

TEACHER'S MANUAL

This Suitcase Program provides the materials and lesson plans for teachers of grades K-2 with content and activities increasing in difficulty by grade level. Activities in this Suitcase Exhibit may assist in meeting the Tennessee State Standards.

ACTIVITIES

UNIT I: Defining an Earthquake

LEVEL 1: *What is an Earthquake?*

ACTIVITY I: Tremble Here, Tremble There	3
ACTIVITY II: Tremors and Turtles	4
ACTIVITY III: Earth Mural	5

UNIT II: Why and Where Earthquakes Occur

LEVEL 1: *Inside Planet Earth*

ACTIVITY I: Earth from the Inside Out	6
ACTIVITY II: Energy Transfer	7
ACTIVITY III: Giant Jigsaw Puzzle	8

UNIT III: Physical Results of Earthquakes

LEVEL 1: *Earthquakes Shape our Earth*

ACTIVITY I: Earth Moves	9
ACTIVITY II: Model Communications	10

UNIT IV: Measuring Earthquakes:

LEVEL 1: *Earthquakes Great and Small*

ACTIVITY I: Weak and Strong	11
ACTIVITY II: Shakes Makes Quakes	12
ACTIVITY III: Shake a Minute	13

UNIT V: Earthquake Safety and Survival [K-6]

PART 1: *What Happens During an Earthquake?*

ACTIVITY I: Size Up Your State	14
ACTIVITY II: Earthquake Simulation	15
ACTIVITY III: Know What Might Happen	16

<i>PART 2: Hunt for Hazards</i>	
ACTIVITY I: Classroom Hazard Hunt	17
ACTIVITY II: Home Hazard Hunt	18
ACTIVITY III: Community Hazard Hunt	19
<i>PART 3: Prepare and Share</i>	
ACTIVITY I: Brainstorming	20
ACTIVITY II: Create a Kit	21
ACTIVITY III: Poster Party	22
<i>PART 4: Evacuation Drill</i>	
ACTIVITY I: Get Ready, Get Set	23
ACTIVITY II: Pull It All Together	24
INVENTORY CHECKLIST	25

TENNESSEE STATE STANDARDS FOR K-2

K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
1.ETS1.1	Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
2.PS2.1	Analyze the push or the pull that occurs when objects collide or are connected.
2.PS2.2	Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
2.PS2.3	Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
2.PS3.1	Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.
2.ESS1.1	Recognize that some of Earth's natural processes are cyclical while others have a beginning and an end. Some events happen quickly, while others occur slowly over time.
2.ESS1.3	Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together.
2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.
2.ETS2.2	Predict and explain how human life and the natural world would be different without current technologies.

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT I: Defining an Earthquake

LEVEL 1: What is an Earthquake?

ACTIVITY I: Tremble Here, Tremble There

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students create a model of an earthquake and observe the effects of a simulated quake.

GUIDING QUESTIONS

What do we mean when we say people are “quaking in their boots?” What do you suppose is happening to the Earth when there is an earthquake?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.
- 2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object’s movement or non-movement.
- 2.PS3.1 Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

An assortment of paper plates, cups and small boxes

MATERIALS PROVIDED BY TEACHER

A shallow box partially filled with sand or soil
A small table or desk that moves easily

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT I: Defining an Earthquake

LEVEL 1: What is an Earthquake?

ACTIVITY II: Tremors and Turtles

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Discuss the origins of legends as a means of explaining occurrences in nature.

GUIDING QUESTIONS

How can we understand about earthquakes using science? How do you suppose people explained them before that?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.ETS1.1 Recognize that some of Earth's natural processes are cyclical while others have a beginning and an end. Some events happen quickly, while others occur slowly over time.
- 2.ETS2.2 Predict and explain how human life and the natural world would be different without current technologies.

