



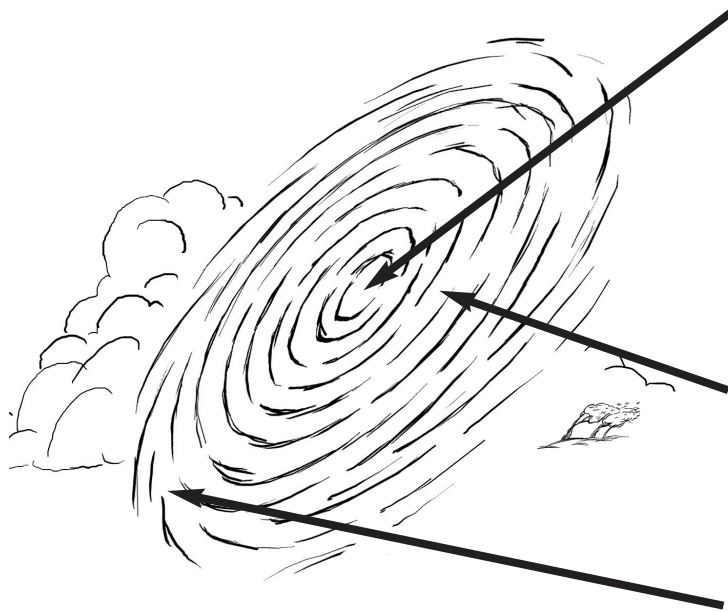
# Facts About Hurricanes

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Name \_\_\_\_\_

## What are hurricanes?

- Hurricanes are tropical storms with winds greater than 74 miles (119 kilometers) per hour.
- After a tropical storm reaches 39 miles (63 kilometers) per hour, the storm is named.
- In the Northern Hemisphere, hurricane winds blow counterclockwise; in the Southern Hemisphere, they blow clockwise.
- Hurricanes are steered by global winds over the oceans.
- Hurricanes can be beneficial; they are a major source of rain, and they release energy from the atmosphere.



### Hurricane Eye

A region that can be as large as 30 miles (48 kilometers) in diameter found at the center of a hurricane, where skies are often clear and winds are light. The storm's lowest pressure readings are found here.

### Eye Wall

A "wall" of clouds and intense thunderstorms that surround the eye.

### Spiral Rain Bands

Bands of thunderstorms that wrap around the hurricane.





# Facts About Hurricanes

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## When and where do hurricanes form?

- Atlantic hurricane season normally runs from June through November, when the water temperature in these regions is relatively high.
- Hurricanes form in the southern Atlantic Ocean, the Gulf of Mexico, the Caribbean Sea and in the Pacific Ocean.

## How do hurricanes form?

- Hurricanes develop over warm tropical waters.
- Hurricanes gather heat and energy through contact with warm ocean waters.
- Condensation of water vapor increases a hurricane's power.
- As warm air near the surface of the water moves toward the eye of the hurricane, it converges, rises and fuels the storm.
- A pronounced rotation develops around the eye of the hurricane.
- This process then builds upon itself, developing a spiral band of swirling clouds that is a hurricane.





# Hurricane Tracking Vocabulary

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Name \_\_\_\_\_

**Directions:** Research to define these words. Use the words to complete the sentences that follow.

**hemisphere**  
**hurricane**

**latitude**  
**longitude**

**meteorologist**  
**tracking**

1. The lines that run parallel to the equator are called

\_\_\_\_\_ lines.

2. The continents of North America, Europe and Asia are in the

Northern \_\_\_\_\_.

3. \_\_\_\_\_

lines run from the North Pole to the South Pole.





# Hurricane Tracking Vocabulary

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4. A \_\_\_\_\_ gives us current information on weather.
5. A \_\_\_\_\_ is a huge storm that packs strong winds and heavy rains. The word comes from the Spanish word *huracán*.
6. \_\_\_\_\_ is something done by meteorologists to help them make predictions about what direction a hurricane is headed.

