were repaired and 100% of water and sewage pipes were repaired.
- Private insurance companies paid out NZ\$898m for repairs.

# Knowledge Organiser – Restless Earth 2

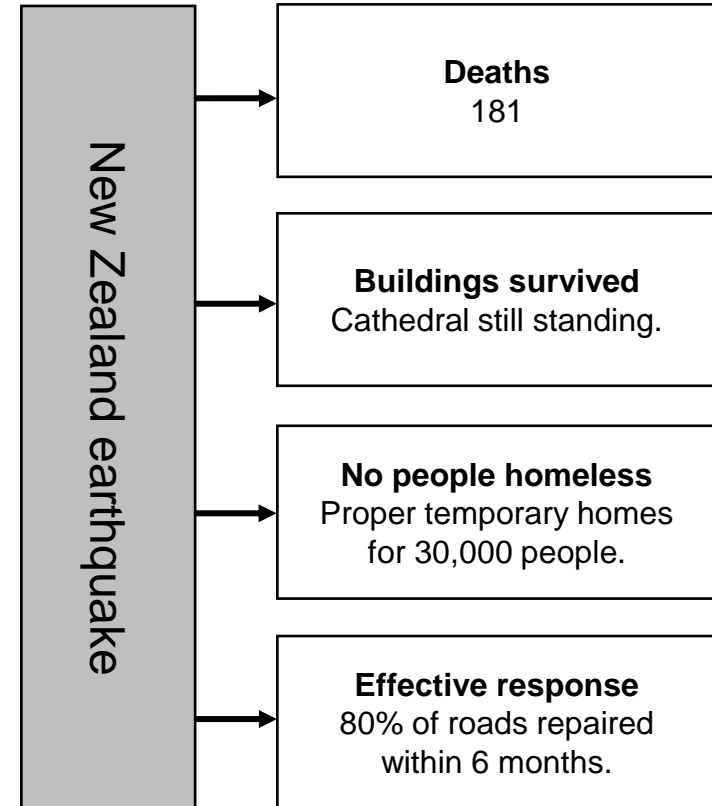
## Differences



## Similarities



## Differences



## Revision Questions

What was **similar** about the Haiti and New Zealand earthquakes? What was **different** about the Haiti and New Zealand earthquakes?



## Comparing Earthquakes (1 / 2)

### Knowledge

Earthquakes of a similar magnitude with a similar focus depth can have different effects.

### How can wealth influence effects and responses? (1 / 2)

Haiti is a lower middle income country (LMIC). Average income per person is \$1,300.  
New Zealand is a high income country (HIC). Average income per person is \$45,300.

More wealth can reduce the effects of earthquakes because it can be used to pay for:

**Emergency services.** For example, ambulances and paramedic training. This means that people injured by collapsing buildings can be treated quickly. This means that they are more likely to survive.

**Education.** For example, engineer training. This means that more buildings can be designed to resist collapse. This means that more buildings are less likely to collapse during earthquakes.

More wealth can improve responses to earthquakes because it can be used to pay for:

**Technology.** For example, phones with fast mobile internet. This means that the government can easily share evacuation plans. This means that people can quickly and easily move to safety. This means that they are more likely to survive.

### Revision Questions

- New Zealand is a \_\_\_\_\_. It is wealthier than Haiti, which is a \_\_\_\_\_.
- How can wealth reduce the effects of earthquakes?
- How can wealth improve responses to earthquakes?

## Comparing Earthquakes (2 / 2)

### Knowledge

### Revision Questions

#### How can wealth influence effects and responses? (2 / 2)

More wealth can improve responses to earthquakes because it can be used to pay for:

**Resources.** For example, building materials. This means that infrastructure like roads and water pipes can be quickly rebuilt. This means that secondary effects like disrupted travel and floods are less severe.

#### How can relief influence effects and responses?

Christchurch was the city most affected by the New Zealand earthquake. It is mostly flat. Port-au-Prince was the city most affected by the Haiti earthquake. It is on steep slopes.

**Steeper relief** can worsen the effects of earthquakes because **landslides** are more likely to happen. This means that buildings are likely to be buried as well as collapse. This means that more buildings are likely to be destroyed during earthquakes.

**Steeper relief** can worsen the responses to earthquakes because **landslides** are more likely to happen. This means that buildings are likely to become blocked. This means that emergency services cannot easily travel to the places with most injuries.

- How can wealth improve responses to earthquakes?
- Which city was most affected by each earthquake? What is relief like in each city?
- How can steeper relief worsen the effects of earthquakes?
- How can steeper relief worsen the responses to earthquakes?

## Earthquake Engineering

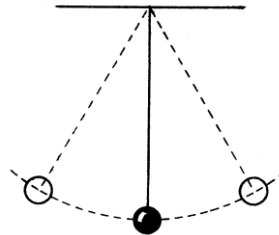
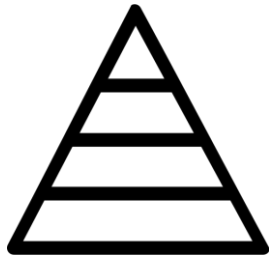
### Knowledge

Buildings can never be designed to survive all earthquakes. However, buildings can be designed to have a lower chance of collapsing. They are **earthquake-resistant** buildings.

If a building has a **wide base**, its centre of gravity is less likely to move outside that base when it is shaking. This means that it is less likely to collapse. For example, **pyramids** are resistant to collapse during earthquakes.

**Springs** and **rollers** in the **foundations** of buildings absorb the energy of the shaking ground. This means that buildings with springs and rollers are less likely to collapse.

**Counterweights** suspended in the top of buildings counteract the energy of the shaking ground. This means that buildings with counterweights are less likely to collapse.



### Revision Questions

- What does “earthquake-resistant” mean?
- Why are pyramid-shaped buildings unlikely to collapse during an earthquake?
- How do springs and rollers reduce the risk of buildings collapsing during earthquakes?
- How do counterweights reduce the risk of buildings collapsing during earthquakes?