PLEASE NOTE:
Students must complete the "Initiation" section of the Monster Guard app before they begin this activity, in order to gain access to the Tsunami training mission.

Opening

Inform students that they are going to learn about tsunamis and how to stay safe when a tsunami happens. Ask students to raise their hands if they know what a tsunami is. Then ask them if they have ever seen a tsunami (even on TV). Assess for prior knowledge by asking the students to share what they know about tsunamis. Then, show them a video about tsunamis at **www.youtube.com/watch?v=x0GX_kc7JZo**. Discuss the video with the students.

Monster Guard

Tell students that will be learning more about tsunamis with a cool app called **Monster Guard**. Explain that **Monster Guard** was created by the American Red Cross as a way for students to have fun learning, practicing, and sharing how to stay safe during different types of emergencies.

Adapt your teaching instructions to the various methods of playing **Monster Guard** – whether you are using a smart board to play as a class or having students play in small groups or individually using mobile devices.

Before they begin playing, remind students that they need to watch the videos before and after the training mission for information that will help them complete the classroom activities.

Pass out the activity sheet, read the introduction together, and have students go through the Tsunami training mission with Tolly. Remind them to write their score in the space provided on the activity sheet. As a class, have students suggest ways they think they could raise their scores the next time.

Demonstration (ALL GRADES)

Begin with a demonstration to show students how a tsunami differs from normal ocean waves.

You will need:
- a shallow pan
- straws
- a 2-liter bottle with a screw-on cap
- gravel

Procedure:

- Fill the shallow pan with water and place it on a table at the front of the room.
- Have student volunteers use the straws to blow on the surface of the water.
- Discuss the waves generated by this "wind."
- Ask students how they think wind-generated waves are different from tsunami waves (Wind generated waves only affect the surface of the water. Tsunamis rapidly displace water.)
- Hold up a 2-liter bottle filled with 2 inches of gravel.
- Add water to the bottle until it is half full, then secure the cap tightly and gently lay the bottle on its side. The gravel will slide into a hill, which represents a beach.
- To create a tsunami, have a student lift the mouth of the bottle slightly and suddenly. Though the mouth of the bottle may rise less than an inch, the upward motion will send a sizable wave onto the gravel beach.
- Talk about how this is similar to what happens when an undersea earthquake pushes up on the ocean, sending out a tsunami. Explain that it is like overfilling a bathtub when the water comes over the edge. There are no waves, just rising water that rushes across the land. Tell the students that tsunamis can also be generated by other things, such as a large landslide.

Grades 1-3

PART 1. Read the introduction to Part 1 of the activity. Talk about how to look for the warning signs of a tsunami, and how sometimes you don't have much time to prepare, so you should always be ready to act – get to higher ground as fast as you can! Have students work individually to complete Part 1 of the activity. Schedule time for students to share their drawings.

PART 2. Have students work individually to complete Part 2 of the activity. Remind them that they can replay the **Monster Guard** Tsunami training mission if they need help. Review the answers in a class discussion.

Answers: (1) b; (2) a; (3) a.

Continued on next page

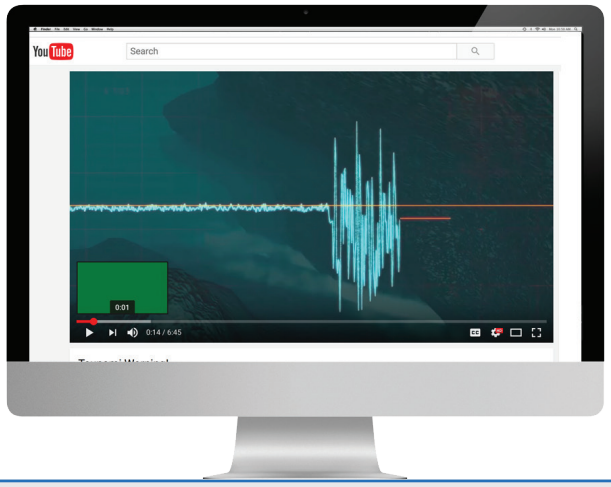
Grades 4-6

PART 1. Read the introduction to Part 1 of the activity. Talk about how to look for the warning signs of a tsunami – such as receding water and the exposing of marine life on the bottom of the ocean – and how sometimes you don't have much time to prepare, so you should always be ready to act – get to higher ground as fast as you can! Have students watch the video about Tilly Smith and discuss how she knew a tsunami was on the way. Have students work individually to write their stories imagining themselves keeping people safe the way Tilly did. Schedule time for students to share their stories.

PART 2. Have students work individually to complete Part 2 of the activity. Remind them that they can replay the **Monster Guard** Tsunami training mission if they need help. Review the answers in a class discussion.

Answers: (1) Cover, Hold On, shoreline, ground; (2) coming, higher; (3) radio, television; (4) 15; (5) hours

PART 3. Show students the video "Tsunami Warning!" at **https://youtu.be/XIxhRs7bst4**, which dramatizes how the tsunami warning system would alert people across the Pacific to the approach of a tsunami generated by an earthquake off the coast of Chile. Discuss the benefits of the tsunami warning system and ask students to suggest potential improvements. Remind students that sometimes there may be no warning, so they need to know the natural signs that a tsunami may be approaching. Encourage students to learn more about the tsunami warning system and tsunami science at the NOAA Tsunami website, **http://tsunami.noaa.gov**, where they can find a real-time display of current tsunami activity.



