



OPTIMIZING THE HUMAN EXPERIENCE

Our Changing Environment



STEM Road Map Module Title

Our Changing Environment

STEM Road Map Theme

Optimizing the Human Experience

Grade Level

Kindergarten

Authors

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Koehler, C., Bloom, M. A., & Milner, A. R. (2015). The STEM road map for grades K-2. In C. C. Johnson, E. E. Peters-Burton, & T. J. Moore (Eds.), *STEM road map: A framework for integrated STEM education* (pp. 41-67). New York, NY: Routledge.

See <https://www.routledge.com/products/9781138804234> for more information about *STEM Road Map: A Framework for Integrated STEM Education*.

STEM Road Map Curriculum Module Overview

STEM Road Map Module Theme and Grade Level: Optimizing the Human Condition - Kindergarten

STEM Road Map Module Topic: Our Changing School Environment

Lead Discipline – English/Language Arts

Module Summary

In this module, students will investigate the environment around them with a focus on the needs of living things and the effects of changes in the environment on these organisms. Students will synthesize their learning during the module to publish a newsletter for the local community, highlighting the environmental changes they have identified (adapted from Koehler, Bloom, & Milner, 2015; see <https://www.routledge.com/products/9781138804234>).

Established Goals/Objectives

The goal of this module is for students to demonstrate conceptual awareness of changes in their environment such as the localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats. At the conclusion of this module, students will be able to:

- Identify changes in their environment (SCIENCE)
 - Understand that there are various causes to environmental changes.
 - Understand that there are various solutions to environmental changes.
- Utilize technology to gather research information and communicate (TECHNOLOGY)
- Utilize technology tools to gather data (TECHNOLOGY)
- Utilize technology to facilitate deeper conceptual understanding (TECHNOLOGY)
- Identify technological advances and tools that scientists use to learn about the changing environment (TECHNOLOGY)
- Explain/discuss/express concepts about changes in the environment through the development of a newsletter for the local community to report changes in the environment around the school and community. (ELA)
- Chart, graph, identify, and analyze patterns of your local weather using the symbols > = < to indicate warmer, colder, etc. (MATHEMATICS)
- Sort recyclables brought in each day. Use the symbols > = < to count, chart and graph [amount and weight] and compare daily tallies. (MATHEMATICS)
- Demonstrate competency in the 21st Century Skills (e.g. interdisciplinary themes and investigations; learning and innovation skills; information, media and technology literacy; life and career skills)
- Evaluate the influence changes in the environment have on culture and society. (SOCIAL STUDIES)

Challenge and/or Problem for Students to Solve

In this module, student teams are challenged “to develop and print a newsletter or blog for the local community to report conditions and changes in the environment in the community (Koehler et al., 2015).

Content Standards Addressed in STEM Road Map Module

Next Generation Science Standards	Common Core Mathematics	Common Core English/Language Arts (ELA)	National Association for the Education of Young Children (NAEYC):
<p>K-ESS2-1</p> <p>Use and share observations of local weather conditions to describe patterns over time.</p>	<p><u>CCSS Math Practices</u></p> <p>MP1 Make sense of problems and persevere in solving them.</p> <p>MP2 Reason abstractly and quantitatively.</p> <p>MP3 Construct viable arguments and critique the reasoning of others.</p> <p>MP4 Model with mathematics.</p> <p>MP5 Use appropriate tools strategically.</p> <p>MP6 Attend to precision.</p> <p>MP7 Look for and make use of structure.</p> <p>MP8 Look for and express regularity in repeated reasoning.</p>	<p><u>Reading Standards</u></p> <p>RI.K.1 With prompting and support, ask and answer questions about key details in a text.</p> <p>RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p>	<p>2.G.02 Children are provided varied opportunities and materials to learn key content and principles of science.</p>
<p>K-ESS3-1</p> <p>Use a model to represent the</p>	<p><u>Math Content</u></p> <p>CCSS.Math.Content.K.CC.B.4 Understand the relationship</p>	<p><u>Writing Standards</u></p> <p>W.K.2 Use a combination of</p>	<p>2.G.03 Children are provided with varied opportunities</p>

Next Generation Science Standards	Common Core Mathematics	Common Core English/Language Arts (ELA)	National Association for the Education of Young Children (NAEYC):
relationship between the needs of different plants and animals (including humans) and the places they live.	between numbers and quantities; connect counting to cardinality.	<p>drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p>W.K.5 With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.</p> <p>W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).</p>	and materials that encourage them to use the five senses to observe, explore, and experiment with scientific phenomena.
<p>K-PS3-1</p> <p>Make observations to determine the effect of sunlight on Earth’s surface.</p>	<p>CCSS.Math.Content.K.CC.C.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.</p> <p>CCSS.Math.Content.K.CC.C.7 Compare two numbers</p>	<p><u>Speaking and Listening Standards</u></p> <p>SL.K.1 Participate in collaborative conversations with diverse partners about <i>kindergarten topics and texts</i> with peers and adults in small and larger groups.</p>	<p>2.G.04 Children are provided with varied opportunities to use simple tools to observe objects and scientific phenomena.</p>

Next Generation Science Standards	Common Core Mathematics	Common Core English/Language Arts (ELA)	National Association for the Education of Young Children (NAEYC):
	between 1 and 10 presented as written numerals.	<p>SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.</p> <p>SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.</p>	
<p>K-LS1-1</p> <p>Use observations to describe patterns of what plants and animals (including humans) need to survive.</p>	<p>CCSS.Math.Content.K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.</p> <p>CCSS.Math.Content.K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.</p>		<p>2.G.05 Children are provided with varied opportunities and materials to collect data and to represent and document their findings (e.g., through drawing or graphing).</p>

Next Generation Science Standards	Common Core Mathematics	Common Core English/Language Arts (ELA)	National Association for the Education of Young Children (NAEYC):
	<p>CCSS.Math.Content.K.MD.B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.</p>		<p>2.G.06 Children are provided with varied opportunities and materials that encourage them to think, questions, and reason about observed and inferred phenomena.</p>
	<p>CCSS.Math.Content.K.CC.A.1 Count to 100 by ones and by tens.</p> <p>CCSS.Math.Content.K.CC.A.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).</p> <p>CCSS.Math.Content.K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).</p> <p>CCSS.Math.Content.K.CC.B.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number</p>		<p>2.G.07 Children are provided with varied opportunities and materials that encourage them to discuss scientific concepts in everyday conversation.</p>

Next Generation Science Standards	Common Core Mathematics	Common Core English/Language Arts (ELA)	National Association for the Education of Young Children (NAEYC):
	from 1-20, count out that many objects.		
			2.G.08 Children are provided with varied opportunities and materials that help them learn and use scientific terminology and vocabulary associated with the content areas.
			2.H.02 All children have opportunities to access technology that they can use.
			2.H.03 Technology is used to extend learning within the classroom and integrate and enrich the curriculum.

