



# 2013 THE CHALLENGE

## Think About It

Weather happens every day. Our planet has been moving and changing for thousands of years. When the weather or the way the planet moves and changes damages buildings or puts people in danger, it's called a natural disaster. Natural disasters of all kinds happen in every part of the world. Each year almost 250 million people find themselves in or near a natural disaster.

Think about these natural disasters.

**Wildfires** — Everybody loves a sunny day. But what happens when it's sunny day after day after day, the plants begin to dry up, and a fire starts? A natural disaster called a wildfire.

**Blizzards** — Gently falling snow is beautiful to watch and fun to play in. But what happens when the snow falls so hard that you can't see out the window or leave your house? A natural disaster called a blizzard.

**Floods** — Rain helps the plants grow and gives us water to drink. But what happens when the rain falls so hard that water spills onto dry land from rivers, streams, and lakes? A natural disaster called a flood.

**Avalanches and landslides** — And what happens when storms make the snow or ground so loose that it comes sliding down a mountain or hillside? A natural disaster called an avalanche or landslide.

**Tornadoes and hurricanes** — When the wind blows, you can fly a kite or paper airplane. But what happens when the wind blows so hard that it knocks down houses or picks up cars? A natural disaster called a tornado or a hurricane.

**Earthquakes and tsunamis** — Did you know that the ground under your feet is moving? Usually, it moves so very slowly that only a few scientists know it's moving. But what happens when it moves so hard and fast that you feel the ground shake or see a giant wave? A natural disaster called an earthquake or tsunami.

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**Volcanic eruptions** — Volcanoes can be found all over the world. They can be quiet for thousands of years. But what happens when a volcano explodes? A natural disaster called a volcanic eruption.

Have you ever thought about...

- Who makes the plans to keep people safe in a natural disaster?
- Who warns people that a natural disaster is near?
- Who rescues people trapped by a natural disaster?
- Who takes care of people who need help during and after a natural disaster?
- Who cleans up, repairs, and rebuilds after a natural disaster?
- How you can stay safe if a natural disaster happens near you?



Your challenge this season is to:

- Investigate natural disasters
- Select one specific natural disaster for your team to learn more about
- Then focus on the before, during, or after stage of the natural disaster your team selected.

## Identify a Natural Disaster

Here are some suggestions for getting started:

**Each Team Member** — Begin by asking your own family and friends. Have they ever been in or near a natural disaster?

Here is a list of natural disasters to ask about.

- Avalanche
- Storm (ice, snow, wind, or rain)
- Earthquake
- Tornado or cyclone
- Flood
- Tsunami
- Hurricane
- Volcanic eruption
- Landslide
- Wildfire (not started by people)

What happened? How did they find out a natural disaster was coming? What did they do? How did they stay safe? Who helped them? Were they rescued? Did they stay in a shelter or with family or friends? Did someone bring them food, water, or medicine? Who cleaned up and fixed things damaged by the natural disaster?

**Each Team Member** — Make a list of the natural disasters people you know were in or near and the people who helped them.

**As a Team** — Next, take a look at each team member's list. Talk about how your team can find out more about the natural disasters and the people who help by warning, rescuing, rebuilding, and caring for others in a natural disaster. Are they near you? Can you talk with them in person? Over the phone? Using email or social media? By letter?

**As a Team** — Choose one specific natural disaster from the list above to learn more about. Make sure you pick a natural disaster that interests your entire team.

## Learn About the Natural Disaster

**As a Team** — Get to know more about the natural disaster your team chose. How does it start? What happens? Why is it dangerous for people, their belongings, and buildings?



Here are some examples of dangers caused by natural disasters:

- Shaking from an earthquake or the fast moving water of a tsunami can damage or destroy buildings, roads, and bridges
- When a volcano explodes, rocks, gases, and ash can fly through the air at 400+ miles per hour (700 kilometers per hour)
- Heavy ice and snow can pull down power lines, weigh down building roofs, or trap people in their homes or cars
- Tornado and hurricane winds can pick up cars, trucks, and whole buildings
- Landslides and avalanches can bury anything in their path
- A single wildfire can destroy thousands of acres and hurt the people and animals that live there
- Floods can fill a basement with water or wash away whole buildings

**As a Team** — Once you know about the causes of your team’s natural disaster and some of its dangers, do some research. What can your team learn about how people are warned that a natural disaster is coming? Who gives the warning? How do they know a natural disaster is coming? How do they tell people? What do they tell people to help keep them safe? Here are some examples of people and organizations who help warn and care for people before, during, and after a natural disaster.

