



Preparing for Tornadoes

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 Tornado training mission.



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Opening

Inform students that they are going to learn about tornadoes and how to stay safe during a tornado emergency. Ask students to raise their hands if they know what a tornado is. Then ask them if they have ever seen a tornado (even on TV). Assess for prior knowledge by asking students to share what they know about tornadoes (e.g. what did you see on TV, what is a tornado?). Explain that a tornado is a very powerful funnel-shaped storm with strong winds that can reach speeds of more than 250 mph.

Monster Guard

Tell students that they will be learning more about tornadoes 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 Tornado training mission with Olivia. 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.

Grades 1-3

Begin by telling students that they are going to help you create a model tornado in a jar. Perform the demonstration below. Then prompt students to discuss how this model is like and unlike a real tornado.

Demonstration:

You will need:

- a one-quart jar with lid, filled with water
- liquid dish detergent
- white vinegar
- green or blue food coloring.



Procedure:

- Fill the jar with 3/4 quart of water.
- Add 2 teaspoons of liquid dish detergent, 2 teaspoons of white vinegar, and 2 drops of food coloring.
- Place the lid on securely, and swirl the water in a counter-clockwise circular motion (because most tornadoes in the United States rotate counter-clockwise). A "tornado" will appear in the middle of the jar.
- To demonstrate the effects of a tornado, drop small objects like plastic animals or cars into the water and swirl again.

PART 1. Read the short explanation of how tornadoes form. (For a more detailed explanation, show students the animation at <http://ngm.nationalgeographic.com/2013/11/biggest-storm/tornado-formation>.) Have students work in small groups to complete Part 1 using the maps available at www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology. Also look at tornadopath.org, a live tornado tracker, which shows a map of activity in the past 48 hours. Review their answers in a class discussion.

Answers: (1) Answers vary by state; (2) Texas, Kansas, Florida; (3) Alaska, Rhode Island, District of Columbia, all of which average zero tornadoes per year.

PART 2. Have students work individually to complete Part 2 of the activity. Remind them that they can replay the **Monster Guard** Tornado training mission if they need help. Review the answers to questions 1 and 2 as a group, then call on students to show how they would protect themselves from a tornado if they were taking shelter in their tornado safety spot. Correct students who need help with this protective action. Students should understand that tornadoes are very powerful. Remind them that they must avoid windows and go

to the lowest floor of the home – if possible, a basement or storm shelter. They should crouch as low as possible on the floor, facing down, and cover their head with their hands. They should also cover themselves with padding, like a blanket or mattress, if they can. Students should also always follow guidance and training taught in school tornado drills. Encourage students to be ready by practicing at home as well.

Answers: (1) warning; (2) closet, bathroom.

PART 3. Have students work in small groups to complete Part 3 of the activity. Allow time for students to share their safety spots with the class. Then reinforce the tornado safety actions described above by having students demonstrate them again.



Grades 4-6

Tell students that they are going to help you create a model tornado in a jar. Perform the demonstration below. Then prompt students to discuss how this model is like and unlike a real tornado.

Demonstration:

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- liquid dish detergent
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- green or blue food coloring.

Procedure:

- Fill the jar with 3/4 quart of water.
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PART 1. Read the short explanation of how tornadoes form. (For a more detailed explanation, show students the animation at <http://ngm.nationalgeographic.com/2013/11/biggest-storm/tornado-formation>.)

Have students work in small groups to complete Part 1 using the maps available at www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology. Also look at tornadopath.org, a live tornado tracker, which shows a map of activity in the past 48 hours. Review their answers in a class discussion.

Answers: (1) Answers vary by state; (2) Texas, Kansas, Florida, Oklahoma, Nebraska, Illinois, Colorado, Iowa, Minnesota, Missouri, Alabama, Mississippi, Arkansas, Louisiana, South Dakota ; (3) April, May, June; (4) in Texas, Kansas, and Florida during April, May, and June.

PART 2. Have students work individually to complete Part 2 of the activity. Remind them that they can replay the **Monster Guard** Tornado training mission if they need help. Review the answers to questions 1 and 2 as a group, then show how they would protect themselves from a tornado if they were taking shelter in their tornado safety spot. Correct students who need help with this protective action. Students should understand that tornadoes are very powerful. Remind them that they must avoid windows and go to the lowest floor of the home – if possible, a basement or storm shelter. They should crouch as low as possible on the floor, facing down, and cover their head with their hands. They should also cover themselves with padding, like a blanket or mattress, if they can. Students should also always follow guidance and training taught in school tornado drills. Encourage students to be ready by practicing at home as well.

Answers: (1) warning; (2) closet, bathroom; (3) knees, arms, head.

PART 3. Have students work in small groups to complete Part 3 of the activity, using the photos of tornado damage available at www.spc.noaa.gov/faq/tornado/f-scale.html and the information about specially built safe rooms available at www.fema.gov/safe-rooms. Schedule time for students to share their ideas for making homes more tornado-safe.

Teachers:

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



Preparing for Tornadoes

Hi, I'm Olivia. More than 1,000 tornadoes hit the U.S. every year – the most of anywhere in the world! Want to learn more? Download **Monster Guard**. It's free app from the American Red Cross that teaches kids how to be prepared for emergencies. Choose "Tornado" on the main menu. Then join me on a training mission to learn how to stay safe when a tornado happens.

Note: You must have completed the **Monster Guard** Initiation section before you can access the Tornado training mission.

My Tornado Safety Score: _____



Part 1

A *tornado* is a spinning, funnel-shaped storm. It reaches down from a thundercloud to touch the ground. Tornadoes happen when warm, moist air near the ground rises up through colder air above to form a thunderstorm. If the rising air begins to spin, it can become a tornado.

Do tornadoes happen often in your state? Visit www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology to find out. Look for your state on the map. The number on your state tells how many tornadoes typically happen in your state each year. Use that number to answer question 1. Then use the numbers on other states and your knowledge of U.S. geography to answer the other questions.

1. Typical number of tornadoes in my state each year: _____

2. Which three states typically have the most tornadoes each year?

3. Which states have the least number of tornadoes on average?

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Do tornadoes happen often in your state? Visit www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology to find out. Use the main map to look up the average annual number of tornadoes in your state over the past twenty years. Write the answer in the space below. Then use the main map and the monthly tornado occurrence maps to answer the questions.

1. Average annual number of tornadoes in my state: _____

2. Which states average more than three tornadoes per month each year?

3. Which three months average the most tornadoes each year?

4. Based on your data, where and when should people be most on the lookout for tornadoes?

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Part 2

Do you remember your tornado safety training? Fill in the blanks below to show what you learned.

1. You should head for your safety spot when you hear a tornado _____ for your area.
2. Your tornado safety spot could be a storm shelter, a basement, a specially built “safe room,” or an interior room on the first floor that does not have any windows, like a _____ or _____.
3. When you are in your safety spot, get on your _____ and bend over to make your body as tight as a ball. Cross your _____ over the back of your _____ to protect yourself from things blown around by the wind.

Part 3

Tornadoes are the most destructive type of storm on our planet. Weather scientists use a scale to measure the force of a tornado based on its estimated wind speed and the destruction it causes.

Visit www.spc.noaa.gov/faq/tornado/f-scale.html, and click the links under Typical Damage to see what a tornado can do as it gets stronger and stronger. Then get together with a group of classmates, and brainstorm how we could design houses to help protect people from tornadoes.

To get started, find out about specially built “safe rooms” at www.fema.gov/safe-rooms. Sketch your ideas on the back of this sheet, then share your ideas in a class discussion.

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