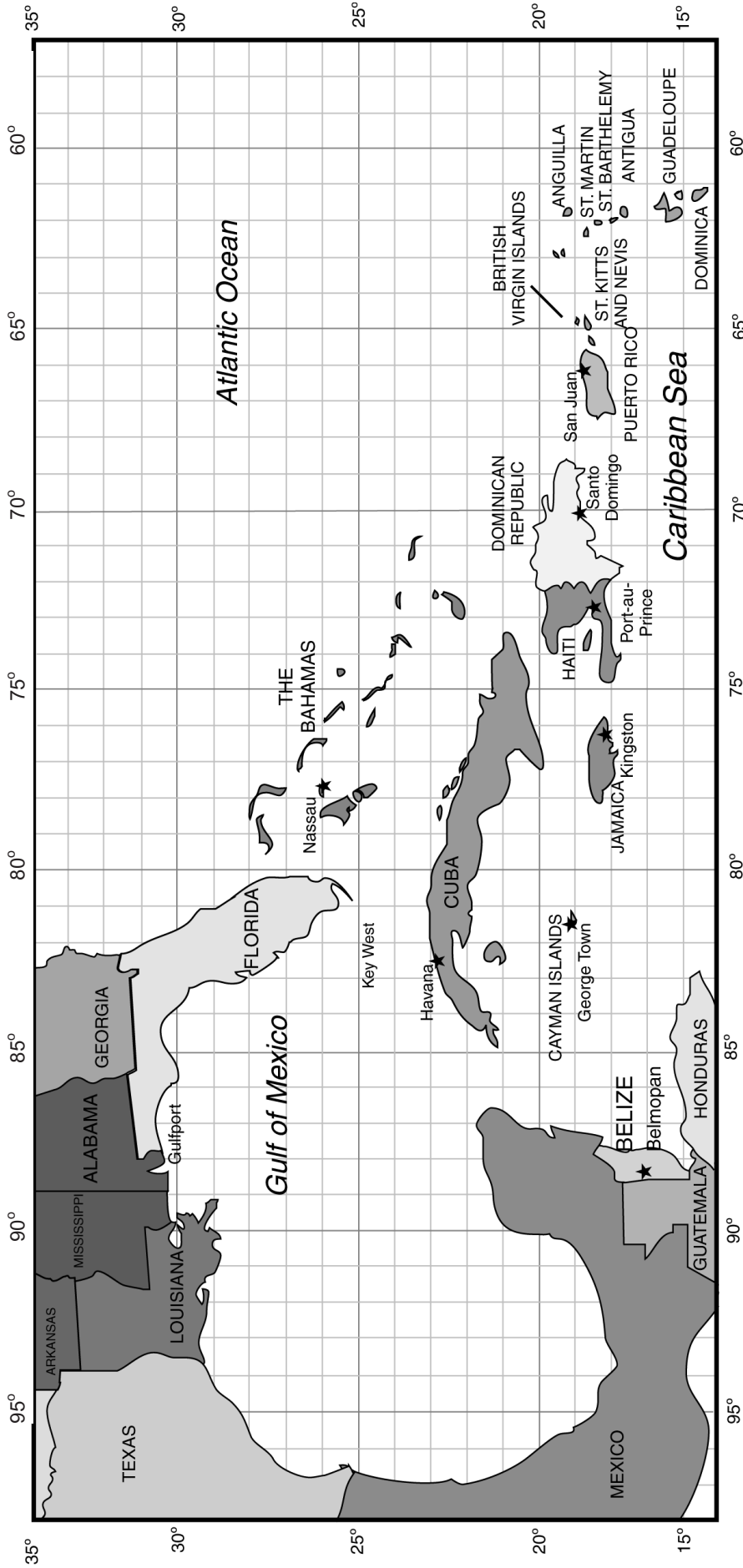




# Atlantic Hurricane Tracking Map

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Name \_\_\_\_\_



**American  
Red Cross**

Visit the American Red Cross Web site  
at [www.redcross.org/disaster/masters](http://www.redcross.org/disaster/masters)