- Police officers and fire fighters
- Meteorologists and weather reporters
- City planning and emergency departments
- Weather programs run by countries (like NOAA Weather in the USA or the World Weather Information Service in Switzerland)
- The Red Cross, Red Crescent, and other volunteers

**As a Team** — Start your detailed research. Learn more about one of these times:

- Before the natural disaster strikes
- During the natural disaster
- After the natural disaster

Here are some things to learn about.

**Before a natural disaster strikes** — Find out how individual team members can plan ahead and stay safe. What can your team learn about what families need if a natural disaster strikes? How much warning will you have? What can your team learn about how people know when to warn a community that a natural disaster is near? What kinds of things should a family think about and do to prepare for an emergency? What will they need to care for themselves and their pets? What will happen to farm animals?

**During the natural disaster** — Find out who cares for people, pets, and other animals during the natural disaster. If team members have to leave their homes, where will they stay? How will they get food, water, clothing, or medicine? Who rescues people who are trapped? How are these people rescued?

Find out about the forces that are at work during the natural disaster. What do they do to buildings, roads, bridges, dams, and other property? Do they shake? Are they blown over? Are they picked up? Are they washed away? What is happening?

**After the natural disaster** — Find out who cares for people after the natural disaster. Who helps to clean up and rebuild? What would happen if the team’s school was damaged? What if the road to your house was damaged? What if the grocery store was damaged? How would you get food, medicines, and other things that you and your family need? How would you let helpers know what you need?



## Build It

Time to build your LEGO model. Your model should represent a scene that shows the before, during, or after stage of the natural disaster. Here are some model ideas to get your team thinking. Be creative when you are building and remember your model must show movement.

### Before a natural disaster strikes

- Can you show how the forces of nature grow, travel, and become a natural disaster?
- Can you show how people are warned about your natural disaster?
- Can you show how people prepare for the coming natural disaster?
- Can you show how first responders prepare for the coming disaster?

### During the natural disaster

- Can you show the natural disaster that your team chose and how it causes damage?
- Can you show how your disaster plan will keep you safe?
- Can you show how people are cared for during your natural disaster?
- Can you show the actual forces at play during the natural disaster?

### After the natural disaster

- Can you show how people were found after your natural disaster?
- Can you show how people are rescued?
- Can you show where people stay or how they get the food, water, medicines, and other things they need?
- Can you show how things are cleaned up, repaired, or rebuilt?



### Make something in your model move. Here are the rules:

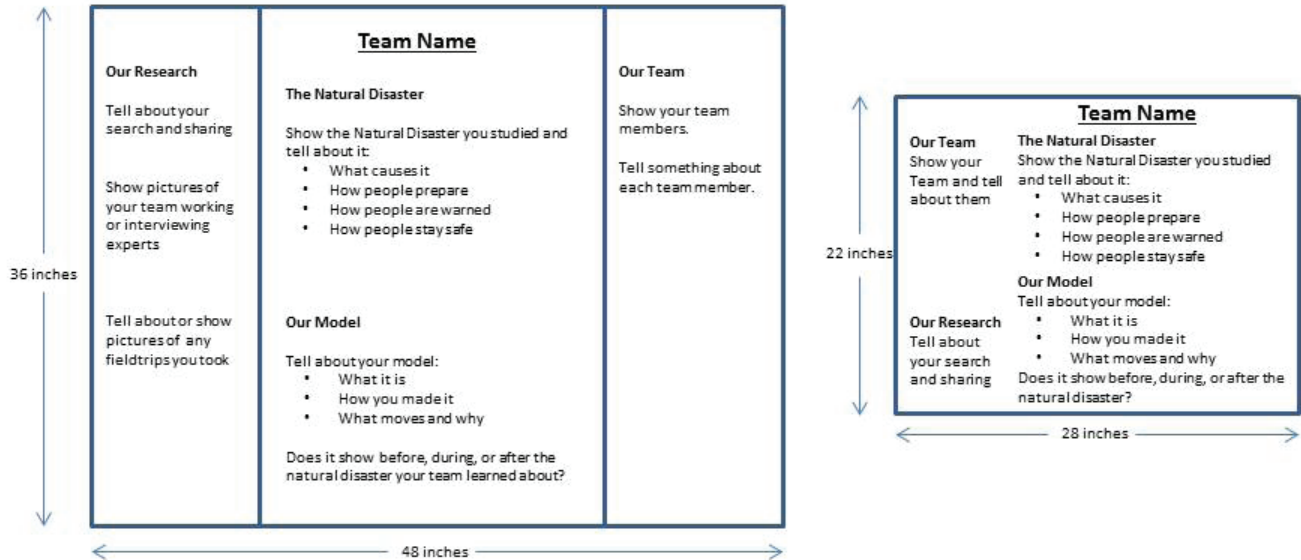
- Your Jr.FLL Team model should be built from scratch using your imagination.  
There is no right or wrong answers when it comes to building, so use all the LEGO elements you need. Build a model that represents what you learned!
- The model must be no bigger than 15-inches x 15-inches.  
A LEGO XL baseplate or other premeasured footprint makes it easier to keep the model the right size.
- The model should be made of LEGO elements—you can use any LEGO bricks, figures, or moving parts you need.
- The model should have at least one motorized, moveable part. You can use any LEGO motor to make your part move.  
There is a LEGO motor included with the optional Jr.FLL Base Set that your team can purchase from LEGO Education after registering your team with *FIRST*.
- The model should include one simple machine—you can use LEGO parts to build ramps, levers, pulleys, gears, wheels and axles, screws, or wedges. You can find many of the pieces to make these items in the optional Jr. FLL Base Set.
- You cannot paint or decorate the LEGO parts; you cannot use other art or craft materials in your model.



