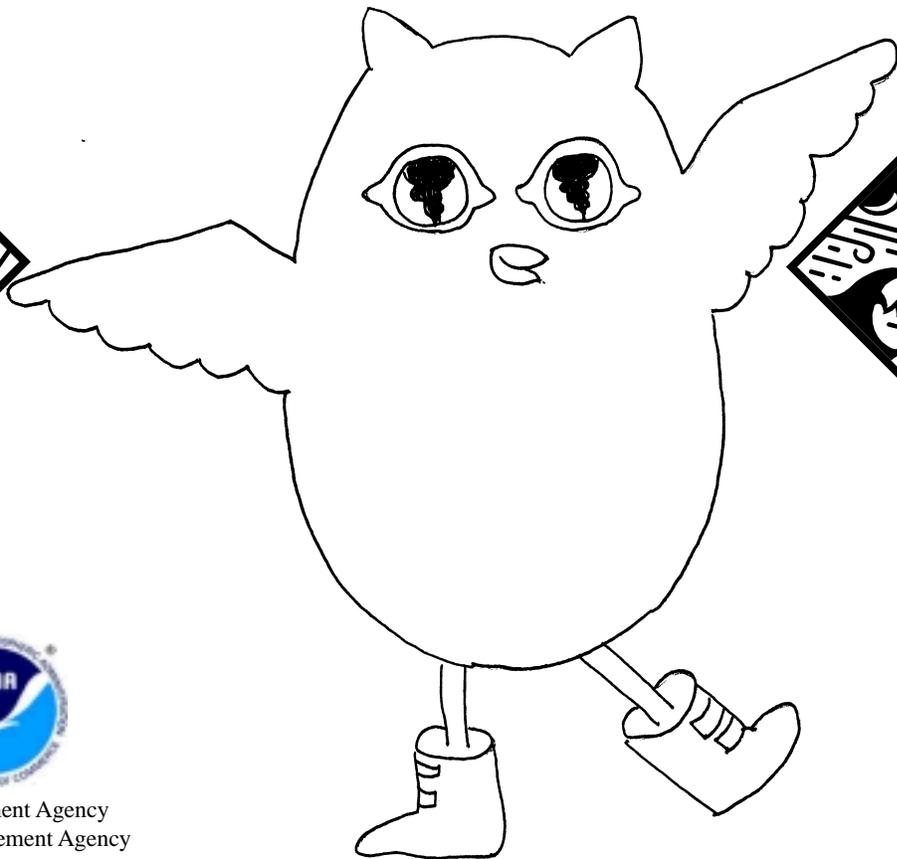


WATCH OUT ...

STORMS
AHEAD!!!