21st Century Skills Addressed in STEM Road Map Module

21st Century Skills	Learning Skills & Technology Tools (from P21 framework)	Teaching Strategies	Evidence of Success
Interdisciplinary themes	Economic, Business, and Entrepreneurial Literacy Health Literacy Environmental Literacy	Teachers will provide students with the opportunity to investigate changes in the environment such as the localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats through a transdisciplinary lens, in part, in the context of the economics of everyday life and the business industry (e.g. agricultural, etc.).	Students will compare and contrast their prior and current experiences with changes in the environment such as the localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats through a transdisciplinary lens in the context of the interdisciplinary themes.
Learning and innovation skills	Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration	Creativity and innovation, critical thinking and problem solving, communication, and collaboration will be facilitated through the: “Super Sunflower” investigation; the development of a school newspaper or blog that reports changes in the environment around the school and	Students will demonstrate creativity and innovation, critical thinking and problem solving, communication, and collaboration through the completion of the “Super Sunflower” investigation; the publication of a school newspaper or blog that reports changes in the environment around the school and community; and

		community; and creating a “Playlist” of the videos that they took throughout this module to upload on their blog.	the uploading of their “Playlist” of the videos that they took throughout this module to upload on their blog.
Information, media and technology skills	Information Literacy Media Literacy Information Communication and Technology Literacy	Teachers will engage students in guided practice and scaffolding strategies through the use of developmentally appropriate books, videos, and websites to advance their knowledge. For example, “interactive read aloud,” “I wonder, I learned” graphic organizer, P.O.E. investigations, Venn diagrams, etc.	Students will acquire and use deeper content knowledge through the use of media and technology skills and demonstrate that knowledge by uploading information on the classroom blog that reports changes in the environment around the school and community and a “Playlist” of the videos that they took throughout this module to upload on their blog.
Life and career skills	Flexibility and Adaptability Initiative and Self-Direction Social and Cross Cultural Skills Productivity and Accountability Leadership and Responsibility	Teachers will facilitate student collaborative teamwork to foster their life and career skills.	Throughout this module, student teams will collaborate to develop a school newspaper or blog that reports changes in the environment around the school and community.

Key Vocabulary for the Module

Key Vocabulary	Definition
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Adaptation	Adaptations are features that people, plants, and animals possess that help them to live in their habitats.
Chemical	A chemical is any solid, liquid, or gas that is part of our environment.
Climate	Climate is the weather conditions in an area over an extended period of time.
Conservation	Conservation is to restore or protect something in the natural environment.
Compost	Compost is different types of decayed material mixed together that goes back into the soil.
Disaster	A disaster is an unexpected event that causes damage to animal, plants, people, and the environment.
Drought	A drought is a long period of dry weather with very little rainfall.
Earth	Earth is the planet where we live.
Environment	The environment is the conditions and objects including living things that are in our surroundings.
Extinction	Extinction is when a species of plant or animal disappears from the earth.
Garbage	Garbage is made up of everything we can no longer use, such as spoiled food, or other waste.
Habitat	A habitat is a place in nature where plants, animals, and people grow and live.
Prevent	To prevent is to stop something from taking place.
Pollution	Pollution is anything that we can see, smell, hear, and taste that is harmful to animals, plants, people, and the environment.
Recycle	To recycle something is to use it more than one time.
Reduce	To reduce is to make something smaller or to make less of it.
Reuse	To reuse is to use something more than one time.
Seasons	Earth has different seasons at different times during the year because of patterns in the weather and the amount of sunlight.
Waste	To waste is to use something carelessly.
Weather	Weather is the daily conditions over a particular area that includes temperature, precipitation, cloud cover, and air pressure.

Launch

Introduce the module challenge by telling students that they are going to act as investigators and reporters during this module. Like professionals who investigate news stories and report on them, students are going to investigate the local environment and factors that affect that environment and create a newsletter or a blog for the local community.

Introduce the concept of environment and habitats by holding a class discussion, asking questions such as:

- What is the environment?
- What are habitats?
- Are there different types of habitats? (If they say yes) What kinds of habitats are there?
- What are the basic needs of all living things? (e.g. air, water, food, shelter [habitat], and sunlight)
- What happens when all five basic needs are not met?
- Why is it important for all living things to have these basic needs met at all times?
- Why do some living things become extinct?
- What are some reasons these basic needs may not be met?
- What can we do to make sure the basic needs of all living things are always met?

Show the Video: “This Land is Your Land” <https://www.youtube.com/watch?v=3C4iRf9gOdY> (This video is 2:28 minutes long) asking students to watch for the different habitats they see in the video.

Prerequisite Key Knowledge:

Prerequisite key knowledge	Application of knowledge	Differentiation for students needing knowledge
NGSS <ul style="list-style-type: none">• Cause and effect	Understanding cause and effect will enable students to determine how environmental change is interdependent in relation to erratic weather conditions and local animal habitats through a transdisciplinary lens.	Provide students with specific content via books, videos, songs, computer programs, and real-world experiences. Enable students to share their diverse knowledge and experiences as a whole class learning opportunity.
CCSS Math <ul style="list-style-type: none">• Number sense	Having an understanding of number sense will enable students to chart, graph, identify and analyze patterns (e.g. warmer, cooler) ($>=<$) as well as sort, count, chart, and	

	graph (e.g. amount and weight). Number sense will allow students to compare ($>=<$) daily tallies to draw conclusions.	
CCSS ELA <ul style="list-style-type: none"> • Making Predictions • Journaling • Question/Verbal Response 	<p>Students will pose and test a hypothesis and then confirm or reject their predictions. Through journaling and questioning/verbal response, students will share their thought processes as they engage in the “Super Sunflower” investigation, the development of a school newspaper or blog that reports changes in the environment around the school and community, and a “Playlist” of the videos that they took throughout this module to upload on their blog.</p>	
NAEYC <ul style="list-style-type: none"> • Group Discussion 	<p>Group discussion will support the student teams as they use creativity and innovation, critical thinking and problem solving, communication, and collaboration in the “Super Sunflower” investigation, the development of a school newspaper or blog that reports changes in the environment around the school and community, and a “Playlist” of the videos that they took throughout this module to upload on their blog.</p>	

