



1 A tsunami is a powerful and destructive wave or series of waves. They happen when a lot of sea water is suddenly moved. This is called displacement — like the way bathwater rises when you get in.

In open seas, tsunamis look like large ocean swells. By the time they reach land they can be many metres high and cause lots of damage.

2 There are a number of events that can result in a tsunami.

The Earth's crust is broken into a series of plates, known as tectonic plates. These plates float over a slow moving liquid called the mantle. The movement between the plates is what causes earthquakes. Earthquakes can cause tsunamis.

3 An earthquake under the sea can make the sea floor rise or fall. As it rises, huge amounts of water are pushed upwards and waves form. If the sea floor falls, seawater rushes in to restore the level. This drags water away from the shore. The force of water flowing towards the quake area makes the surface of the sea bulge and form a tsunami.

4 Landslides beneath the sea can throw rocks across the seabed and cause water displacement as well. A volcano can erupt underwater, which will also force up the sea level. Even earthquakes on land can create tsunamis.

A tsunami wave is very long and has lots of energy. It moves the water right down to the ocean bed. Out at sea, long periods can pass between wave crests. The speed of the wave depends on the depth of the water.

5 The sea becomes shallower closer to land, but the waves still have lots of energy. The waves also become shorter and the energy is forced into less and less water. This forces the water up into steeper waves that come closer together.

A common mistake is to call tsunamis "tidal waves". These are different things. Tides are caused by the moon and sun's gravity making the sea level rise and fall. When the sun, moon and Earth are in line, their gravity is strong enough to create a high tide. These tides are called spring tides. A tidal wave is a large incoming wave caused by spring tides and high winds.

6 Tsunami is a Japanese term meaning harbour (tsu) wave (nami). It was first used when fishermen returned from sea to find their harbour destroyed.

Tsunamis mostly occur in the Pacific Ocean area. There is a warning system for countries in these areas. Computers can predict when a tsunami will arrive. This gives people enough time to head to safety.

An earthquake in the Indian Ocean caused a series of tsunamis on 26<sup>th</sup> December 2004. Hundreds of thousands of people died. This happened in an area without a warning system.

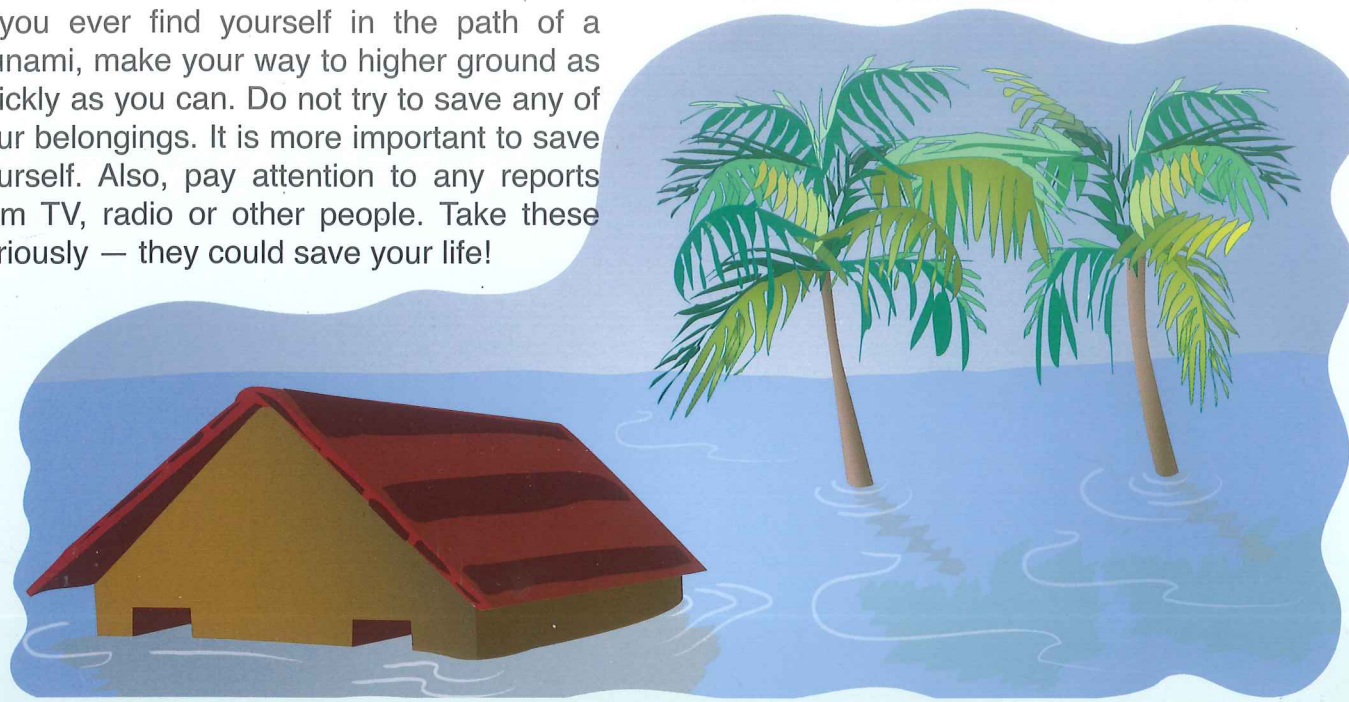
7 There are a few natural signs that a tsunami may be on its way. Animals seem to sense danger and will flee to higher ground. You may hear a rumble or roar from the surging water. The ocean may start bubbling and smelling like gas from underground. Finally, if you see the water being sucked away from the beach, you'd better run for it.