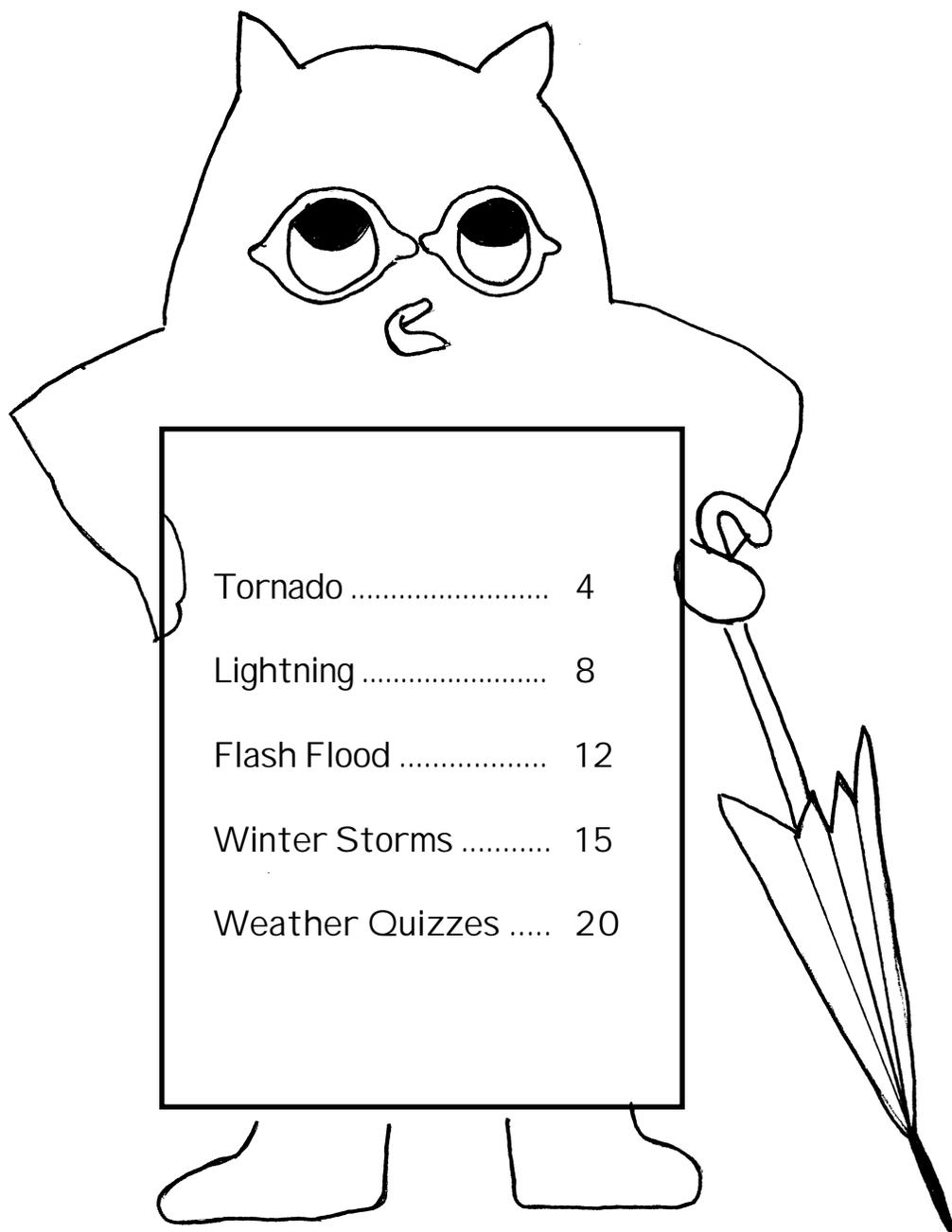


Owlie Skywarn's Weather Book

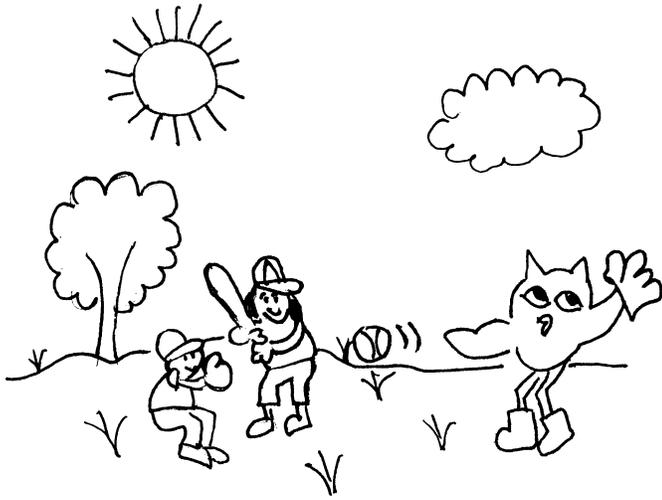


Ohio Emergency Management Agency
Federal Emergency Management Agency
U.S. Department of Commerce

What's Inside Owlie Skywarn's Weather Book



Tornado	4
Lightning	8
Flash Flood	12
Winter Storms	15
Weather Quizzes	20



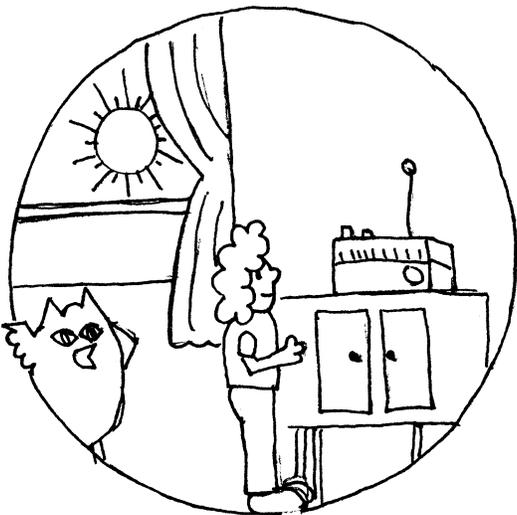
Weather can be calm and peaceful. It also can be violent and dangerous. Each year, hundreds of people are killed by severe storms of one kind or another. But they don't have to be. If they paid attention to NOAA's* National Weather Service warnings, they would be safe.

** NOAA stands for National Oceanic and Atmospheric Administration, an agency of the Department of Commerce.*



The following lists weather watches and warnings. Be smart; remember them and do what they say. They may one day save your life.

TORNADO

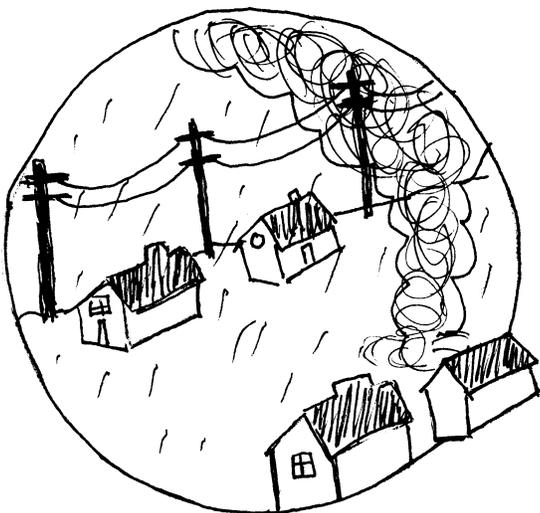


If you ever see a big black cloud with a funnel-like extension beneath it, watch out. It could be a tornado.

A tornado looks like a funnel with the fat part at the top. Inside it, winds may be swirling around at 300 miles an hour. If it goes through a town, the tornado could flatten houses and buildings, lift up cars and trucks, shatter mobile homes into splinters. Sometimes the path is narrow, but everything in the path is wrecked. But you don't always see the funnel. It may be raining too hard. Or the tornado may come at night. Listen for the tornado's roar. Some people say it sounds like a thousand trains.

Tornado Watch

The National Weather Service forecasts that a tornado may develop later. The sky may be blue at the time you hear the watch. Don't be fooled. Listen to the radio or local TV station for the latest news.

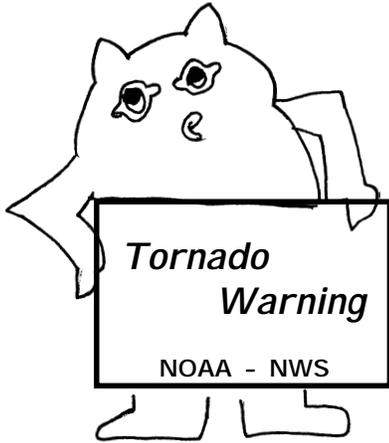


Tornado Warning

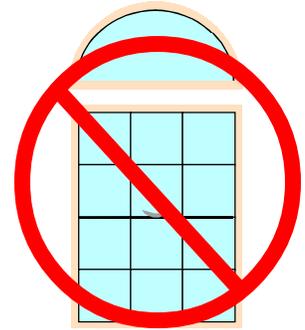
A tornado has been sighted. It may move toward you. Dark clouds boil in the sky.

There may be thunder and lightning and heavy rain. And there may be hail. When you see large hail, you may be close to a tornado. Seek shelter. Power may go off. Funnels reach down from the black clouds.

What to do - IN YOUR HOUSE -

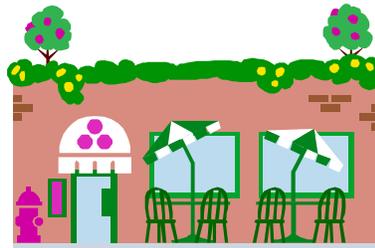


- When you hear the tornado watch, keep your eye on the sky for signs of a possible tornado and listen to the radio for the latest advice from the National Weather Service. When you hear the warning, act to protect yourself.
- Get away from the windows. They may shatter, and glass may go flying.
- Go to the basement. Get under a heavy workbench or the stairs.
- If there is no basement, go to an inside closet, bathroom or hallway on the lowest level of the house.
- Get under a mattress. Protect your head.