ATLANTIC HURRICANE TRACKING MAP  
**Masters of Disaster**® Hurricanes, Level 2  
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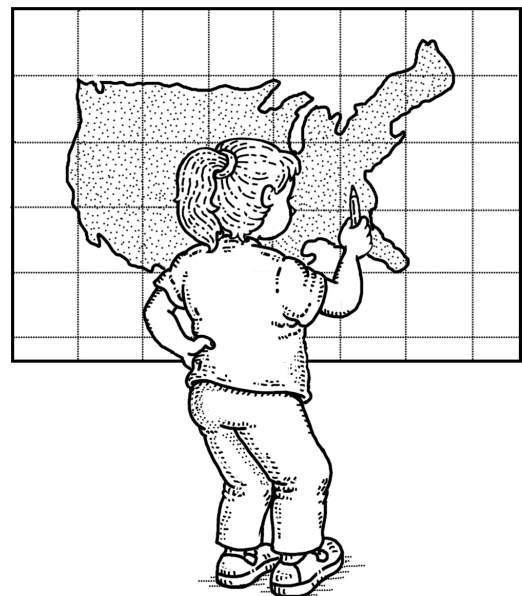
# Atlantic Hurricane Tracking Map

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**Directions:** Using what you know about latitude and longitude, plot the following coordinates on the Atlantic Hurricane Tracking Map. Then, connect the plots to make a line graph to show the path of Hurricane Georges.

## Coordinates for Hurricane Georges

DATE OF PLOT	LATITUDE	LONGITUDE
9/21/98	17°	62°
9/22/98	18°	67°
9/23/98	19°	72°
9/24/98	21°	77°
9/25/98	23°	80°
9/26/98	26°	85°
9/27/98	28°	88°
9/28/98	31°	89°





# Fact Sheet for Hurricane Georges

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Name \_\_\_\_\_

## September 13, 1998

A tropical wave originates off the coast of Africa.

## September 14

The wave is upgraded to a tropical depression.

## September 15

The tropical depression is increasing in speed.

## September 16

The tropical depression is upgraded to a tropical storm moving westward with wind speeds of 39 miles per hour (mph) (63 kilometers per hour [kph]).

It receives its name—Tropical Storm Georges.



## September 17

Tropical Storm Georges is upgraded to Hurricane Georges and is predicted to be a major category 4 storm by next week. Satellite imagery shows that an eye is beginning to form. Wind speeds are up to 75 mph (121 kph).

## September 18

The wind speed within Hurricane Georges picks up speed; it is now 90 mph (145 kph). Hurricane WATCHES are in effect for some of the islands.

## September 19

A hurricane WARNING is in effect for some of the islands. Wind speeds have increased to 125 mph (201 kph).

## September 20

A hurricane WATCH is in effect for the Dominican Republic and Puerto Rico. Wind speeds decrease throughout the day, going from 135 mph to 115 mph (217 kph to 185 kph).





# Fact Sheet for Hurricane Georges

Page 2 of 3

## September 21

A hurricane WARNING is in effect for the Dominican Republic and Puerto Rico. Wind speeds drop from yesterday's 115 mph (185 kph) to 100 mph (161 kph).

## September 22

It is reported that five people were killed in Puerto Rico from Hurricane Georges. Flash floods and mudslides are reported in the Dominican Republic from yesterday's storm. The hurricane WARNING is discontinued on both these islands. A hurricane WATCH is in effect for the Bahamas and southern Florida. By late evening, wind speeds decrease to 95 mph (153 kph) from 105 mph (169 kph) earlier in the day. In the evening, a hurricane WARNING is issued for the Bahamas and parts of Florida.

