

Tornado



Tornado

**Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.**

Start right now learning about the basics of how tornadoes affect people and property. Take the following brief quiz to see how much you already know about severe storms. See the bottom of page 4 to check your answers.

1. If a tornado is approaching your house, you should do all of the following except:
 - a. move to the lowest level of the house.
 - b. stay away from windows and doors.
 - c. slightly open a window on the opposite side of the house.
 - d. turn off natural gas lines.
2. Tornadoes are unlikely to occur in areas around rivers, lakes, and mountains.
 - a. true
 - b. false
3. Buildings often explode as the tornado passes over the top of the buildings due to the low pressure of the tornado.
 - a. true
 - b. false
4. During which time period are tornadoes most likely to occur?
 - a. 6 AM to noon
 - b. noon to 6 PM
 - c. 3 PM to 9 PM
 - d. 3 AM to 9 AM
5. Which of the following is the least likely indication that a tornado is in the immediate area?
 - a. light drizzle
 - b. wall cloud
 - c. very dark, almost greenish sky color
 - d. large hail



One for the Record

Tornadoes can be record-setting events that impact many people's lives. Damage done by tornadoes can be severe and mind numbing. The energy associated with tornadoes is large, and the damage caused by the high winds can be spectacular. The



image to the right shows the result when a tornado launched a record into the air and impaled the album into a telephone pole. Tornadoes are almost invisible until they pick up dirt and debris from the ground, as seen in the image to the left



Match each of the following facts to the correct number associated with that fact. Check the answers on the bottom of page 4 to see how well you did on this matching activity.

<u>Fact</u>	<u>Possible Numbers</u>
1. Highest value on the Fujita Tornado Damage Intensity Scale	0
2. Average number of tornado-associated deaths per year in Texas (1961-1993)	1
3. Highest estimated wind speed (in mph) of a tornado	2
4. Average number of reported tornadoes per year in Hawaii	3
5. Average number of reported tornadoes per year in Maine	5
6. Average forward speed (in mph) of a tornado	6
7. Percent of tornadoes classified as weak (less than 110-mph wind speeds)	9
8. Percent of deaths caused by weak tornadoes (less than 110-mph wind speeds)	10
	12
	20
	30
	50
	70
	100
	200
	300
	400

Tornado

The Spin of Tornadoes

Tornadoes are low-pressure regions in the atmosphere that are associated with high winds and relatively short durations. The tornado-formation process is still not well understood. Scientists do not have exact answers as to why some clashes between warm and cold air produce tornadoes and other collisions only bring thunderstorms to an area.

The Formation of a Tornado

Figure 1 below shows that when warm and cold air masses collide, stronger winds are

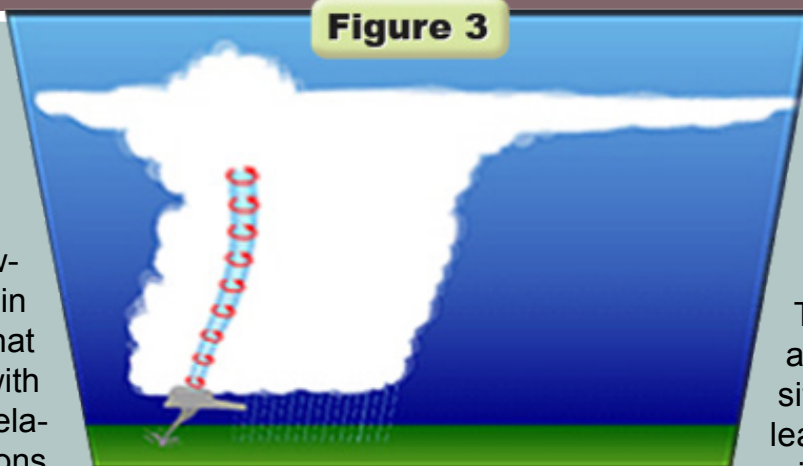


Figure 3

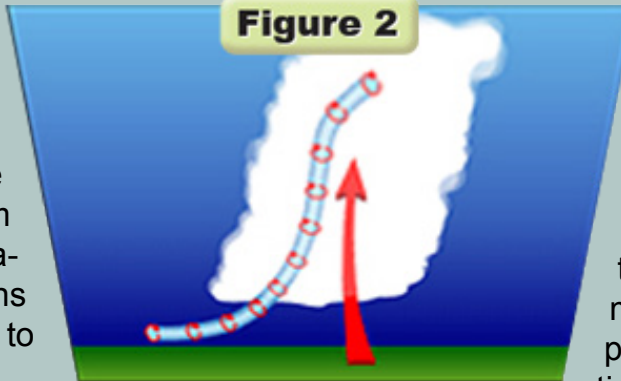


Figure 2

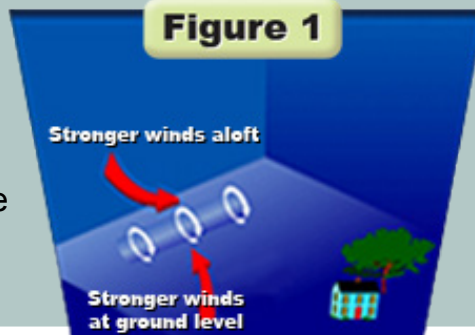


Figure 1

present at both ground level and higher levels. These strong winds are pushing in opposite directions, which leads to a horizontal spinning of the air in the lower atmosphere. You can think of this as a weak sideways tornado. Warm air that's rising, as shown in Figure 2, can lift one end of the horizontally rotating mass of air into a vertical position. This area of rotation can extend between two to six miles wide. Most violent tornadoes form within this area of strong rotation inside a thunderstorm, as shown in Figure 3.

Please visit our site for more helpful information:
STEMsims.com

Answers: 1) c, 2) b, 3) b, 4) c, 5) a. Page 3 Answers: 1) 5, 2) 9, 3) 300, 4) 1, 5) 2, 6) 30, 7) 70, 8) 5.

The Science Fair Kits project was funded in part under the Department of Homeland Security Science and Technology Directorate grant contract #N10PC20003. Its contents are solely the responsibilities of the authors and do not necessarily represent the official views of the Department of Homeland Security.

© 2015 STEM Sims. All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable, and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent or other industrial or intellectual property rights.