Desired Outcomes and Monitoring Success

Desired Outcome	Evidence of Success in Achieving Identified Outcome	
<p>Students will demonstrate conceptual awareness of changes in their environment such as the localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats through a transdisciplinary lens.</p>	<p>Performance Tasks</p> <p>Student teams will conduct the “Super Sunflower” investigation to explore effects of changes in the environment.</p>	<p>Other Measures</p> <p>Formative assessment will be the main source of evidence of success for the Kindergarten module. This will include group discussions, observations, questioning, and STEM Notebooks.</p> <p>The summative assessment will be the successful development of a school newspaper or blog to be distributed to other kindergarten classes in the school district and beyond to report changes in the environment around the school and community in addition to each lesson plan’s summative assessment.</p>

Assessment Plan

<p>Major Group Products</p>	<ul style="list-style-type: none"> • “Super Sunflowers” investigation • School newspaper or blog • Playlist
<p>Major Individual Products/Deliverables</p>	<ul style="list-style-type: none"> • STEM Notebook entries (e.g. “I wonder, I learned”; P.O.E. Venn diagram, graphic organizer, etc.) • Group participation • Summative assessments from each lesson

Resources

School-based Individuals: Classroom Teacher

Technology: Developmentally appropriate videos, websites, and computer programs.

Community: Guest Speaker (e.g. Meteorologist, ecologist, etc.)

Materials:

- Computer and Internet for videos
- Document Camera
- I-pads/phones/tablets for student videotaping
- Books
- STEM Notebooks for students
- Chart paper
- Markers
- Map and/or globe
- A clear and clean 2 liter plastic bottle
- Scissors
- Potting Soil
- Sunflower seeds

Safety/Cautions

- Advise students to appropriately use the materials.

STEM Road Map Module Timeline

STEM Road Map Module Schedule Week One

Day 1	Day 2	Day 3	Day 4	Day 5
<i>Lesson 1</i> <i>Our Amazing Environment!</i>	<i>Lesson 1</i> <i>Our Amazing Environment!</i>	<i>Lesson 1</i> <i>Our Amazing Environment!</i>	<i>Lesson 2</i> <i>Let's Explore Our Neighborhood Environment!</i>	<i>Lesson 2</i> <i>Let's Explore Our Neighborhood Environment!</i>
Launch the module by introducing the concepts of environment and habitats. Access student prior knowledge about habitats and begin charting weather.	Conduct an “interactive read aloud” – <i>Red Leaf, Yellow Leaf</i> by Lois Ehlert. Complete Super Sunflowers activity (observations continue throughout module).	Students take a schoolyard/neighborhood walk to observe and draw plants at various stages of their life cycles.	Introduce the concept of pollution. Conduct an interactive read aloud and discuss the impacts of pollution. Introduce Our Environmental Health investigation	Our Environmental Health investigation – part one

STEM Road Map Module Schedule Week Two

Day 6	Day 7	Day 8	Day 9	Day 10
<i>Lesson 2</i> <i>Let's Explore Our Neighborhood Environment!</i>	<i>Lesson 2</i> <i>Let's Explore Our Neighborhood Environment!</i>	<i>Lesson 3</i> <i>Our Neighborhood News</i>	<i>Lesson 3</i> <i>Our Neighborhood News</i>	<i>Lesson 3</i> <i>Our Neighborhood News</i>
Our Environmental Health investigation – part two	Field trip (may be taken on any day of Lesson 2 or 3)	Introduce importance of environmental awareness. Introduce Health Habitats project and create plan. Begin work on student newsletter.	Implement students' Healthy Habitats plan. Continue work on student newsletter.	Complete student newsletter.

Lesson Plan #1 Our Changing Environment– Kindergarten

Lesson Title

Our Amazing Environment!

Lesson Summary

In this lesson, students will explore the concept of environment, various habitats, and the basic needs of living things. Students will investigate plant growth conditions through a Super Sunflowers investigation.

Essential Question(s)

- What is the environment?
- What are habitats?
- Are there different types of habitats? (If they say yes) What kinds of habitats are there?
- What are the basic needs of all living things? (e.g. air, water, food, shelter [habitat], and sunlight)
- What do you think happens when all five basic needs are not met?

Established Goals/Objectives

At the conclusion of this lesson, students will be able to:

- Define environment
- Define habitats and identify several habitats
- Identify the basic needs of all living things
- Chart, graph, identify, and analyze patterns of your local weather using the symbols > = < to indicate warmer, colder, etc.
- Utilize technology tools to gather research information and communicate.

Time Required

3 days (90 minutes each)

Necessary Materials

- Computer and Internet for videos
 - National Geographic-Climate and Weather:
<http://www.watchknowlearn.org/Video.aspx?VideoID=3929&CategoryID=2671>
 - “This Land is Your Land”
<https://www.youtube.com/watch?v=3C4iRf9gOdY> (This video is 2:28 minutes long).
- Document Camera
- I-pads/phones/tablets for student videotaping
- Books
 - *Red Leaf, Yellow Leaf* by Lois Ehlert

- STEM Notebooks for students (notebook pages are in Appendix)
- Chart paper
- Markers
- Map and/or globe
- Clear, clean 2 liter plastic bottles, cut in half (3 per group of 3 students)
- Scissors
- Potting Soil
- Sunflower seeds

Standards Addressed in STEM Road Map Module Lesson

Next Generation Science Standards

K-ESS2-1; K-ESS3-1; K-PS3-1; K-LS1-1;

Common Core Mathematics

MP1; MP2; MP3; MP4; MP5; MP6; MP7; MP8; CCSS.Math.Content.K.CC.B.4; CCSS.Math.Content.K.CC.C.6; CCSS.Math.Content.K.CC.C.7; CCSS.Math.Content.K.MD.A.1; CCSS.Math.Content.K.MD.A.2; CCSS.Math.Content.K.MD.B.3; CCSS.Math.Content.K.CC.A.1; CCSS.Math.Content.K.CC.A.3; CCSS.Math.Content.K.CC.B.5;

Common Core ELA

CCSS.ELA.RI.K.1; CCSS.ELA.RI.K.3; CCSS.ELA.W.K.2; CCSS.ELA.W.K.5; CCSS.ELA.W.K.7; CCSS.ELA.SL.K.1; CCSS.ELA.SL.K.3; CCSS.ELA.SL.K.5;