8 Some countries in tsunami zones are trying to reduce the damage they cause by:

- building walls.
- building floodgates and channels to redirect the incoming water.
- putting up notices informing people of the early signs of a possible tsunami and telling them where to go.

Planting forests along coastlines could also be a good thing to do. If there are enough trees, they can stop the force of the tsunami and save people further inland.

- 9 If you ever find yourself in the path of a tsunami, make your way to higher ground as quickly as you can. Do not try to save any of your belongings. It is more important to save yourself. Also, pay attention to any reports from TV, radio or other people. Take these seriously — they could save your life!



## Questions

- A tsunami is
  - a series of powerful waves.
  - a tidal wave.
  - not dangerous.
- The Earth's crust is broken into
  - oceans.
  - tectonic plates.
  - mantles.
- At what point do tsunami waves become really tall?
  - out at sea
  - in shallow water
  - on land
- What causes tides?
  - earthquakes
  - tsunamis
  - the moon and the sun
- What is not a natural warning for a tsunami?
  - animals fleeing
  - a bad smell
  - dark skies
- Do you think that a tsunami warning system is useful on its own?
  - No, people need to understand how they can save themselves in a tsunami.
  - Yes, if people can be warned, they can prevent the tsunami.
  - No, the warning system could be wrong and make people panic for nothing.

## Vocabulary

Find words in the text that match the meanings below. The word is in the section shown in brackets.

- Strong and mighty in force (1)
- Not as deep (5)
- To foresee an event (6)
- To escape or run away from (7)
- To change something's direction (8)

## Grammar

A **prefix** is a letter or letters added to the beginning of a word to change its meaning. E.g. like/**dis**like. Add a prefix from the box to make words.

re under in dis

- turn
- forming
- believe
- ground

## Back To The Text...

- In Section 1, "A tsunami is a powerful and destructive wave ..." is
  - a fact.
  - opinion.
- Another good name for this text would be:
  - Tsunami Terror
  - Tidal Waves

- The illustration on page 3 probably shows a village
  - before a tsunami.
  - after a tsunami.

## Cloze

### Tornado Terror

Choose from the following words to complete this cloze passage.

hundreds winds cloud  
destructive formed

Tsunamis are not the only 19 force in nature; tornadoes, hurricanes and cyclones can make a big mess too. Tornadoes are 20 in thunderclouds when warm air, which is rising quickly, is twirled around by the huge winds at the top of the 21. Air is sucked into this spinning whirlwind which then snakes its way to the ground. This can be big trouble because some tornado 22 have been measured at 450 kilometres per hour. Severe tornadoes can take 23 of lives!

## Challenge Option

Vocabulary: How many words can you make from the word TSUNAMI?