Downtown or in a shopping mall ...

- Get off the street.
- Go into a building. Stay away from windows and doors.



Outside ...

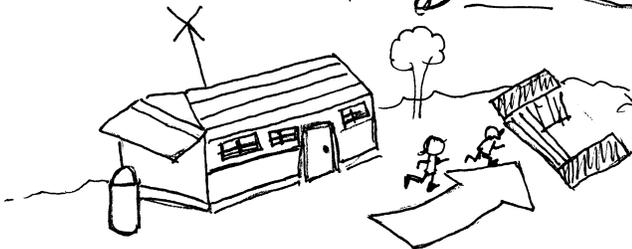
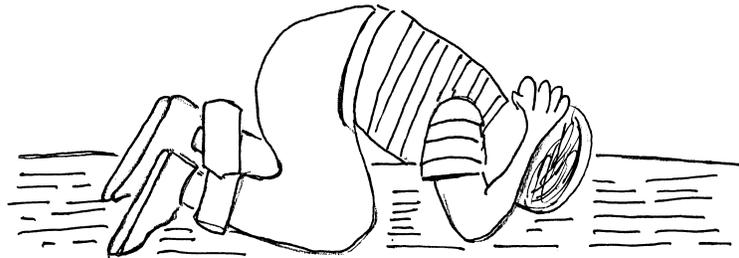
- Get out of the car and inside a house or building.
- Don't try to outrun a tornado in a car. Tornadoes can pick up a car and throw it through the air.
- If you're caught outside, lie in a ditch, or crouch near a strong building.
- Cover your head with your hands.



IN SCHOOL

- Follow directions.
- Go to an inside hall on the lowest floor.
- Crouch near the wall. Bend over with your hands on the back of your head.

- Keep away from glass and stay out of big rooms like the gym, cafeteria or auditorium.
- Keep a battery radio on. Listen for news about the tornado.



If you live in a mobile home, get out. Even if it's tied down, a mobile home can be shattered by a tornado. The whole thing can be lifted up and dropped. Get out and into a safer place. Some mobile home areas have storm shelters. If you can't get to a shelter, lie in a ditch and cover your head with your hands.

And remember, when there's a tornado, there can be a lot of lightning.

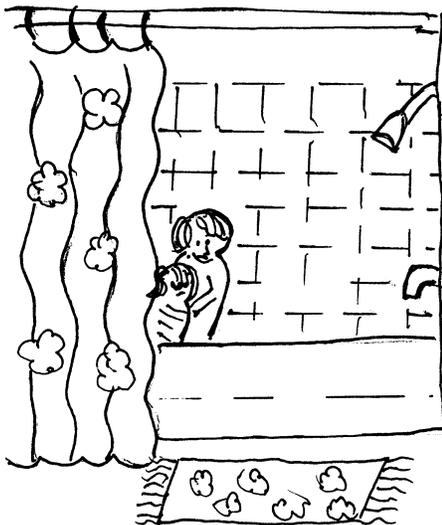
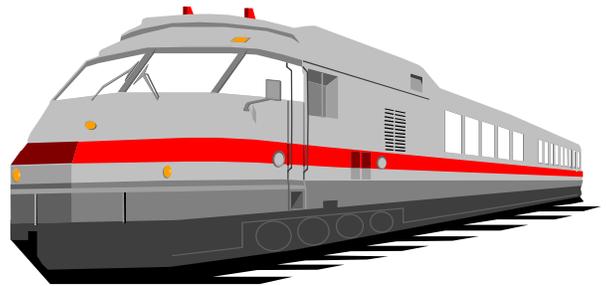
- Stay away from anything that uses electricity.
- Stay away from anything metal - faucets, radiators, sinks and tubs.

Tornadoes are scary. They pack a lot of energy; enough to blow down a whole town. But you can live through a tornado. Don't panic. Be smart. Know what to do and **do it**.

OWLIE'S TRUE TORNADO FACTS



- Most tornadoes are narrow and seldom stay on the ground for more than 15 miles. But the wider ones - up to a mile wide, go further and are the big killers.
- On April 3 and 4, 1974, 148 tornadoes moved across 13 states and killed more than 300 people.
- On March 18, 1925, a tornado traveled 219 miles (about 350 kilometers) across Missouri, Illinois and Indiana and killed 689 people in less than four hours.
- In 1931, a tornado in Minnesota lifted an 83-ton railroad train with 117 passengers and carried it for 80 feet.
- In 1975, a Mississippi tornado carried a home freezer for more than a mile.



- Tornadoes are rare in many parts of the United States, but they have occurred in all 50 states.
- Oklahoma City has been struck by tornadoes 32 times in the past 90 years.
- One town, Codell, Kansas, was struck three times - in 1916, 1917 and 1918 - each time on May 20.
- Most tornadoes happen in April, May and June in the Central and Southeast U.S., but they have occurred in every month and in every state in the nation.
- Tornadoes usually travel along the ground at 35 miles an hour, but some can go as fast as 70 miles an hour.
- In Texas, a mother huddled in an interior closet with six children. A tornado ripped off the roof of their house, tore down one wall and destroyed their garage. But all seven in the closet weren't even scratched.
- And in Mississippi, a mother and her daughter sought shelter in their bathtub. When the tornado hit, the only room left was the bathroom.