NAEYC

2.G.02; 2.G.03; 2.G.04; 2.G.05; 2.G.06; 2.G.07; 2.G.08; 2.H.02; 2.H.03

21st Century Skills

Interdisciplinary themes; Learning and innovation skills; Information, media and technology skills; Life and career skills

Key Vocabulary	Definition
Adaptation	Adaptations are features that people, plants, and animals possess that help them to live in their habitats.
Chemical	A chemical is any solid, liquid, or gas that is part of our environment.
Climate	Climate is the weather conditions in an area over an extended period of time.
Conservation	Conservation is to restore or protect something in the natural environment.
Compost	Compost is different types of decayed material mixed together that goes back into the soil.
Disaster	A disaster is an unexpected event that causes damage to animal, plants, people, and the environment.
Drought	A drought is a long period of dry weather with very little rainfall.
Earth	Earth is the planet where we live.
Environment	The environment is the conditions and objects including living things that are in our surroundings.
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Garbage	Garbage is made up of everything we can no longer use, such as spoiled food, or other waste.
Habitat	A habitat is a place in nature where plants, animals, and people grow and live.
Prevent	To prevent is to stop something from taking place.
Pollution	Pollution is anything that we can see, smell, hear, and taste that is harmful to animals, plants, people, and the environment.
Recycle	To recycle something is to use it more than one time.
Reduce	To reduce is to make something smaller or to make less of it.
Reuse	To reuse is to use something more than one time.
Seasons	Earth has different seasons at different times during the year because of patterns in the weather and the amount of sunlight.
Waste	To waste is to use something carelessly.
Weather	Weather is the daily conditions over a particular area that includes temperature, precipitation, cloud cover, and air pressure.

Teacher Background Information

The STEM Research Notebook is an important part of this module. The notebook pages are attached at the end of the module. Note that the entry numbers may be discontinuous (for example, there are no entry #s 2,3, or 4) because this module has been shortened from a longer version in order to accommodate the summer program.

The environment is all around us and is a natural part of our daily lives. This lesson enables children to begin to explore the concept of changes in the environment through tracking weather patterns and through the Super Sunflowers investigation.

Students will use a process of predict, observe, and explain (P.O.E.) for their investigations in this module. This abbreviated version of the scientific process is appropriate for activities in which students observe and test scientific phenomena.

The following websites may be useful to you as you prepare for this lesson:

National Geographic-Climate and Weather:

<http://www.watchknowlearn.org/Video.aspx?VideoID=3929&CategoryID=2671>

Pollution Impacts on the Economy:

<http://www.environmentforbeginners.com/content/category/11/23/51/>

Predict, Observe, Explain: Activities Enhancing Scientific

Understanding: <http://static.nsta.org/files/PB281Xweb2.pdf>

It is important to consistently utilize the key vocabulary words throughout this lesson to reinforce conceptual awareness of changes in the environment.

You may wish to incorporate a discussion of various careers during this module (Koehler, Bloom, & Milner, 2015; see <https://www.routledge.com/products/9781138804234>):

Astronomer

Botanist

Ecologist

Engineer

Farmer

Geographer

Journalist

Mathematician

Meteorologist

Scientist

For more information about these and other careers, see Bureau of Labor Statistics' *Occupational Outlook Handbook* at <http://www.bls.gov/ooh/home.htm>.

Lesson Preparation

Assemble all materials for each day. Have the STEM Notebook entries copied for each student as the STEM Notebooks will be used every day. Students will have the opportunity to predict, observe, and explain the needs of living things in the Super Sunflowers investigation. Since students will be working with this module for only ten days, you should prepare sample sunflower planters 1-2 weeks in advance, simulating the various conditions described in the activity, so that students can see a longer-term example of the various environmental conditions (see Activity/Investigation). You may also wish to create a daily weather chart for students to use to chart weather conditions (see Activity/Investigation).

Learning Plan Components

Introductory Activity/Engagement

Present students with their STEM Notebook that they will use throughout the module.

Introduce the module challenge by telling students that they are going to act as investigators and reporters during this module. Like professionals who investigate news stories and report on them, students are going to investigate the local environment and factors that affect that environment and create a newsletter or a blog for the local community.

Introduce the concept of environment and habitats by holding a class discussion, asking questions such as:

- What is the environment?
- What are habitats?
- Are there different types of habitats? (If they say yes) What kinds of habitats are there?
- What are the basic needs of all living things? (e.g. air, water, food, shelter [habitat], and sunlight)
- What happens when all five basic needs are not met?
- Why is it important for all living things to have these basic needs met at all times?
- Why do some living things become extinct?
- What are some reasons these basic needs may not be met?
- What can we do to make sure the basic needs of all living things are always met?

Show the Video: “This Land is Your Land” <https://www.youtube.com/watch?v=3C4iRf9gOdY> (This video is 2:28 minutes long) asking students to watch for various habitats during the video. Ask students to share what habitats they saw during the video. Document student responses on chart paper and post on classroom wall.

STEM Notebook Entry #1:

Have students draw and label two different habitats they have seen (e.g. Forest, prairie, desert, wetland, tundra, ocean, mountain, etc.).

Activity/Investigation

Weather Chart

Every day of this module, students will chart and graph their local weather to begin to identify and analyze patterns in weather as well as to begin to make connections among climate (the weather conditions over an extended period of time), changes in the environment, localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats.

Beginning today, at the start of every class, have students will chart, graph, identify, describe and analyze patterns of your local weather:

- warmer, colder, [\geq = \leq]
- descriptions of the weather (such as sunny, cloudy, rainy, and warm)
- numbers of sunny, windy, and rainy days in a month
- pattern analysis could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months

Interactive Read Aloud

Conduct an interactive read aloud of *Red Leaf, Yellow Leaf* by Lois Ehlert to introduce plant life cycles. Create a class know, wonder, learned (KWL) chart to track student ideas. Students will also create a STEM Notebook entry before and after the reading.

STEM Notebook Entry #5:

- Students will document their “wonderings” about plants and how they grow in their STEM Notebook before the “interactive read aloud” (with both words and pictures)
- Document student responses on chart paper and post on classroom wall. (Keep up throughout module)

Conduct the interactive read aloud of *Red Leaf, Yellow Leaf* by Lois Ehlert.

- Allow students to share personal stories throughout the reading.
- Ask students to predict throughout the story.
- Allow students to add new ideas from the book to the class chart and their STEM Notebooks.

