# Disastrous Data: We Need a Plan

Students learn about natural hazards and how to protect themselves and others.

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<tr>
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<td>Grade Level</td>
<td>6</td>
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<tr>
<td>Duration</td>
<td>1-2 class periods</td>
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## National Geography Standards

**ELEMENT FIVE: ENVIRONMENT AND SOCIETY**

15. How physical systems affect human systems.

## Arizona Geography Strand

**CONCEPT 5 Environment and Society**

GRADE 6

PO 4 Identify the way humans respond to/prepare for natural hazards in order to remain safe.

## Other Arizona Standards

### Mathematics College and Career Ready Standards

**Statistics and Probability**

6.SP.B.5. Summarize numerical data sets in relation to their context, such as by:

- a. Reporting the number of observations.
- b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

### Standards for Mathematical Practice


## ELA College and Career Ready Standards

**Reading**

**Integration of Knowledge and Ideas**

6-8.RH.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

**Writing**

**Production and Distribution of Writing**

6-8.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

- a. Produce clear and coherent functional writing (e.g.,
Overview
A natural hazard takes place in the physical environment and destroys human life, property, or both. Tornadoes, lightning, floods, extreme temperatures, and earthquakes are some natural hazards that have had disastrous effects on human systems. Analyzing data about such events can help students understand the impact that natural hazards have on human life and the need for a plan of action to help prepare the population to better survive disasters.

Purpose
In this lesson students will practice using mean, median, mode, and range to organize and analyze data on the consequences that natural disasters have on human life. Students will formulate ideas to help prepare populations and avoid casualties.

Materials
- Calculators (optional)
- Maps: Disastrous Flash Floods, Disastrous Lightning, Disastrous Heat Extremes, Disastrous Tornadoes
- Disastrous Data worksheets and Answer Key
- Optional: pictures or video clips of flash floods, lightning, heat extremes, and tornadoes.
- Oral Presentation Form

Objectives
The student will be able to:
1. Calculate mean, median, mode, and range to organize a set of data on deaths caused by natural hazards.
2. Formulate ideas to help prevent deaths caused by these disasters.

Procedures
Prerequisite: Students should have practice in calculating mean, median, mode, and range

SESSION ONE
1. Write on board this definition: natural hazard—a process, taking place in the natural environment that destroys human life, property, or both.
2. Discuss the difference between manmade and natural disasters. Then brainstorm with the class some possible natural hazards. What are the consequences to humans? What can be done to prevent deaths?
3. Divide the class into four groups. Each group will be responsible for one of the following:
   ✓-lightning data
   ✓-tornado data
   ✓-flash flood data
   ✓-extreme heat data
4. Give each group one copy of their group's map and enough Disastrous Data worksheets for each group member.
5. Go over directions and procedures. Provide work time. If students are not finished, this can be homework.

SESSION TWO
1. Give groups about 15 minutes to organize for a written display or oral presentation of data, commenting on 4 consequences to humans and 4 ideas on how to prepare for their hazard.
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2. As the groups are presenting, continue class discussions with comments, questions, and possible answers.

**Assessment**

**Math:** Check the groups' calculations using the worksheet keys. Students should score 80% or higher.

**Geography, Reading, and Writing:** Each group should be able to come up with 4 consequences to humans and 4 ideas for how to prepare for their given hazard (8 points). Groups should have 6 points or higher to be considered mastery.

**Extensions**

Data can be organized with box plots, stem and leaf plots and/or pie graphs

Update these statistics. Students can compare data from different years.

Research information on natural hazards not included in the lesson and their consequences to humans and environments.

**Sources**

[www.fema.gov/kids/dizarea](http://www.fema.gov/kids/dizarea)

[http://www.ncdc.noaa.gov/oa/ncdc.html](http://www.ncdc.noaa.gov/oa/ncdc.html)