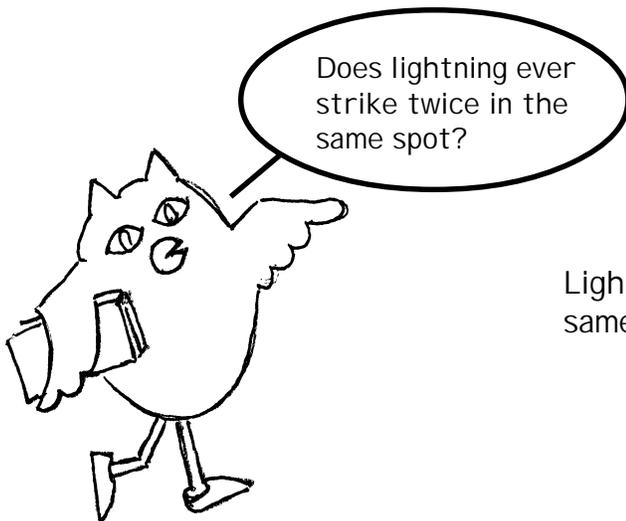
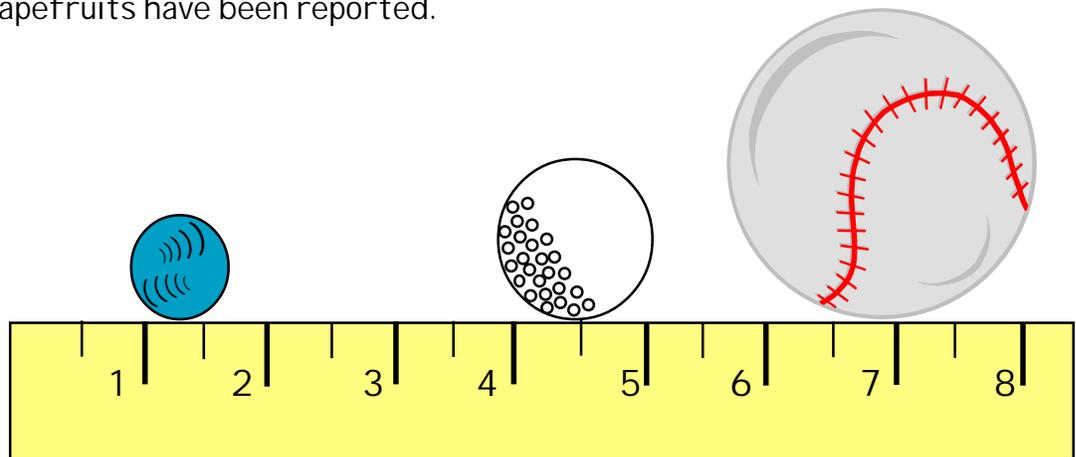


LIGHTNING

Lightning kills more people than hurricanes or tornadoes. At any moment, right now, there are 2,000 lightning storms around the world.

Everyday, someone is struck by lightning. Most of them survive, but many do not. In the United States, about 200 people die each year from lightning or from fires caused by lightning.

Not all thunderstorms produce tornadoes. But severe thunderstorms have lightning and strong winds and other hazards. And there may be damaging hail. Some hail may be the size of marbles. Others are as big as golf balls. Some hail as large as grapefruits have been reported.



Lightning may hit the same place or the same person several times.

Ray Sullivan, a retired National Park Ranger, was hit seven times. He has been knocked down, picked up and thrown into the air. He has lost his shoes and a toenail and he can't hear as well as he used to. But he's lucky to be alive.

Now he lives in a mobile home with lightning rods on each end and lightning rods on trees around his home. Hopefully, lightning will follow the rods and leave Ray Sullivan alone.



Lightning storms may occur in winter, but are more common in the summer.

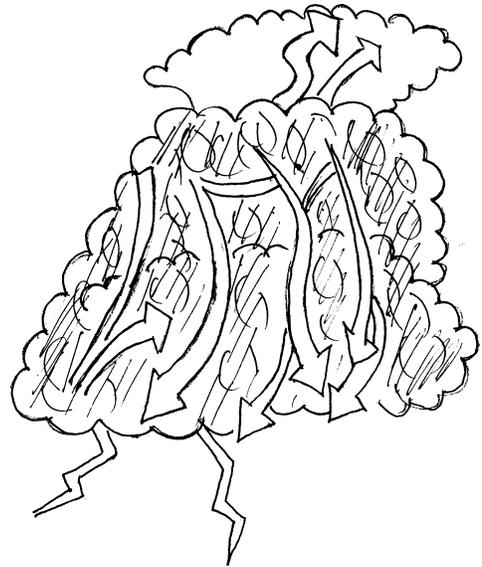
BEFORE A STORM -

Keep an eye on the sky.

On a hot day, cumulus clouds build up. They grow larger, towering higher and higher. They darken. The top of the clouds may be spread out by winds at high altitudes.

As clouds develop, particles in the clouds become charged with electricity. When the charges overflow, they make a lightning flash.

Lightning may go from one part of a cloud to another, or from cloud to cloud. It may go from a cloud to the earth, or from earth to a cloud.



Lightning takes the shortest path. So, it hits the highest objects - a tall tree or house, a tower, or a person standing alone in a flat field.

What to do and not to do, when there is lightning.



If you're outside ...

- Try to get into a house or large building.
- Get inside a hard-topped car.
- If you're in a field, crouch on your knees and bend over. Don't lie down because wet ground can carry electricity.
- If you're in water, get out. Get away from the beach.



If you're inside ...



- Stay away from water faucets, sinks and tubs - anything that could conduct electricity.



- Don't go into a shed that stand alone.



- Keep away from windows and doors.



- Don't go under a large tree that stands alone.



- Don't use the telephone unless there's an emergency.



- Don't be higher than your surroundings.

- Don't use electric appliances - irons, toasters, mixers - lightning could follow the wire. Stay away from the TV.

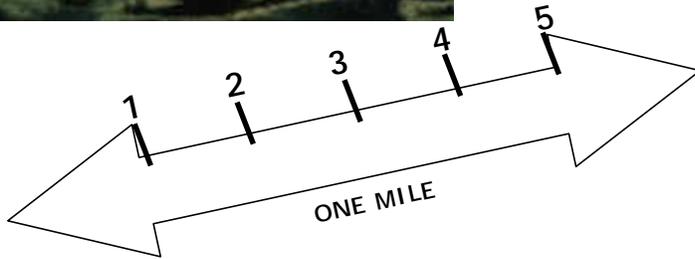
- Don't stand on a hilltop.

- Don't stay out in a boat.

- Don't carry anything made of metal and don't be near anything made of metal.



BOOM!



Thunder and lightning occur together.

The light reaches you at once. Sound takes some time to reach you. Usually you see the lightning stroke before you hear the thunder.