STEM Notebook Entry #6:

- Students will document their what they learned in their STEM Notebook after the “interactive read aloud” (with both words and pictures)
- Teacher will document student responses on the KWL and post on classroom wall. (Keep up throughout module)

Super Sunflowers

Tell students that they are going to investigate sunflower growth under different conditions in this activity. Review the five basic conditions necessary for life, and ask students to predict what will happen when any one of those is missing. This investigation is designed to simulate healthy growing conditions, drought conditions, and growing conditions in which sunlight is interrupted from particulate matter in the air, simulating air pollution.

STEM Notebook Entry #7:

(PREDICT) - As you prepare for the “Super Sunflowers” investigations, ask your students to respond to each of the following questions for the various conditions simulated in the investigation:

- What does your seed need to sprout into a seedling? (Light and water)
- How long will it take for your seed to sprout into a seedling?
- How much will your seedling grow each week?

Document student predictions on chart paper. Students should document their predictions in their STEM Notebook using both scientific terms and illustrations.

Sample Predict/Observe/Explain (P.O.E.) chart:

Predict	Observe	Explain

Each group should have all the supplies needed to begin their Super Sunflowers investigation at their table/area. Each group of 3-4 students should create 3 sunflower planters to simulate the conditions in the three investigations:

Investigation #1: the seed will be properly watered and have appropriate sunlight

Investigation #2: the seed will be properly watered but not have sunlight (to simulate particulate matter in the air)

Investigation #3: the seed will not be watered but will have appropriate sunlight

Direct students to:

- Clean the clear 2 liter bottles (clear so the students can see root growth).
- Cut the bottle in half (or cut bottles ahead of time).
- Poke holes in the bottom of the bottle to allow drainage.
- Fill the bottle bottom with potting soil.
- Plant sunflower seeds into the soil.

- Have students label each planter with their team names and #1, #2, or #3 to correspond with the conditions described below.

For investigation #1, properly water these plants daily and place on the window sill where they will receive appropriate daily sunlight.

For investigation #2, properly water these plants daily but put in dark area of the classroom to restrict sunlight.

For investigation #3, do not water these plants but put them on the window sill where they will receive appropriate daily sunlight.

STEM Notebook Entry #8:

(OBSERVE – This observation will take place over time) Students should make regular observations of their sunflower plants throughout the module (you may need multiple copies of STEM Notebook Entry #8 – have students date each entry).

Investigation #1 (This seed will be properly watered and have appropriate sunlight):

- How long did it take for your seed to sprout into a seedling?
- How much did your seedling grow each week?

Investigation #2 (This seed will be properly watered but not have sunlight):

- How long did it take for your seed to sprout into a seedling?
- How much did your seedling grow each week?

Investigation #3 (This seed will not be watered but have appropriate sunlight):

- How long did it take for your seed to sprout into a seedling?
- How much did your seedling grow each week?

Explain

STEM Notebook Entry #9 (*This entry will be made near the end of the module after students have had a chance to observe their sunflower growth and the growth of the sample sunflower planters you created in advance*).

- Revisit predictions from before the “Super Sunflowers” investigation.
- Using the student recorded videotapes, have students compare their predictions to their observations.
- Students will explain why they think what happened actually happened.
- Students will discuss whether their predictions were accurate, close, or not accurate and why.
- Students will share their ideas and explanations with the whole class.

Extend/Apply Knowledge

Provide students with examples of newsletters and/or blogs (depending on which medium your students will use for their final challenge) to examine. Ask students to identify the components of newsletters and/or blogs. Students might note that there are photographs, headlines, written text, and perhaps graphics. Have students brainstorm about what they might include in a newsletter or blog about the local environment (weather, types of plants, etc.).

Assessment

Performance Tasks

Have students define “environment.” Have them draw and label a picture of a change in the environment. Partner students and have them compare their pictures. Allow students to identify the differences in the pictures. Student should use a minimum of two vocabulary words.

Other Measures

Teacher observations.

STEM Notebook entries.

Participation in their teams during investigations.

See assessment rubric at the end of this module.

Internet Resources

- Animated Lesson to learn about Water Pollution:
<https://www.youtube.com/watch?v=y1ObvXZDQNs>
- Blogging Sites for Teachers: <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=blogging%20sites%20for%20teachers>
- Change The World In 5 Minutes - Everyday at School:
<https://www.youtube.com/watch?v=oROsbaxWHOM>
- Climate Kids: <http://climatekids.nasa.gov/>
- Clean Air Kids: www.clearn-air-kids.org.uk
- Differentiated Instruction:
<http://steinhardt.nyu.edu/scmsAdmin/uploads/005/120/Culturally%20Responsive%20Differentiated%20Instruction.pdf>
- Diverse Learners: <http://www.edutopia.org/blog/differentiated-instruction-ways-to-plan-john-mccarthy>
- Drinking Water: Bottled or From the Tap?
<http://kids.nationalgeographic.com/kids/stories/spacescience/water-bottle-pollution/>
- Educational environmental video for kids
https://www.youtube.com/watch?v=Z_eApyjB8sM

- EPA Climate Change Impacts and Adapting to Change: <http://www.epa.gov/climatechange/impacts-adaptation/>
- Federally Funded NASA 'Educates' Children About Global Warming on 'Climate Kids' Web Site: <https://www.youtube.com/watch?v=aT37M383uAc>
- Gifted Students: <http://educationnorthwest.org/sites/default/files/12.99.pdf>
- Global Warming: <http://www.neok12.com/Global-Warming.htm>
- Going Green: <https://www.youtube.com/watch?v=8DJ45Yc3urg>
- How to Make a Pollution Catcher | Science Projects: <https://www.youtube.com/watch?v=9uVdi-3AqRE>
- How to Plant a Tree: <http://www.timeforkids.com/tree>
- Kids Air: http://www.airnow.gov/index.cfm?action=aqikids_home.index
- Land Pollution: http://www.ducksters.com/science/environment/land_pollution.php
- Martha Speaks | The Pollution Players | PBS KIDS: <https://www.youtube.com/watch?v=qCvtyKd5Rdl>
- National Geographic-Climate and Weather: <http://www.watchknowlearn.org/Video.aspx?VideoID=3929&CategoryID=2671>
- Pollution Impacts on the Economy: <http://www.environmentforbeginners.com/content/category/11/23/51/>
- Predict, Observe, Explain: Activities Enhancing Scientific Understanding: <http://static.nsta.org/files/PB281Xweb2.pdf>
- Scaffolding Strategies: <http://www.edutopia.org/blog/scaffolding-lessons-six-strategies-rebecca-alber>
- Sesame Street: Recycling Aluminum Cans: <https://www.youtube.com/watch?v=BKpoCzt03B8>
- The Environment Water Pollution: http://www.ducksters.com/science/environment/water_pollution.php
- The Four Seasons: <http://www.livescience.com/25202-seasons.html>
- "The Lorax" (reading) Dr. Seuss: <https://www.youtube.com/watch?v=aa82mcXO9AQ>
- The Lorax cartoon: <https://www.youtube.com/watch?v=8V06ZOQuo0k>
- The Oil Spill: <https://www.youtube.com/watch?v=SakDOUIDWDs>
- The Wump World – A Reading: <https://www.youtube.com/watch?v=PORV4ZnKwdA>
- This land is your land: <https://www.youtube.com/watch?v=3C4iRf9gOdY>
- Time for Kids: <http://www.timeforkids.com/minisite/environment>