MATERIALS INCLUDED

Master 1a, U.S. map
Master 2, The Turtle Tale

MATERIALS PROVIDED BY TEACHER

For each student:
2 small paper plates
1 straw
Green construction paper
Handout from Master 3, *Turtle Tale Pop-Up Puppet*
Scissors
Markers or crayons
Stapler

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT I: Defining an Earthquake

LEVEL 1: What is an Earthquake?

ACTIVITY III: Earth Mural

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Legends are traditional narrative explanations of natural phenomena that evolve when scientific explanations are not available.

GUIDING QUESTION

What does the center of the Earth look like, and what might cause earthquakes?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.ETS2.2 Predict and explain how human life and the natural world would be different without current technologies.

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

A large roll of paper for mural
Drawing paper and crayons or oil pastels
Scissors

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT II: Why and Where Earthquakes Occur

LEVEL 1: Inside Planet Earth

ACTIVITY I: Earth From the Inside Out

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will name and identify layers of the Earth and observe a model of the Earth's plates,

GUIDING QUESTIONS

What are the layers of the earth?

TENNESSEE STATE STANDARDS

- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

Batches of Play-Doh™, modeling medium (see recipe), or plasticine modeling clay
Master 12b, Earth Layers worksheet
Small strips of yellow, blue, and red construction paper
3 toothpicks
Scissors
Paste or glue
Dental floss or butter knife

MATERIALS PROVIDED BY TEACHER

Transparency made from Master 12a (Layers of the Earth)
Overhead projector
Hard-boiled egg with the Earth's plates outlined in permanent marker (crude markings will do)
Kitchen knife or dental floss

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT II: Why and Where Earthquakes Occur

LEVEL 1: Inside Planet Earth

Activity II: Energy Transfer

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will observe a model of the Earth's plates, and then create a model of the Earth's plates with their bodies.

GUIDING QUESTIONS

What differences do you see between the three layers of the Earth?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.
- 2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

A color-coded red sign that says "Core"
A color-coded yellow sign that says "Mantle"
A color-coded blue sign that says "Crust"
(Each can be on a string to hang on a student's head)

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT II: Why and Where Earthquakes Occur

LEVEL 1: Inside Planet Earth

Activity III: Giant Jigsaw Puzzle

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will construct a representation of the Earth's plate with jigsaw puzzle pieces.

GUIDING QUESTION

How would you explain an earthquake if you were a modern Gabrielino? (from Activity I)

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.ETS1.1 Recognize that some of Earth's natural processes are cyclical while others have a beginning and an end. Some events happen quickly, while others occur slowly over time.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.
- 2.ETS2.2 Predict and explain how human life and the natural world would be different without current technologies.

MATERIALS INCLUDED

Handouts made from Masers 13, Earth Plates, 14a, Puzzle Pieces, and 14b Puzzle Pieces

MATERIALS PROVIDED BY TEACHER

Egg Model from Activity I
Crayons
Scissors
Paste
World Map
Transparency made from Master 13,
Earth Plates
Transparencies

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT III: Physical Results of Earthquakes

LEVEL 1: Earthquakes Shape Our Earth

ACTIVITY I: Earth Movers

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will demonstrate horizontal, vertical and lateral fault movement.

GUIDING QUESTION

What are the three types of faults?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.
- 2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
- 2.PS3.1 Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.

MATERIALS INCLUDED

Master 13, Earth Plates (or World Map)
Master 21, Fault Movements

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparencies of Masters 13 and 21

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT III: Physical Results of Earthquakes

LEVEL 1: Earthquakes Shape Our Earth

ACTIVITY II: Model Communities

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will describe a rural community, then draw a model of it. Students will demonstrate the effects of earthquakes on the model community.

GUIDING QUESTIONS

What would happen during an earthquake to a fence built across a fault?

TENNESSEE STATE STANDARDS

- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.
- 2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
- 2.PS3.1 Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.