As soon as you see lightning, count the seconds until you hear the thunder. If there are five seconds, the lightning was about a mile away. (Sound goes about 1,000 feet a second.)

In metric, if it takes three seconds to hear the thunder, the storm is about a kilometer away.

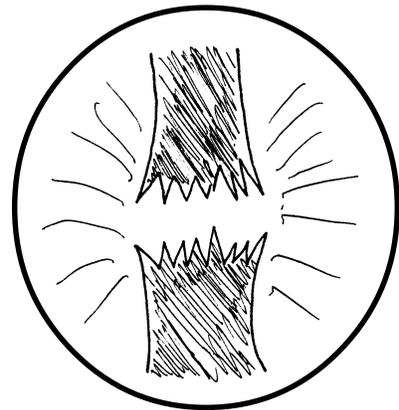
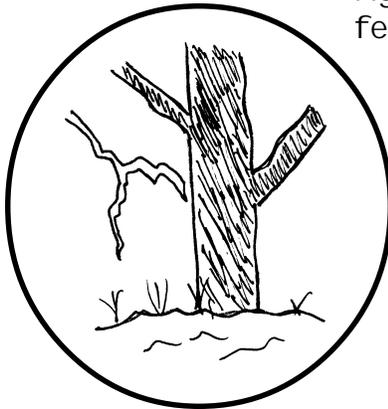
If you see lightning and hear thunder at just about the same moment, watch out. The storm is right above you, only a few hundred feet away.

Lightning is also a killer. It strikes people directly. It also starts fires and many people die from those fires.

Lightning also does strange things.

It can explode a tree. Lightning heats the sap in the tree trunk. The sap changes to steam. The steam expands and blows the tree apart.

In a herd of cows, one out of dozen or more might be struck. The others are untouched.



Sometimes when it's stormy, you don't see any streaks of lightning, but the sky lights up occasionally. That means the storm is very far away, too far for you to see the streaks, and perhaps so far, you don't hear the thunder, either.

FLASH FLOOD



Whenever it rains heavily, there may be flash floods. Flash floods occur in mountain streams - often in canyons; or flooding of dry washes. But they do happen in cities as well.

Flash floods can occur even though it's not raining where you are. It may be raining hard farther upstream. It is raining so hard, water cannot sink into the ground. It rushes down the mountainside to the stream. The stream cannot carry all the water, so it floods.

A flash flood may come at you as a high wave of water. And it moves fast as an express train. Chances are, you won't have time to get out of its way, unless you have a plan.

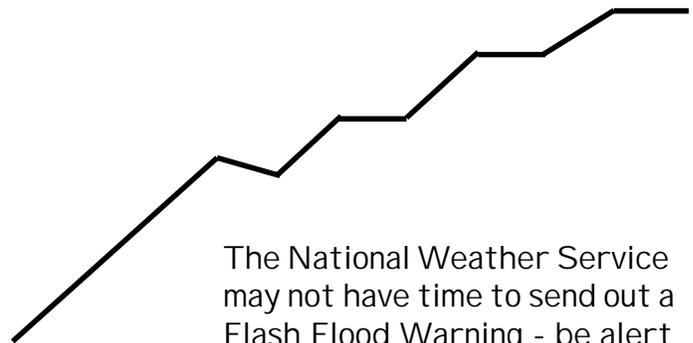
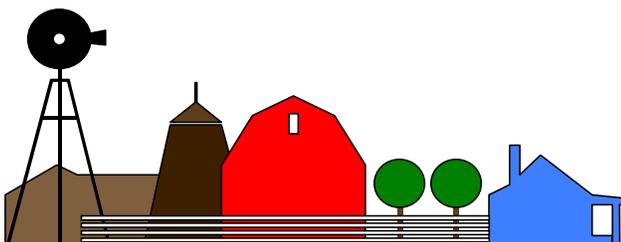


Flash Flood Watch

There may be flooding. Keep alert. Be smart. Watch out for heavy storms. Keep your eye on streams to see if water is rising. If streams rise, get out fast. Go to higher ground.

FLASH FLOOD WARNING

When you hear "**Flash Flood Warning**," there is flooding. Move out right away. The flood could reach you any moment. Get to high ground. Seconds count.



The National Weather Service may not have time to send out a Flash Flood Warning - be alert and ready to act on your own.



Don't Panic ...

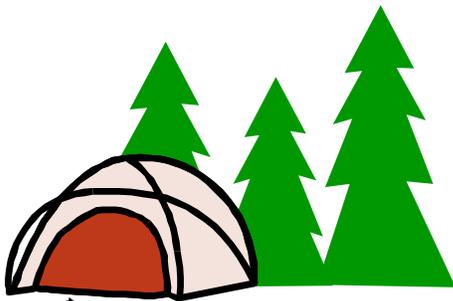
Move to higher ground - leave everything and run.

A flash flood can pick up cars, campers, vans, recreational vehicles and roll them downstream. It can tumble huge boulders, uproot trees and carry them; wash out roads and tumble bridges like matchsticks.

Campers ...

What to do -

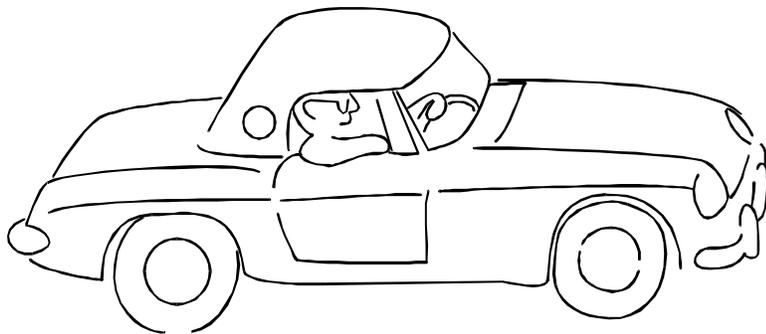
- If the forecast is for heavy rain, stay home.
- If you already have set up camp - stay alert. Keep an eye on the sky. Have a battery radio and listen to a local station.
- Watch for signs of rain - not only where you are, but upstream.
- Plan ahead. Pick high ground for your camp. Also, know which way to move in an emergency to higher ground. Check out the route to be sure it's passable.
- Remember - seconds count. Flash floods move faster than you'd believe possible.