Books

- Bergen, L. (2009). *Don't Throw That Away!: A Lift-the-Flap Book about Recycling and Reusing*. New York: Little Simon.
- Berger, M. (1994). *Oil Spill*. New York: Harper Collins.
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- Lawrence, E. (2014). *Global Warming*. New York: Bearport Publishing.
- Lishak, A. (2008). *Global Warming: What's that got to do with me?* North Mankato, MN: Smart Apple Media.
- Morgan, S. (2007). *Waste Disposal*. North Mankato, MN: Sea-to-Sea Publications.
- Robinson, F. (1995). *Recycle That!* Chicago: Children's Press.
- Robinson, F. (1995). *Too Much Trash!* New York: Children's Press.
- Rogers, K. & Alexander, J. (2000). *Paper Crunch*. Crystal Lake, IL: Rigby Literacy.
- Siddals, M. (2010). *Compost Stew: An A to Z Recipe for the Earth*. New York: Tricycle Press.
- Simon, S. (2010). *Global Warming*. New York: HarperCollins.

Lesson Plan #2
Our Changing Environment– Kindergarten

Lesson Title

Let's Explore Our Neighborhood Environment!

Lesson Summary

In this lesson, students will explore the local neighborhood to identify habitats and features of the environment they may want to highlight in their newsletter or blog. Students will understand the concept of pollution and its impacts on the environment.

Essential Question(s)

- What habitats are in the local neighborhood?
- What factors might impact local habitats?
- What is pollution?
- How does pollution affect the environment?
- How does pollution affect habitats?
- How does pollution affect the basic needs of all living things?

Established Goals/Objectives

At the conclusion of this lesson, students will be able to:

- Define pollution.
- Describe how pollution affects the environment, habitats, and all living things.
- Chart, graph, identify, and analyze patterns of your local weather using the symbols > = < to indicate warmer, colder, etc.
- Make observations to gather information.
- Identify technological advances and tools that scientists use to learn about changes in the environment.

Time Required

4 days (90 minutes each)

Necessary Materials

- Computer and Internet for videos
 - EPA Climate Change Impacts and Adapting to Change: <http://www.epa.gov/climatechange/impacts-adaptation/>
 - “Animated Lesson to learn about Water Pollution”: <https://www.youtube.com/watch?v=y1ObvXZDQNs> (This video is 3:01 minutes long)
- Document Camera
- I-pads/phones/tablets for student videotaping
- Books
 - *Water Pollution* by Rhonda Lucas Donald
 - *Air Pollution* by Rhonda Lucas Donald
- STEM Notebooks for students
- Chart paper
- Markers
- Map and/or globe

Safety/Cautions

- Advise students to appropriately use the materials.

Standards Addressed in STEM Road Map Module Lesson

Next Generation Science Standards

K-ESS2-1; K-ESS3-1; K-PS3-1; K-LS1-1;

Common Core Mathematics

MP1; MP2; MP3; MP4; MP5; MP6; MP7; MP8; CCSS.Math.Content.K.CC.B.4; CCSS.Math.Content.K.CC.C.6; CCSS.Math.Content.K.CC.C.7; CCSS.Math.Content.K.MD.A.1; CCSS.Math.Content.K.MD.A.2; CCSS.Math.Content.K.MD.B.3; CCSS.Math.Content.K.CC.A.1; CCSS.Math.Content.K.CC.A.2; CCSS.Math.Content.K.CC.A.3; CCSS.Math.Content.K.CC.B.5;

Common Core ELA

CCSS.ELA.RI.K.1; CCSS.ELA.RI.K.3; CCSS.ELA.W.K.2; CCSS.ELA.W.K.5; CCSS.ELA.W.K.7; CCSS.ELA.SL.K.1; CCSS.ELA.SL.K.3; CCSS.ELA.SL.K.5;

NAEYC

2.G.02; 2.G.03; 2.G.04; 2.G.05; 2.G.06; 2.G.07; 2.G.08; 2.H.02; 2.H.03

21st Century Skills

Interdisciplinary themes; Learning and innovation skills; Information, media and technology skills; Life and career skills

Key Vocabulary	Definition
Adaptation	Adaptations are features that people, plants, and animals possess that help them to live in their habitats.
Chemical	A chemical is any solid, liquid, or gas that is part of our environment.
Climate	Climate is the weather conditions in an area over an extended period of time.
Conservation	Conservation is to restore or protect something in the natural environment.
Compost	Compost is different types of decayed material mixed together that goes back into the soil.
Disaster	A disaster is an unexpected event that causes damage to animal, plants, people, and the environment.
Drought	A drought is a long period of dry weather with very little rainfall.
Earth	Earth is the planet where we live.
Environment	The environment is the conditions and objects including living things that are in our surroundings.
Extinction	Extinction is when a species of plant or animal disappears from the earth.
Garbage	Garbage is made up of everything we can no longer use, such as spoiled food, or other waste.
Habitat	A habitat is a place in nature where plants, animals, and people grow and live.
Prevent	To prevent is to stop something from taking place.
Pollution	Pollution is anything that we can see, smell, hear, and taste that is harmful to animals, plants, people, and the environment.
Recycle	To recycle something is to use it more than one time.
Reduce	To reduce is to make something smaller or to make less of it.
Reuse	To reuse is to use something more than one time.
Seasons	Earth has different seasons at different times during the year because of patterns in the weather and the amount of sunlight.
Waste	To waste is to use something carelessly.
Weather	Weather is the daily conditions over a particular area that includes temperature, precipitation, cloud cover, and air pressure.