# Show It

Your Team Show Me poster is the backdrop for your team model at a Jr.FLL Expo. Sometimes your team will be busy doing fun activities at a Jr.FLL Expo or event. Your team can't always be near your model to talk about what you learned and built. Your Show Me poster is a way to tell others about what your team learned and what you built. Use written words, pictures, and drawings to create your Show Me poster. Tell as much as you can. Let everyone visiting your Jr.FLL display know how hard you worked.

Here's how your Show Me poster should be arranged:



Be sure to include:

- Your team name
- The type of natural disaster your team chose
- Research about the natural disaster
- Information about your model
- Information about your team

Here are the rules:

- Use a 22-inch x 28-inch flat poster board or a 36-inch x 48-inch tri-fold presentation board—no bigger!
- You can use words, drawings, photos, and small objects attached to the poster to tell about what your team learned.
- Tell about your team—your team name, your team members. (Remember to make space to share something special about each one.)
- Tell about the places you hunted for answers and the people you asked.
- Tell about the natural disaster—what it is, how it causes danger, and how your team can stay safe.



- Tell about your model and your machine—what is moving, where, and how.
- Tell about the part of the Natural Disaster your team chose to show in your model. Before, During, or After?

And remember, the most important thing is to have fun while you show your understanding of natural disasters and how your team plans to stay safe.

## Share It

Now, share what you learned. You decide how to share what you've learned. Get permission and put your poster up at school, the library, or another public building. Invite parents, teachers, people who helped you find answers, team sponsors, and other kids to see your poster and your model. Tell the story. Answer questions. Sing a song. Put on a play. Be serious. Be funny. But find a way to share what you know!

If you attend a Jr.FLL Expo, reviewers will visit with you for 5 to 10 minutes. Be prepared to:

- Listen to the reviewers and answer their questions
- Tell the reviewers about your team
- Tell the reviewers about the natural disaster your team chose and what you learned
- Tell the reviewers about your hunt for answers
- Show the reviewers how your model works
- Tell the reviewers about how you shared what you learned
- Be sure you have lots to share; the reviewers are looking forward to learning from you!

## Coaches, Need Help Getting Started?

This season's Jr.FLL Challenge builds an understanding of the way natural disasters affect people and the complex network of technology that helps with warnings, rescue, care for victims, recovery, and rebuilding. The sheer scope can be mind-boggling, even for adults, but the DISASTER BLASTER Challenge lays the groundwork for understanding the roles that all kinds of careers play in keeping us safe. It allows your team to learn about these events and feel confident in their ability to plan and stay safe. It brings an awareness of technology and its impact on the real world. The Jr.FLL Coaches' Guide contains more information about Junior *FIRST* LEGO League, community events and awards, along with hints for a successful season, including scheduling and activity suggestions. The DISASTER BLASTER 2013 Coaches' Resources contains discussion topic ideas, a glossary, and a wide variety of age-appropriate resources, both print and online.

Information and resources are also available online at [www.jrfirstlegoleague.org](http://www.jrfirstlegoleague.org) and at [www.usfirst.org/jr.fll](http://www.usfirst.org/jr.fll)

If you have more questions, e-mail [jrflteams@usfirst.org](mailto:jrflteams@usfirst.org) for support.