When you're outside ...

Keep out of storm drains in the suburbs and country. Don't play in irrigation ditches, dry washes or other waterways. These places can be dangerous even in fair weather. When it rains, the water can get deep fast and the current can be very strong.

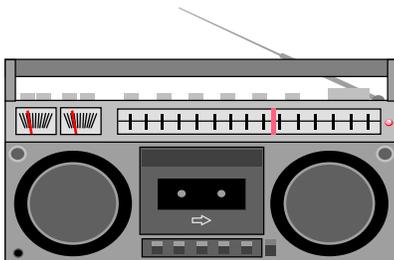
There will probably be heavy lightning. When you go to higher ground, stay off hilltops. Don't get under lone trees. Be smart - remember warnings about what to do, and not to do, when there's lightning.



In a car ...

What to do -

- Watch for flooding at bridges and dips in the road.
- Never drive where water is over bridges or roads. All of a sudden the bridges or roads could be washed out. They may not even be there under the water.
- If your car is trapped, get out. Move to higher ground. You may lose your car, but you'll save your life.
- If you're driving at night, be especially careful. Usually you cannot see very well because of the wind and rain. If you should drive into water, don't try to drive out of it. Get out of your car. Scramble to higher ground.
- If you're driving through canyon country along a stream and hear a flash flood warning, leave your car and climb to high ground - don't try to outrun the flash flood.



Wherever flash floods are possible, keep a battery radio with you. Keep it on a local station or stay tuned to a NOAA Weather Radio. The flood could get worse.

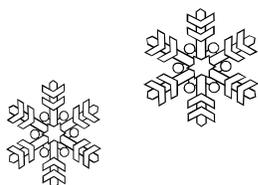
Try to keep warm. Keep away from the stream.

WINTER STORM



Flash floods and tornadoes can occur somewhere during any month of the year.

Not so with snowstorms; they occur in winter or sometimes early spring or late fall. Usually the snow piles up slowly, so you have time to get to a safe place. But not always. In a winter storm, a few flakes may fall and the next moment there is blinding snow. It's so heavy, you can't see to drive or walk. It piles up deeper and deeper. All at once you may be stalled in a huge drift. You could be trapped.



Winter
Storm
Watch

Winter Storm Watch

There may be heavy snow, blizzards, freezing rain, ice and/or sleet.

Winter Storm
Warning

Winter Storm Warning

There is a severe winter weather storm. It may move your way. Be alert.

If you're thinking of going outside in a heavy snowstorm, DON'T!
It is safer to STAY INSIDE.

Before a storm - PREPARE YOUR CAR FOR DEEP SNOW

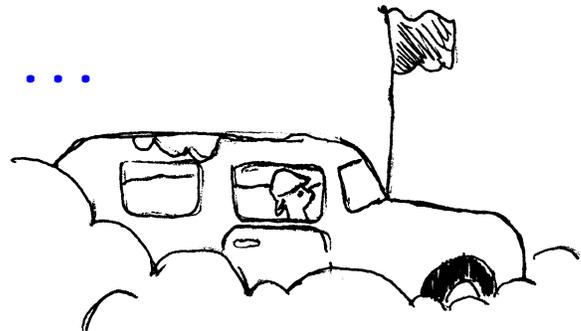
BE SURE TO REMIND YOUR PARENTS TO HAVE ...



- a flashlight
- a warm blanket
- matches and candles
- first aid kit
- cell phone or
- coins for pay phone
- pail of sand/kitty litter
- shovel
- windshield scraper
- brush
- knife
- paper towels
- booster cables
- a tow chain
- food for quick energy
- bright cloth for signaling

If your car gets stuck ...

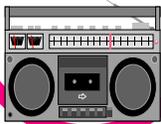
- Tie a bright cloth to the antenna and raise it high so rescuers can find you.
- If your car has no antenna, use a pole or fishing rod.
- As you sit, exercise. Clap your hands, stamp your feet, swing your arms about. Keep your blood circulating. Keep warm. Don't leave your car.
- If engine is running, keep a window open a bit. Conserve gasoline and food. You may be stranded a long time.
- Leave the overhead light on at night so you can be seen.



What to do if you're at home ...



Have a battery operated radio, spare batteries



Stay inside. Don't go out unless you have a lifeline fastened to you and to the house

Remember, electricity may go off. Have a way to cook and to keep warm. The furnace may not work

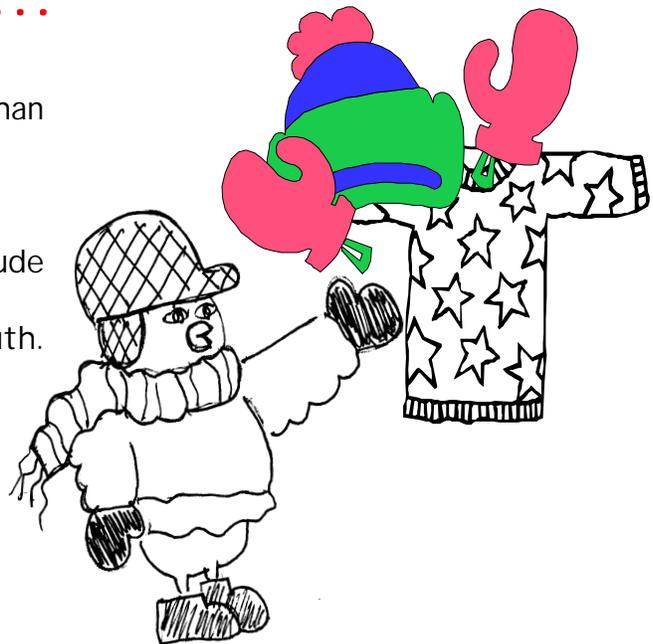
Store water for drinking



Have a supply of food, a flashlight, lamps or candles for light.

If you must go out ...

- Wear mittens. They are warmer than gloves.
- Wear several layers of clothing. Several layers are warmer than a single garment. Layers should include wool and a windbreaker.
- Wear a hood that covers your mouth.
- Wear a hat and ear muffs.
- Don't move away from the house without a lifeline during a heavy snowstorm or bliz-





In the Antarctic there is a **30-30-30** rule. When the temperature is **30** below, and the wind is **30** miles an hour, a person can survive only **30** minutes.