MATERIALS INCLUDED

Master 22, Rural Community after an Earthquake

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparency made from Master 22

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT IV: Measuring Earthquakes

LEVEL 1: Earthquakes Great and Small

ACTIVITY I: Weak and Strong

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will demonstrate two types of energy and different levels of strength.

GUIDING QUESTIONS

What are some of the different forms of energy? How does the amount of energy change depending on motion?

TENNESSEE STATE STANDARDS

- K.LS1.3 Explain how humans use their five senses in making scientific findings.
- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.ETS1.2 Predict and explain how human life and the natural world would be different without current technologies.

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

None

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT IV: Measuring Earthquakes

LEVEL 1: Earthquakes Great and Small

ACTIVITY II: Shakes Makes Quakes

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will demonstrate that earthquakes have different levels of strength. Students will construct a model to simulate earthquakes and earthquake damage, compare the movement in the earthquake model to ground movement during a quake.

GUIDING QUESTIONS

What are some effects of earthquakes? Are earthquakes always the same? How do building materials make a difference in whether it can withstand an earthquake?

TENNESSEE STATE STANDARDS

- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.
- 2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
- 2.PS3.1 Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

Master 27, Shake Table
An assortment of objects for building structures:
small blocks Legos™
penne pasta sugar cubes
Lincoln Logs™ Play-Doh™ or flubber

MATERIALS PROVIDED BY TEACHER

A small table or desk that moves easily
A shallow box partially filled with sand or soil

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT IV: Measuring Earthquakes

LEVEL 1: Earthquakes Great and Small

ACTIVITY III: Shake a Minute

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Compare different levels of earthquake strength in terms of their effects on structures.

GUIDING QUESTION

How long do earthquakes last?

TENNESSEE STATE STANDARDS

- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.
- 2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
- 2.PS3.1 Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

Large clock with a second hand
Blackboard and chalk
Pencils
Paper

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 1: What Happens During an Earthquake?

ACTIVITY I: Size Up Your State

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will identify the earthquake hazard for their state.

GUIDING QUESTIONS

What is the earthquake hazard for your state? How many states in the U.S. are free from earthquake hazards?

TENNESSEE STATE STANDARDS

- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.ESS1.1 Recognize that some of Earth's natural processes are cyclical while others have a beginning and an end. Some events happen quickly, while others occur slowly over time.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.
- 2.ETS2.2 Predict and explain how human life and the natural world would be different without current technologies.
- 3.ESS3.1 Explain how natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) impact humans and the environment.
- 4.ESS2.2 Interpret maps to determine that the location of mountain ranges, deep ocean trenches, volcanoes, and earthquakes occur in patterns.
- 5.ETS2.2 Describe how human beings have made tools and machines (X-ray cameras, microscopes, satellites, computers) to observe and do things that they could not otherwise sense or do at all, or as quickly or efficiently.
- 6.LS2.6 Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes. (I thought these were K-2 activities)

MATERIALS INCLUDED

Copy of Master 37, Earthquake Hazard Map

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparency of Master 37
Crayons or colored pencils

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 1: What Happens During an Earthquake?

ACTIVITY II: Earthquake Simulation

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will identify hazards caused by earthquakes and demonstrate safe behavior during an earthquake simulation.

GUIDING QUESTIONS

What does “drop and cover” mean? What are some things you can do to stay safe in case of an earthquake?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
- 3.PS3.1 Recognize that energy is present when objects move; describe the effects of energy transfer from one object to another.
- 4.PS3.2 Observe and explain the relationship between potential energy and kinetic energy.
- 6.PS3.2 Construct a scientific explanation of the transformation between potential and kinetic energy.

MATERIALS INCLUDED

Master 38, Earthquake Simulator Script

MATERIALS PROVIDED BY TEACHER

Overhead Projector
Transparency of Master 38, Drop and Cover
Master 40
Desks or tables to get under
Optional items for simulation activity (chairs to rattle; pencils, books, and other objects to drop)

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 1: What Happens During an Earthquake?