## September 23

Hurricane WARNINGS are still in effect for some of the islands and southern Florida. Wind speeds drop to 65 mph (105 kph).

## September 24

Hurricane Georges is headed for Florida—outer bands are now visible on local radar. Hurricane WARNINGS are still in effect for southern Florida. After hitting several of the islands, Hurricane Georges is back over water and is re-intensifying. Wind speeds increase to 75 mph (121 kph).

## September 25

Wind speeds increase to 90 mph (145 kph) with a storm surge of 3 to 5 feet (0.9 to 1.5 meters). Hurricane Georges is hitting the Keys and southern Florida hard. A tropical storm WARNING is in effect for the east coast of Florida. A hurricane WATCH is in effect for the Gulf Coast.

## September 26

A hurricane WARNING is issued for the north Gulf Coast from Morgan City, Louisiana, to Panama City, Florida. A hurricane WATCH is issued from east of Panama City to St. Marks, Florida. There are dangerous flood threats from the storm surge and rainfall by early morning. Wind speeds continue at 90 mph (145 kph).





# Fact Sheet for Hurricane Georges

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## September 27

The hurricane WATCH for east of Panama City to St. Marks, Florida, is discontinued. However, these areas are now under a tropical storm WARNING.

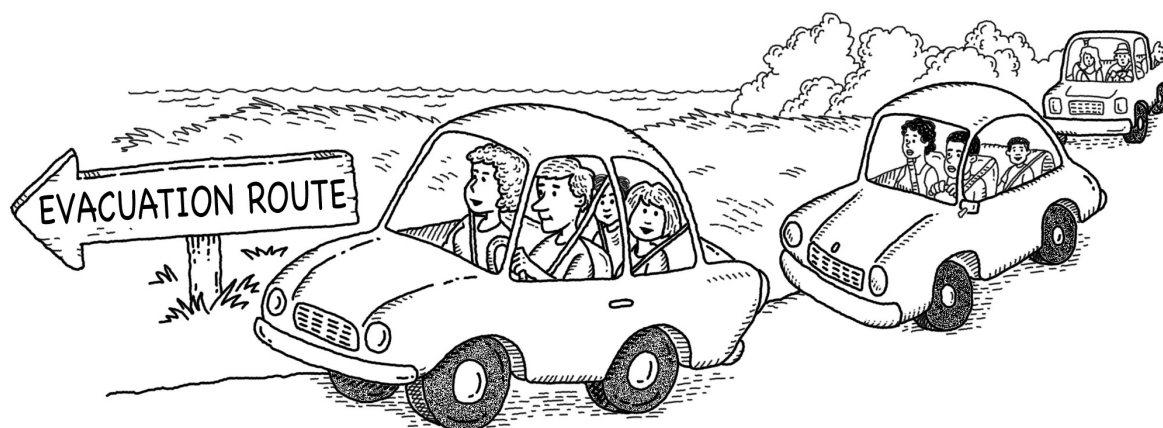
## September 28

Hurricane Georges makes final landfall at 4:00 a.m. near Biloxi, Mississippi, with wind speeds of 95 mph (153 kph). A hurricane WARNING remains in effect from Morgan City, Louisiana, to Panama City, Florida. The eye of the storm is passing over Ocean Springs, Mississippi—stars can be observed. The storm drops 23 to 25 inches (58 to 64 centimeters) of rain in southern Mississippi and Alabama; more is expected. Hurricane Georges is downgraded to a tropical storm with wind speeds at 65 mph (105 kph).

## September 29

Tropical Storm Georges is downgraded to a tropical depression and is over Mobile, Alabama. Wind speeds decrease throughout the day from 50 mph (80 kph) to 30 mph (48 kph).

Fifteen people died as a result of Hurricane Georges in Puerto Rico and the U.S. mainland, and over 200,000 dwellings were damaged or destroyed.