During the winter, you will often hear about wind chill. That's when the air temperature and the wind combine to make your body feel colder than the temperature reading.

You get that feeling when you get out of the pool or ocean in the summer time. In winter it can be very dangerous. For example, when the outside temperature is **ZERO DEGREES** and the wind speed is **20** miles per hour, the wind chill makes it feel like it's **-40 degrees!!!**

Once a winter storm hits, it's too late to do too much about it. Prepare your house, your car and your clothing ahead of time.

Most winter tragedies occur because people were not ready for the storm.

Be smart. Be prepared for a winter storm.

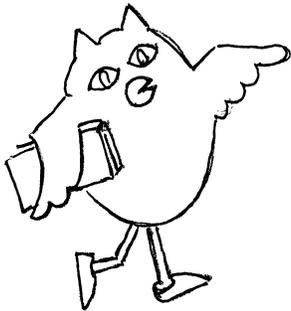
Did you know ...

- The lowest temperature in the United States was -79.8 degrees at Prospect Creek Camp in endicott Mountains of Northern Alaska on January 23, 1971.
- In the lower 48 states, the coldest temperature was -69.7 degrees in Rogers Pass, Montana, on January 20, 1954.
- The hottest temperature ever recorded in the United States was 134 degrees at Greenland Ranch in Death Valley, California on July 10, 1913.
- One storm February 13 - 19, 1959 dumped 189 inches of snow at Mt. Shasta Ski Bowl, California.
- The greatest snowfall in 24 hours in the United States was at Silver Lake, Colorado, April 14-15, 1921 - 75.8 inches.



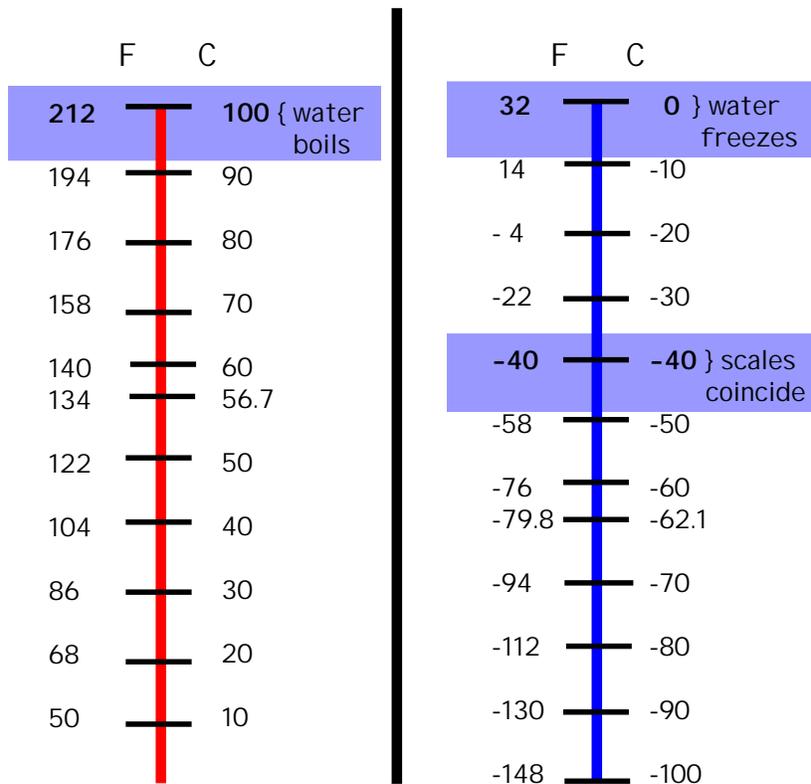
The most snow in the United States in one month - 390 inches (32-1/2 feet) - fell at Tamarack, California in January 1911.

And in one season, the winter of 1971-1972, **93.5 feet** (1,122 inches) of snow fell at the Rainier Paradise Ranger Station in the state of Washington.

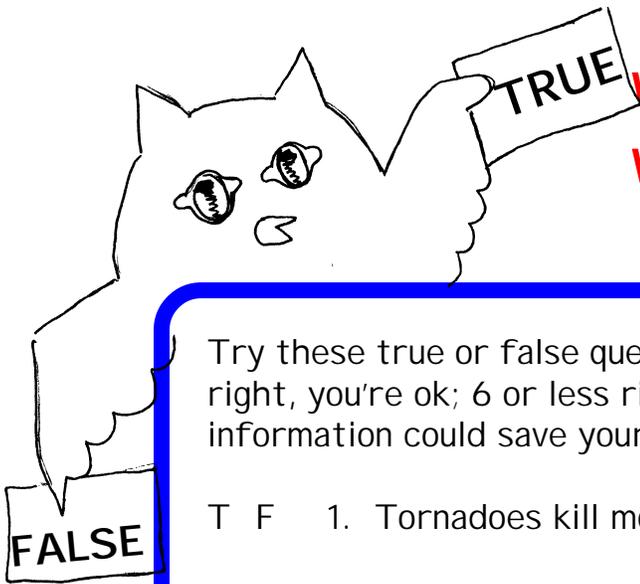


TEMPERATURE CONVERSION

In the United States, temperatures are given in Fahrenheit (F) degrees. The Celsius temperatures (also called Centigrade) are used in most other countries of the world. Here are both scales so you can convert one to another. NOTE: Fahrenheit and Celsius are the same only at -40 degrees.



Test yourself about weather and weather warnings



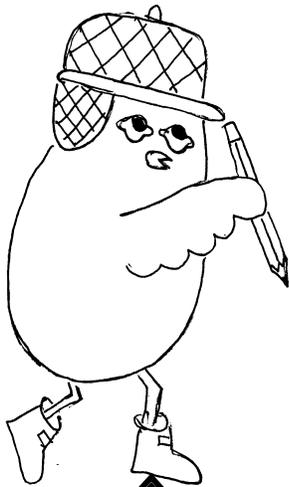
Try these true or false questions. 10 right, you're a weather wizard; 8 right, you're ok; 6 or less right, take another look at the booklet. The information could save your life.