ACTIVITY III: Know What Might Happen

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Explain to students that we can avoid or reduce our chances of being hurt if we know what to expect and what to do during an earthquake.

GUIDING QUESTIONS

What would you do if an earthquake struck? What are some of the warning signs in each room of your home?

TENNESSEE STATE STANDARDS

- K.ETS1.1 Ask and answer questions about the scientific world and gather information using the senses.
- 2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
- 3.ESS3.2 Design solutions to reduce the impact of natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) on the environment.
- 3.ETS2.1 Identify and demonstrate how technology can be used for different purposes.
- 6.LS2.6 Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

Pencil and paper for each student
Crayons or colored pencils

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 2: Hunt for Hazards

ACTIVITY I: Classroom Hazard Hunt

DURATION OF ACTIVITY: 60-90 minutes

LESSON OBJECTIVES

Students will identify potential hazards in their classroom that may cause damage, injury or death during an earthquake. Students will also list, and if possible, make changes in their classroom to reduce potential hazards.

GUIDING QUESTIONS

What are some things that could move, fall or break during an earthquake? How can your classroom be made safer during an earthquake?

TENNESSEE STATE STANDARDS

- K.LS1.3 Explain how humans use their five senses in making scientific findings.
- 2.ETS1.3 Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together.
- 3.ESS3.1 Explain how natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) impact humans and the environment.

MATERIALS INCLUDED

Master 41, Fourth Grade Classroom
Master 42, Classroom Hazard Hunt
Grade Classroom

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparency made from Master 41, Fourth
Transparency marker
Handout of Master 41, Fourth Grade Classroom
Handout of Master 42, Classroom Hazard Hunt
Crayons or colored pencils
Drawing paper, optional

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 2: Hunt for Hazards

ACTIVITY II: Home Hazard Hunt

DURATION OF ACTIVITY: 30 minutes in classroom, 30 minutes at home; classroom follow up

LESSON OBJECTIVES

Students perform a Home Hazard Hunt to determine what hazards can be found in their own homes, and determine what actions they can take to reduce the danger.

GUIDING QUESTIONS

What are some of the hazards found in your home? What can you do to reduce the danger in your home?

TENNESSEE STATE STANDARDS

- K.LS1.3 Explain how humans use their five senses in making scientific findings.
- 2.ETS1.3 Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together.
- 3.ESS3.1 Explain how natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) impact humans and the environment.

MATERIALS INCLUDED

Master 43a, b, and c, Home Hazard Hunt Worksheets
Master 44, Quake-Safe Home Checklist

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparencies of Master 43a, b, and c, Home Hazard Hunt Worksheets
Transparency of Master 44, Quake-Safe Home Checklist
Pencil or pen

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 2: Hunt for Hazards

ACTIVITY III: Community Hazard Hunt

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students perform a Community Hazard Hunt to determine what hazards can be found in their communities, including damage to buildings, power lines, bridges, highways and railroad tracks, ponds, spilled chemicals, and determine what actions they can take to reduce the danger.

GUIDING QUESTIONS

What are some of the hazards found in your community? What can you do to anticipate hazards to avoid danger and injury?

TENNESSEE STATE STANDARDS

- K.LS1.3 Explain how humans use their five senses in making scientific findings.
- 2.ETS1.3 Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together.
- 3.ESS3.1 Explain how natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) impact humans and the environment.
- 6.LS2.6 Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.

MATERIALS INCLUDED

Master 45, Neighborhood Hazard Hunt
Master 46, Safety Rules for Shoppers
Master 47a, b, and c, Community Hazard Hunt

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparency and handouts made from Master 45, Neighborhood Hazard Hunt
Transparency marker
Crayons or colored pencils
Handouts made from Master 46, Safety Rules for Shoppers
Older Students: Handouts made from Masters 47a, b, and c, Community Hazard Hunt

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 3: Prepare and Share

ACTIVITY I: Brainstorming

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will demonstrate an awareness of responsibility for their own well-being and the well-being of others during an emergency.