Visit the American Red Cross Web site  
at [www.redcross.org/disaster/masters](http://www.redcross.org/disaster/masters)

FACT SHEET FOR HURRICANE GEORGES  
Masters of Disaster® Hurricanes, Level 2  
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# Beaufort Wind Scale

Page 1 of 2

Name \_\_\_\_\_

In 1805, British Admiral Sir Francis Beaufort developed this wind scale to help sailors estimate the speed of the wind using visual observations. The scale starts with 0 and extends to a force of 12.

Force	Description	Winds	Signs
0	Calm	0 mph (0 kph)	Smoke rises vertically.
1	Light air	1–3 mph (1–5 kph)	Smoke drifts, but wind vanes or flags do not move.
2	Slight breeze	4–7 mph (6–11 kph)	Leaves rustle and wind vanes move.
3	Gentle breeze	8–12 mph (12–19 kph)	Leaves and small twigs are in constant motion; flags are extended.
4	Moderate breeze	13–18 mph (20–29 kph)	Dust and loose paper blow; small branches move in trees.
5	Fresh breeze	19–24 mph (30–39 kph)	Small leafy trees begin to sway.
6	Strong breeze	25–31 mph (40–50 kph)	Large branches are in motion; whistling is heard in utility wires.
7	Moderate gale	32–38 mph (51–61 kph)	Whole trees are in motion; it is difficult to walk against the wind.
8	Fresh gale	39–46 mph (62–74 kph)	Twigs break from trees.
9	Strong gale	47–54 mph (75–87 kph)	Roof shingles blow free; slight structural damage can occur.
10	Whole gale	55–63 mph (88–101 kph)	Trees are broken or uprooted; considerable structural damage occurs.
11	Storm	64–73 mph (102–118 kph)	Widespread damage occurs; trees blow a distance.
12	Hurricane	74+ mph (119+ kph)	Extreme destruction occurs; buildings are destroyed, trees and utilities are down.





# Beaufort Wind Scale

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## WIND SPEED LOG

**Directions:** Observe the wind several times a day. Describe the speed based on the Beaufort wind scale.



Date	Time of Day	Observation	Wind Speed

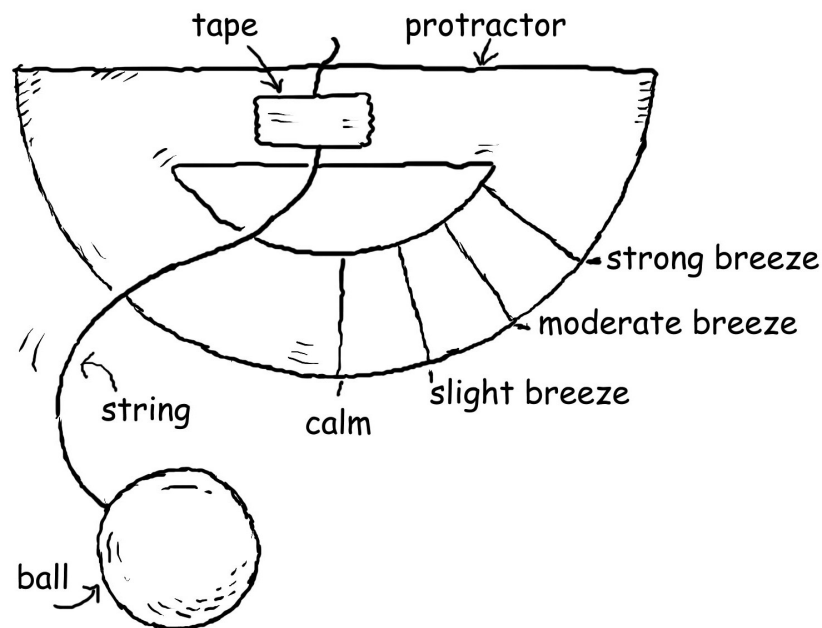




# Building an Anemometer

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Name \_\_\_\_\_



**Note:** Observation is an excellent wind measurement tool. However, for more accurate wind reading, meteorologists use anemometers.