- T F 1. Tornadoes kill more people than any other kind of storm.
- T F 2. Hurricanes are very large storm systems.
- T F 3. Wind is the main cause of loss of life in a hurricane.
- T F 4. Lightning never strikes twice in the same place.
- T F 5. Tornadoes occur only in the midwestern states.
- T F 6. Flash floods occur only when it's raining where you are.
- T F 7. In a tornado, the winds may swirl 200-300 miles an hour.
- T F 8. Winter storms develop only after several hours of warning winds and clouds.
- T F 9. A safe place to be during a lightning storm is inside a hard top car.
- T F 10. During a lightning storm, get under a large tree for protection.

Answers:
1. F - lightning 2. T 3. F - sea surge 4. F
5. F - anywhere 6. F 7. T 8. F 9. T 10. F

WEATHER HAZARDS

Fill in each space with the most correct weather hazard: *hurricane, tornado, lightning, flash flood, or winter storm.*



1. The path of a _____ is sometimes narrow, but very destructive.
2. Usually, before a _____ hits, you see a funnel extending from a dark cloud formation.
3. Usually, high towering clouds develop before a _____ storm.
4. Severe _____ can occur as late as April, which happened in 1982.
5. _____ usually occur in valleys where there are narrow stream beds.
6. A _____ is an extensive storm that usually develops in August or September.
7. In a _____ the winds blow at least 74 miles an hour.
8. When a _____ approaches, go to the cellar or to an inside closet or hall.
9. When a _____ approaches, get away from the seashore; go to a safe inland location.
10. Don't try to outrun a _____ in your car.

Answers:
 1. tornado 2. tornado 3. lightning 4. winter storm
 5. flash flood 6. hurricane 7. hurricane 8. hurricane 9. hurricane 10. tornado



You can protect yourself against weather hazards. Things to do or things to get are listed below.

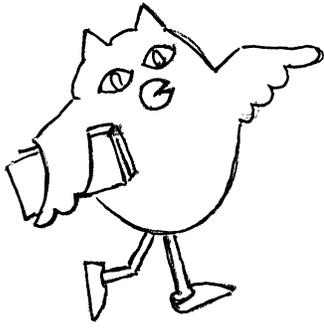


After each, write in the weather hazard (or hazards that apply).

1. Go to the cellar: _____
2. Tape windows: _____
3. Stay away from windows: _____
4. Stay in your car: _____
5. Get out of your car: _____
6. Stay away from metal: _____
7. Stay indoors: _____
8. Have fresh water: _____
9. Have battery radio: _____
10. Cover your head with your hands: _____



Answers:
 1. tornado 2. hurricane 3. hurricane, lightning, tornado
 4. winter storm, lightning 5. flash flood 6. lightning
 7. hurricane, lightning, winter storm, tornado 8. rip current,
 hurricane, tornado, winter storm 9. hurricane, tornado,
 winter storm, flash flood 10. tornado



Here are five weather hazards. Under each, write the warnings about them that you remember. include both the Do's and Don'ts.

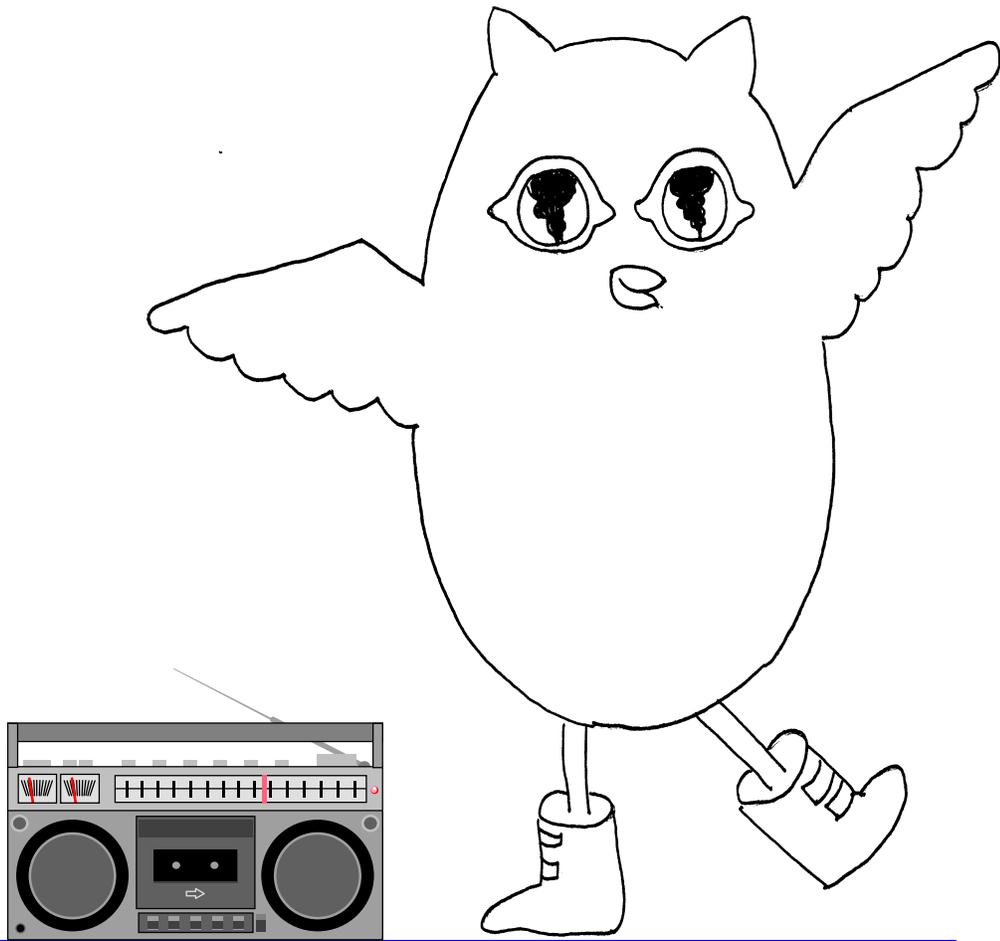
HURRICANE

TORNADO

LIGHTNING

**FLASH
FLOOD**

**WINTER
STORM**



This Owlie Skywarn Weather Book
belongs to:

Name: _____

School: _____