Teachers:

Please provide feedback on this activity using our online feedback form at www.ymiclassroom.com/mgfeedback-tsunami.

Preparing for Tsunamis

Grades 1-3
Reproducible Master

Hi! I'm Tolly! A tsunami is a series of powerful, fast-moving waves. They are usually caused by an earthquake under the ocean. Want to learn more? Download **Monster Guard**. It's a free app from the American Red Cross that teaches kids how to be prepared for emergencies. Choose "Tsunami" on the main menu. Then join me on a training mission to learn how to stay safe when a tsunami is on the way. **Note:** You must have completed the **Monster Guard** Initiation section before you can access the Tsunami training mission.

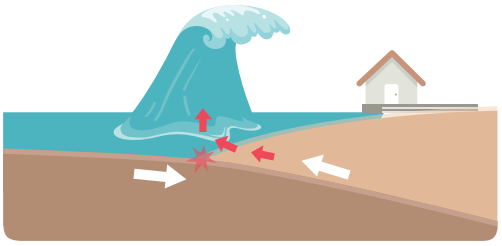
My Tsunami Safety Score: _____

Part 1

As you have seen, tsunamis are different from normal waves. They usually start when an undersea earthquake pushes the ocean water. That causes a series of powerful waves that move through the ocean very quickly – as fast as a jet airplane. When they reach shallow water near the shore, the waves slow down and start growing taller. These tall, powerful waves can cause a lot of damage. In fact, large tsunamis can flood the land up to a mile from the shore!

How can we tell if a tsunami is coming? For tsunamis that start far away, there will usually be a warning on the radio or television, and sirens will sound along the coastline. But for tsunamis that start nearby, there may not be time for a warning. That's why you need to watch for these signs that a tsunami may be on the way.

- The ocean pulls way back from the shore, or suddenly come up farther onto the beach than normal.
- The ocean looks like it is covered with bubbles.
- The ocean makes a loud roaring sound.
- You might see a large wave on the horizon or waves rushing toward the shore and flooding over the coastline.
- You feel a long or strong earthquake near the ocean.



Use this space to draw a picture showing one of the warning signs that a nearby tsunami could be on the way.

Preparing for Tsunamis

Part 2

Do you remember your tsunami safety training? Show what you learned. Circle the correct answer to each question.

1. If you feel an earthquake near the ocean, you should **immediately**…

- [ ] **a.** Watch the ocean.
- [ ] **b.** Drop, Cover, and Hold On

2. If you see the ocean pull back away from the shore…

- [ ] **a.** A tsunami may be coming, and you should move away from the shoreline and seek higher ground.
- [ ] **b.** The tsunami is over

3. To be prepared for tsunamis, you should be able to reach a safe area in...

- [ ] **a.** 15 minutes or less
- [ ] **b.** 1 hour or more

Replay the Monster Guard Tsunami training mission. See if you can score higher!

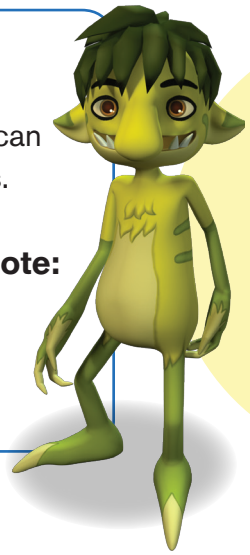
American Red Cross

Preparing for Tsunamis

Grades 4-6
Reproducible Master

Hi! I'm Tolly! A tsunami is a series of powerful, fast-moving waves usually caused by an earthquake under the ocean. Want to learn more? Download **Monster Guard**. It's a free app from the American Red Cross that teaches kids how to be prepared for emergencies. Choose "Tsunami" on the main menu. Then join me on a training mission to learn how to stay safe when a tsunami is on the way. **Note:** You must have completed the **Monster Guard** Initiation section before you can access the Tsunami training mission.