## To make your anemometer you will need—

- Ping-pong ball, cotton ball or small pom-pom
- 2 feet of string
- Tape
- Protractor

1. Use tape to label your protractor according to the picture.
2. Tape one end of the string to the ball.
3. Tape the other end to the center point on the base of the protractor.





# Building an Anemometer

Page 2 of 2

**Directions:** Use your anemometer to track the wind regularly over several days.

Date	Time of Day	Wind Speed	Weather Conditions
------	-------------	------------	--------------------


Compare your measurements to your Beaufort wind scale observations.





# Hurricane Evacuation— Myth Versus Reality

Page 1 of 2

Name \_\_\_\_\_

**Directions:** Many myths about hurricanes and hurricane evacuation present misinformation. Research to find the facts to dispute each statement below.

## Myth 1

It is safe to go outside during the “eye” of the storm.

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## Myth 2

Even if I am told to evacuate, I know I can ride out the storm.

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## Myth 3

I have been through a hurricane before and it is not that bad.

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## Myth 4

If I evacuate and the hurricane does not hit my area, it was a false alarm.

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## Myth 5

I live far enough away from the coast that I do not expect I will be told to evacuate, so hurricanes are not a problem for me.

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# Hurricane Evacuation— Myth Versus Reality

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## **Reality 1**

Beware of the calm center of the storm, called the “eye.” It lasts only a short time, and the most intense part of the hurricane comes just before and just after the eye has passed through the area.

## **Reality 2**

Ninety percent of deaths in a hurricane are caused by coastal flooding. Evacuation advice is given so people can leave the threatened area in time.

## **Reality 3**

Many people may have experienced the fringes of a hurricane and believe they have “weathered” a storm. The severity of a hurricane is much greater toward its center, or eye. Listen to the advice of your local officials.

## **Reality 4**

With so many people living along the coast, it takes a lot of time to evacuate. There may be very short notice that the hurricane is going to come ashore, or the storm may be erratic and it may be hard to pinpoint exactly where it will make landfall. Therefore, it is essential to listen to the advice of local officials and evacuate when you are advised to do so.

## **Reality 5**

Even though you do not live along the coast, as a hurricane comes ashore it can bring high winds, heavy rains, tornadoes and inland flooding. Local officials will advise you of the best action to take. Listen to their advice.





# Help Is on the Way

Page 1 of 1

Name \_\_\_\_\_

**Directions:** Read about the responsibilities of each of the community agencies below. Then, talk about what these agencies might do to help the community in the aftermath of a hurricane.

**Armed forces:**  
assist where they are needed

**Emergency management:**  
coordinates disaster response for the community; opens  
Emergency Operations Center

**Fire department and emergency medical services (EMS):**  
respond to fires, hazardous material emergencies, search and  
rescue situations, medical emergencies

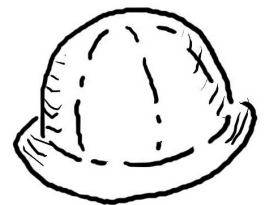
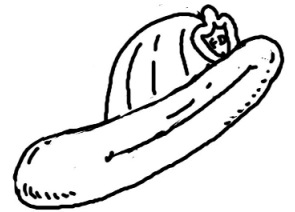
**Health department:**  
evaluates the safety of the water supply; controls insects and vermin (rats)

**Law enforcement:**  
ensures safety, crime prevention, traffic control

**Public works:**  
remove debris; clear roads

**Utility companies (electricity, gas, water, telephone):**  
repair downed wires; get services back on line; fix breaks

**Voluntary organizations (Red Cross, Salvation Army, religious groups, etc.):**  
provide shelter, food, clothing, and emergency assistance; assess  
damage; and help families deal with loss and emotions



**American  
Red Cross**