GUIDING QUESTIONS

What are some things you cannot take with you if you had to leave your home in an emergency? What are things that you really need to live? Are they easy to carry and travel with?

TENNESSEE STATE STANDARDS

- 1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
- 2.ETS1.3 Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together.
- 3.ESS3.2 Design solutions to reduce the impact of natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) on the environment.
- 5.ETS1.1 Research, test, re-test, and communicate a design to solve a problem.

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

Blackboard and chalk

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 3: Prepare and Share

ACTIVITY II: Create a Kit

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will list items to include in classroom, home, and vehicle emergency kits, and brainstorm uses for the kits other than earthquakes. Students will prepare an emergency kit for the classroom.

GUIDING QUESTIONS

What items should be included in an earthquake emergency kit? Why?

TENNESSEE STATE STANDARDS

- K.ETS2.1 Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
- 1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
- 2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.
- 3.ESS3.2 Design solutions to reduce the impact of natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) on the environment.
- 3.ETS2.1 Identify and demonstrate how technology can be used for different purposes.
- 5.ETS2.1 Identify and demonstrate how technology can be used for different purposes.

MATERIALS INCLUDED

Earthquake Survival Kit., which includes:

Hard candy	Flashlight
Batteries (2D & 3AAA)	Water
Waterproof matches	First Aid Kit
Money	Radio
Scissors	Tape
Garbage bags	Playing cars
Paper & marker	

MATERIALS PROVIDED BY TEACHER

Inexpensive backpack or other ample container with shoulder straps
Art supplies
Writing paper and pencils

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 3: Prepare and Share

ACTIVITY III: Poster Party

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will memorize a safety chant. Students will make posters illustrating what they have learned, and distribute them around the school and community.

GUIDING QUESTION

How can you take what you've learned about earthquakes and use that information to inform others about earthquake safety and survival?

TENNESSEE STATE STANDARDS

2.S.10 Identify basic weather-related emergency guidelines. (Health standard)

MATERIALS INCLUDED

None

MATERIALS PROVIDED BY TEACHER

Poster board
Art supplies
Pencils and scarp paper for rough drafts

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 4: Evacuation Drill

ACTIVITY I: Get Ready, Get Set

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will identify hazards they might find during evacuation, and develop actions they determine as helpful in dealing with the aftermath of an earthquake.

GUIDING QUESTIONS

What actions should you take after an earthquake if you are inside? What actions should you take if you are outside?

TENNESSEE STATE STANDARDS

- K.S.8 Distinguish between emergency and non-emergency situations.
- 2.S.8 Identify ways to reduce the risk of injuries and death from injury.
- 2.S.10 Identify basic weather-related emergency guidelines.
- 3.S.9 Describe appropriate actions for emergency and non-emergency situations.
- 3.S.10 Identify the importance of having a home safety plan for various emergency situations.
- 4.S.10 Demonstrate different methods of safe routes from emergency situations in home, school, and the community.
- 5.S.10 Compare and contrast the benefits and consequences of safety preparation when faced with an emergency situation.
- 6.SP.4 Identify appropriate resources available during emergency situations.

MATERIALS INCLUDED

Materials and procedure for earthquake drill
Master 39, Drop and Cover

MATERIALS PROVIDED BY TEACHER

Overhead projector
Transparency of Master 39, Drop and Cover
Index cards

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

UNIT V: Earthquake Safety and Survival

PART 4: Evacuation Drill

ACTIVITY II: Put It All Together

DURATION OF ACTIVITY: 30 minutes

LESSON OBJECTIVES

Students will describe ways of helping others who are injured during earthquakes. Students will describe feelings they might have and dangers they might face after an earthquake.