Teacher Background Information

The environment is all around us and is a natural part of our daily lives, however human activities can impact the environment. This lesson enables children to begin to explore pollution and how pollution affects the environment. The EPA Climate Change Impacts and Adapting to Change website may be useful to you as you prepare for this lesson:

<http://www.epa.gov/climatechange/impacts-adaptation/>.

It is important to consistently utilize the key vocabulary words throughout this lesson to reinforce conceptual awareness of pollution and environmental change.

Lesson Preparation

Assemble all materials for each day. Have the student STEM Notebook entries copied for each student as the STEM Notebooks will be used every day. Students will make walking tours of the neighborhood. Check the weather in advance and make appropriate accommodations (e.g. raincoats, umbrellas, hats, etc.).

Learning Plan Components

Introductory Activity/Engagement

(Continue to chart, graph, identify, describe and analyze patterns of your local weather to make connections about among climate, changes in the environment, localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats).

(Continue to document plant growth using replicated STEM Notebook Entry #8 on the “Super Sunflower” investigation P.O.E. observation form. Compare, chart, and graph [\geq <] daily growth. This will be conducted until the sunflower seeds have sprouted and are large enough to be transplanted outdoors for eventual harvesting. Allow students to videotape plant growth with I-pads/phones/tablets, etc.

Hold a class discussion about pollution, asking students question such as:

- What is pollution?
- How does pollution affect the environment?
- How does pollution affect habitats?
- How does pollution affect the basic needs of all living things? (Ask this question in regard to their “Super Sunflowers” investigation as well as in a larger context; e.g. drought from global warming; interrupted sunlight from particulate matter in the air – air pollution)

Guide students to understand that there are different types of pollution. This lesson will focus on water pollution, air pollution, and litter (habitat pollution).

Interactive Read Aloud

Conduct an interactive read aloud of *Water Pollution* by Rhonda Lucas Donald
STEM Notebook Entry #10 (before reading):

- Students will document their “wonderings” about water pollution in their STEM Notebook before the “interactive read aloud” (using both scientific terms and illustrations)

Document student responses on chart paper and post on classroom wall.

Conduct the “interactive read aloud” of *Water Pollution* by Rhonda Lucas Donald.

- Allow students to share personal stories throughout the reading.
- Ask your students to predict throughout the story.
- Allow students to add new ideas from the book to the chart and their STEM Notebooks.

STEM Notebook Entry #11 (after reading):

- Students will document what they learned in their STEM Notebook after the interactive read aloud (using both scientific terms and illustrations)
- Document student responses on the KWL and post on classroom wall. (Keep up throughout module)

Activity/Investigation

Introduce the concept to students that pollution can interfere with habitats and the environmental conditions that support life. For example, animals may eat plastic litter and die. Plastic can also contaminate water and soil.

Discuss pollution and its economic impact on the local community, highlighting that pollution affects the environment and has other economic impacts. Create a class chart. For example:

Pollution	Impact	Economic Impact	Solution
Water pollution from sewage, industrial waste, etc.	Water becomes unfit for human consumption. Fish become contaminated and are not fit for human consumption impacting the fishing industry.	Costs more money to treat, clean, and filter water for human consumption.	Treat sewage and industrial waste before they make it to the waterways.
Air pollution from cars.	Bad air for humans and animals like birds. They may not live as long.	Higher health care costs from lung disease.	Walk more and drive less.
Litter (aluminum, plastic, paper, etc.).	Animals may eat the plastic and die. Plastic will	Fishing and farming industry will be affected.	Reduce, reuse, and recycle these materials.

	contaminate water and soil.		
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Our Environmental Health Investigation

Tell students that they are going to conduct an environmental health investigation. This investigation will take place during two neighborhood walking tours. During the first, students will identify and record the various habitats they see in the neighborhood. During the second, students will identify and record evidence of pollution they observe.

STEM Notebook Entry #14:

As you prepare for the “Our Neighborhood Environmental Health” investigation, ask your students to answer the following and complete the STEM Notebook Entry:

- Where are we located? (Locate on map and globe)
- What is the habitat like where we are?
- What is the weather and climate like where we are?
- What are some types of animals and plants where we are?

Begin part one of your walking tour of the school neighborhood for the Our Neighborhood Environmental Health investigation. If students have access to cameras or other devices, allow them to photograph or video record the various habitats they observe.

During part one of the walking tour, have students complete STEM Notebook Entry #15 (pages labeled, “walking tour part one”).

STEM Notebook Entry #15:

Students will document their own ideas in their STEM Notebook (with both words and pictures):

- What animals do we see today?
- What plants do we see today?
- What do we smell today?

When the class returns from the walking tour, create a class list of the various habitats, plants, and animals students observed.

During part two of the walking tour, have students complete STEM Notebook Entry #15 (pages labeled, “walking tour part two”). Students will answer:

- How does weather affect animals, plants, and the people where we are?
- How does pollution affect the weather, animals, plants, and the people where we live?

CONTINUE the “Our Neighborhood Environmental Health” investigation. Allow students to videotape each other with I-pads/phones/tablets, etc.

When the class returns from the walking tour and following agreed-upon rules for discussions:

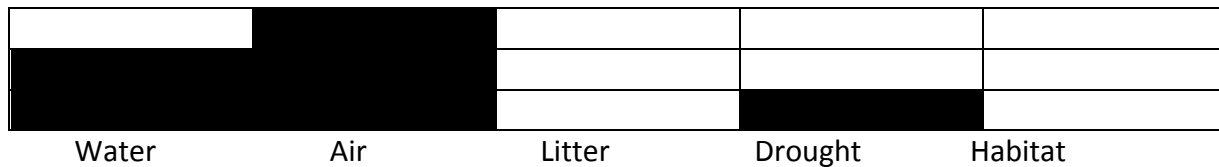
- Teacher will document student observations on KWL chart paper and post on classroom wall [utilize KWL to assess prior knowledge; preconceptions; and misconceptions]. (Keep up throughout module)

Explain

Continue “Our Neighborhood Environmental Health” investigation. Using students’ STEM Notebook entries and photographs and/or videos, have students discuss their observations.

Graph student observations of pollution:

For Example:



Discuss the cultural and societal implication of living where environmental changes are evident. For example, what happens if you live where there is a drought; What happens if you live where the air pollution is high? How is life different in areas where changes in the environment are evident? Discuss what people can do to limit environmental changes; e.g. “Reduce, Reuse, Recycle.”