My Tsunami Safety Score: _____



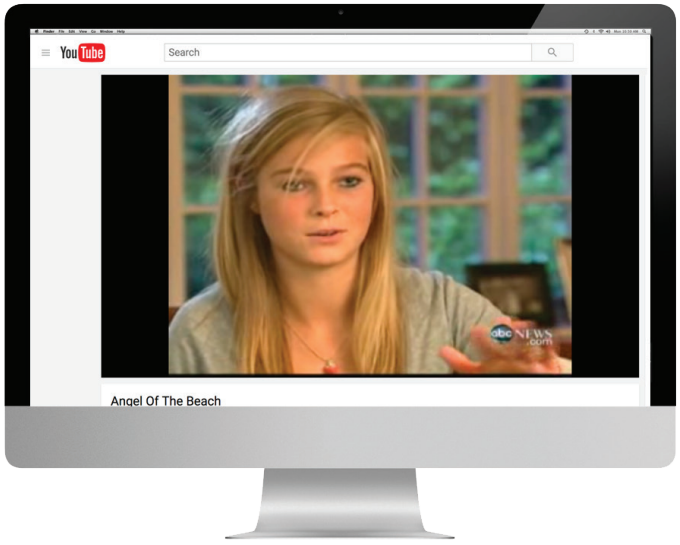
Part 1

As you have seen, tsunamis are different from normal waves. They usually start when an undersea earthquake pushes on the ocean water, causing a series of powerful waves that move through the ocean very quickly – as fast as a jet airplane. When they reach shallow water near the shore, the waves slow down and start growing taller. These tall, powerful waves can cause a lot of damage. In fact, large tsunamis can flood the land up to a mile from the shore!

How can we tell if a tsunami is coming? For tsunamis that start far away, there will usually be a warning on the radio or television, and sirens will sound along the coastline. But for tsunamis that start nearby, there may not be time for a warning. That's why you need to watch for these signs that a tsunami may be on the way.

- The ocean pulls way back from the shore, or suddenly come up farther onto the beach than normal.
- The ocean looks like it is covered with bubbles.
- The ocean makes a loud roaring sound.
- You might see a large wave on the horizon or waves rushing toward the shore and flooding over the coastline.
- You feel a long or strong earthquake near the ocean.

In 2004, a 10-year-old girl named Tilly Smith saved hundreds of people because she had learned the warnings signs of an approaching tsunami. Watch a video about Tilly at **www.youtube.com/watch?v=6C3CJX1-d_8**. Then imagine you are the one who needs to warn the grown-ups about a tsunami. Use the back of this sheet to describe the things you would need look out for that tell us a tsunami may be happening.



Preparing for Tsunamis

Grades 4-6
Reproducible Master

Part 2

Do you remember your tsunami safety training? Show what you learned by filling in the blanks to complete these safety tips.

1. If you feel an earthquake near the ocean, Drop, _____, and _____ until the shaking stops. Then move away from the _____. Seek higher _____ .

2. If you see the ocean pull back away from the shore, a tsunami may be _____. Move away from the shoreline and seek _____ ground.

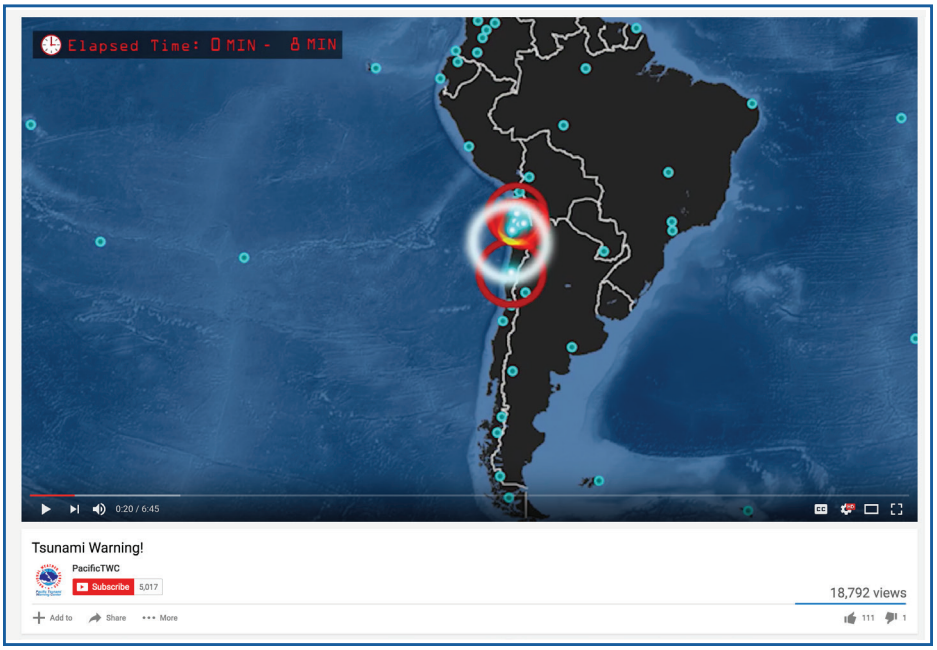
3. For updated emergency information about tsunamis, listen to a NOAA Weather Radio, tune into the Coast Guard emergency frequency station, or tune into a local _____ or _____ station.

4. To be prepared for tsunamis, you should be able to reach a safe area outside the Tsunami Hazard Zone in ____ minutes.

5. Stay away from the shore until local officials tell you it is safe. A tsunami is a series of waves that may continue for _____.

Part 3

Scientists use special "DART" buoys (Deep Ocean Assessment and Reporting of Tsunamis) and other sensors to gather information about tsunamis, so they can warn people who live where a tsunami might hit the shore. You can watch a video about this warning system at **https://youtu.be/XIxhRs7bst4** and learn more about how it works at **http://tsunami.noaa.gov**. Share what you learn in a class discussion.



Replay the Monster Guard Tsunami training mission. See if you can score higher!

American Red Cross