GUIDING QUESTIONS

What are some things we can do to help care for each other and keep busy after an earthquake? How can you help with the clean-up and repair work? What items would help keep you safer when helping?

TENNESSEE STATE STANDARDS

- K.S.8 Distinguish between emergency and non-emergency situations.
- 2.S.8 Identify ways to reduce the risk of injuries and death from injury.
- 2.S.10 Identify basic weather-related emergency guidelines.
- 3.S.9 Describe appropriate actions for emergency and non-emergency situations.
- 3.S.10 Identify the importance of having a home safety plan for various emergency situations.
- 4.S.10 Demonstrate different methods of safe routes from emergency situations in home, school, and the community.
- 5.S.10 Compare and contrast the benefits and consequences of safety preparation when faced with an emergency situation.
- 6.SP.4 Identify appropriate resources available during emergency situations.

MATERIALS INCLUDED

Master 48, Drill and Evacuation Checklist

MATERIALS PROVIDED BY TEACHER

Chairs and other objects needed to simulate earthquake obstacles
Classroom emergency kit
Paper and pencils

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

SUITCASE EXHIBIT INVENTORY CHECKLIST

School: _____

Check Out: _____

Return Date: _____

MoSH Check In:	Teacher Check In:	Item	Books/Videos/Posters	Teacher Return:
		A	Teacher's Manual	
		B	Binder: Paper copies of transparencies	
		C	Binder: Transparencies	
		D	DVD: Yogi Bear Earthquake Preparedness	
		E	DVD: Faulting and Folding	
		F	DVD: Plate Tectonics	
		G	Audio CD: Elmo- Beatin' the Quake	
		H	Poster: The Earth's Fractured Surface	
		I	Poster: Earthquakes	
		J	Booklet: Yogi Bear Earthquake Preparedness	
		K	Seismograph Activity Model Investigation	
		L	Poster: Central United States. Earthquakes	

SUITCASE EXHIBIT INVENTORY CHECKLIST

MoSH Check In:	Teacher Check In:	Item	Materials	Teacher Return:
		1	Seismograph	
		2	6 Foam Blocks	
		3	Geology Demonstration Set: 4 3 ½-inch Foam Rectangles 3 20-inch Foam Strips	Tray 3 Strata Blocks 1 Volcano Model
		4	Rock	
		5	Earthquake Survival Kit Batteries (2D & 3AA) First Aid Kit Tape Playing Cards	Hard Candy Waterproof Matches Money Garbage Bags Paper & Marker Flashlight Water Radio Scissors
		6	Aluminum Foil	
		7	Large Mixing Bowl	
		8	Bucket	
		9	Coffee Can	
		10	Metal Baking Pan	
		11	3 Foam Trays	
		12	Plastic Bags	
		13	15 Droppers	
		14	4 Paper Punches	
		15	16 Small Paper Plates	
		16	String	
		17	Yarn	
		18	Timer	
		19	Straight Pins	
		20	2 Containers of Play-Doh	
		21	Toothpicks	
		22	2 bottles of Food Coloring	
		23	Measuring Cup	
		24	15 Metric Rulers	
		25	Dental Floss	
		26	Paper Clips	
		27	Measuring Tape	
		28	4 Goggles	
		29	5 Containers of Silly Putty	
		30	Clay	
		31	Washers	
		32	Straws	
		33	Stirring Sticks	
		34	Fabric Scraps	
		35	Quake Game (4 tokens, 1 die, 18 Go Cards, 18 Question Cards, 25 Quake Cards, Game board, Directions Card)	
		36	50 Cups	
		37	5 Slinkies	
		38	Lincoln Logs (3 large, 2 medium, 10 small, 45 tiny, 1 rooftop)	
		39	Building Blocks (10 red, 10 green, 10 blue, 10 yellow)	
		40	Bag - Penne Pasta	
		41	Lattice Wood	

MoSH

EARTHQUAKES:
Suitcase Program [K-2]