

# Unit 7: Earth and Human Activity

Content Area: **Science**  
Course(s):  
Time Period: **Generic Time Period**  
Length: **3 weeks**  
Status: **Published**

## Disciplinary Core Ideas

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### Natural Hazards

- [A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. \(3-ESS3-1\) \(Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.\)](#)

MA.K-12.2	Reason abstractly and quantitatively.
CCSS.Math.Content.3.MD.B.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.
LA.3.W.3.1	Write opinion pieces on topics or texts, supporting a point of view with reasons.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
3-ESS3	Earth and Human Activity
3-ESS3-1	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.
LA.3.W.3.7	Conduct short research projects that build knowledge about a topic.

## Essential Questions

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## Essential Unit Question:

How can we protect people from weather-related hazards?

## Objectives:

Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

## Concepts that will be taught:

- Cause-and-effect relationships are routinely identified, tested, and used to explain change.
- Science affects everyday life.
- People's needs and wants change over time, as do their demands for new and improved technologies.
- A variety of natural hazards result from natural processes (e.g., flooding, fast wind, or lightning).
- Humans cannot eliminate natural hazards but can take steps to reduce their impacts.
- Engineers improve technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).
- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria).
- Different proposals for solutions can be compared on the basis of how well each one meets the criteria for success or how well each takes the constraints into account.

## Students will be able to:

- Identify and test cause-and-effect relationships to explain change.
- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.
- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Examples of design solutions to weather-related hazards could include:

- Barriers to prevent flooding
- Wind-resistant roofs
- Lightning rods

- Define a simple design problem that can be solved through the development of an object, tool, process, or system and include several criteria for success and constraints on materials, time, or cost.

## **Activities**

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Read Time for Kids and National Geographic on issues pertaining to our environment and problems.

Complete lab activity from Teachers Pay teachers "Solving Environmental Problems"

Break students into groups to discuss possible solutions to problems we see in everyday and in the environment.

Students can write an opinion piece about an environmental problem they see. They should include solutions and why attention to the problem is important.

## **Mystery Science: The Birth of Rocks**

Mystery #3: (Weathering & Destructive Forces) In this Mystery, students will explore how solid rock breaks apart into smaller pieces through a process called weathering (including root-wedging and ice-wedging.) In the activity, students will model the process of weathering that occurs when rocks tumble and crash into each other using sugar cubes in a container.

Mystery #4: (Erosion, Natural Hazards & Engineering) In this Mystery, students will learn about the types, causes, and dangers of landslides. Through a brainstorming process, students will become engineers who design solutions for preventing landslides, protecting property, and keeping people safe.

## **Materials & Resources**

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[www.mysteryscience.com](http://www.mysteryscience.com)

Time for Kids

National Geographic

"Solving Environmental Problems" Lab *Teachers Pay Teachers*

*Mystery Science:*

*Mystery 3:*

Students work in pairs. Each pair of students will need:

- a container with a lid
- 5 sugar cubes
- two washable markers
- a paper plate
- 2 [Sugar Shake Data Sheets](#) (2-pages each)
- 2 pencils

*Mystery 4:*

Each student will need:

- several [Post-it notes](#) measuring 3"X3"
- a pencil
- a ["Saving My Slide-City Home" worksheet](#)

You will also need:

- wall space where you can put up Post-it notes

## **Assessment**

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opinion pieces

*Mystery Science:*

Mystery 3 and 4 Assessment

Summative Assessment

## **Accommodations & Modifications**

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- Large print textbooks
- Additional time for assignments
- Review of directions
- Have student restate information
- Provision of notes or outlines
- Concrete examples
- Adaptive writing utensils
- Support auditory presentations with visuals
- Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
- Space for movement or breaks
- Extra visual and verbal cues and prompts
- Books on tape
- Graphic organizers
- Quiet corner or room to calm down and relax when anxious
- Preferential seating
- Alteration of the classroom arrangement

- Reduction of distractions
- Answers to be dictated
- Hands-on activities
- Use of Manipulatives
- Follow a routine/schedule
- Alternate quiet and active time
- Teach time management skills
- Rest breaks
- Verbal and visual cues regarding directions and staying on task
- Daily check-in special education teacher
- Visual daily schedule
- Varied reinforcement procedures
- Immediate feedback
- Personalized examples