Extend/Apply Knowledge

Discuss the cultural and societal implications of changes in the environment. For example, discuss pollution in the context of economic impact (e.g. farming, logging, fishing). Help students connect their understanding of the local environment with specific careers, for example, botanist, ecologist, and farmer. Identify technological advances and tools that scientists use to understand changes in the environment (e.g. thermometer, Doppler, weather instruments; etc.). Suggested field trips: recycling station, farm/orchard, etc.

Assessment

Performance Tasks

Students will define pollution.

Students will list five ways pollution affects the environment, habitats, and all living things, using a minimum of three vocabulary words.

Other Measures

Teacher observations.

STEM Notebook entries.

Participation in their teams during investigations.

See assessment rubric at the end of this module.

Internet Resources

- Animated Lesson to learn about Water Pollution:
<https://www.youtube.com/watch?v=y1ObvXZDQNs>
- Blogging Sites for Teachers: <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=blogging%20sites%20for%20teachers>
- Captain Clean Air: <https://www.youtube.com/watch?v=kReb16E7OAO>
- Change The World In 5 Minutes - Everyday at School:
<https://www.youtube.com/watch?v=oROsbaxWHOM>
- Climate Kids: <http://climatekids.nasa.gov/>
- Clean Air Kids: www.cleairn-air-kids.org.uk
- Differentiated Instruction:
<http://steinhardt.nyu.edu/scmsAdmin/uploads/005/120/Culturally%20Responsive%20Differeniated%20Instruction.pdf>
- Diverse Learners: <http://www.edutopia.org/blog/differentiated-instruction-ways-to-plan-john-mccarthy>
- Drinking Water: Bottled or From the Tap?
<http://kids.nationalgeographic.com/kids/stories/spacescience/water-bottle-pollution/>
- Educational environmental video for kids
https://www.youtube.com/watch?v=Z_eApyjB8sM
- EPA Climate Change Impacts and Adapting to Change:
<http://www.epa.gov/climatechange/impacts-adaptation/>
- Federally Funded NASA 'Educates' Children About Global Warming on 'Climate Kids' Web Site: <https://www.youtube.com/watch?v=aT37M383uAc>
- Gifted Students: <http://educationnorthwest.org/sites/default/files/12.99.pdf>
- Global Warming: <http://www.neok12.com/Global-Warming.htm>
- Going Green: <https://www.youtube.com/watch?v=8DJ45Yc3urg>
- How to Plant a Tree: <http://www.timeforkids.com/tree>
- Land Pollution: http://www.ducksters.com/science/environment/land_pollution.php
- Martha Speaks | The Pollution Players | PBS KIDS:
<https://www.youtube.com/watch?v=qCvtyKd5Rdl>
- National Geographic-Climate and Weather:
<http://www.watchknowlearn.org/Video.aspx?VideoID=3929&CategoryID=2671>

- Predict, Observe, Explain: Activities Enhancing Scientific Understanding: <http://static.nsta.org/files/PB281Xweb2.pdf>
- Scaffolding Strategies: <http://www.edutopia.org/blog/scaffolding-lessons-six-strategies-rebecca-alber>
- Sesame Street: Recycling Aluminum Cans: <https://www.youtube.com/watch?v=BKpoCzt03B8>
- The Environment Water Pollution: http://www.ducksters.com/science/environment/water_pollution.php
- The Four Seasons: <http://www.livescience.com/25202-seasons.html>
- "The Lorax" (reading) Dr. Seuss: <https://www.youtube.com/watch?v=aa82mcXO9AQ>
- The Lorax cartoon: <https://www.youtube.com/watch?v=8V06ZOQuo0k>
- The Oil Spill: <https://www.youtube.com/watch?v=SakDOUIDWDs>
- The Wump World – A Reading: <https://www.youtube.com/watch?v=PORV4ZnKwdA>
- This land is your land: <https://www.youtube.com/watch?v=3C4iRf9gOdY>
- Time for Kids: <http://www.timeforkids.com/minisite/environment>

Books

- Bergen, L. (2009). *Don't Throw That Away!: A Lift-the-Flap Book about Recycling and Reusing*. New York: Little Simon.
- Berger, M. (1994). *Oil Spill*. New York: Harper Collins.
- Cherry, L., & Braasch, G. (2008). *How we know what we know about our changing climate: Scientists and kids explore global warming*. Nevada City, CA: Dawn Publications.
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- Simon, S. (2010). *Global Warming*. New York: HarperCollins.

Lesson Plan #3 Our Changing Environment– Kindergarten

Lesson Title

Our “Neighborhood News”

Lesson Summary

In this lesson, student teams will take action to do something helpful for the local environment. Students will also develop and print a school newspaper or blog to be distributed to the local neighborhood about habitats and ways to protect the local environment.

Essential Question(s)

- What happens when all five basic needs of living things are not met?
- Why is it important for all living things to have these basic needs met at all times?
- What are some reasons these basic needs may not be met?
- What can we do to make sure the basic needs of all living things are always met?

Established Goals/Objectives

- Describe what happens when all five basic need are not met.
- Understand why it is important for all living things to have their basic needs met at all times.
- Identify some reasons why basic need may not be met.
- Utilize technology tools to gather research information and communicate.
- Chart, graph, identify, and analyze patterns of your local weather using the symbols > = < to indicate warmer, colder, etc.
- Design and produce a class newsletter or blog to report their scientific findings.

Time Required

Necessary Materials

Materials:

- Computer and Internet for videos
 - Blogging Sites for Teachers: <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=blogging%20sites%20for%20teachers>
 - “Change The World In 5 Minutes - Everyday at School”: <https://www.youtube.com/watch?v=oROsbaxWHOM> (This video is 4:31 minutes long)
 - “How to Plant a Tree” <http://www.timeforkids.com/tree> (This video is 2:20 minutes long)
- Document Camera
- I-pads/phones/tablets for student videotaping

- STEM Notebooks for students
- Chart paper
- Markers
- Map and/or globe
- Tree saplings to plant
- Protective (non-latex) gloves
- Trash bags (1 per 3 students)

Standards Addressed in STEM Road Map Module Lesson
<p>Next Generation Science Standards K-ESS2-1; K-ESS3-1; K-PS3-1; K-LS1-1;</p> <p>Common Core Mathematics MP1; MP2; MP3; MP4; MP5; MP6; MP7; MP8; CCSS.Math.Content.K.CC.B.4; CCSS.Math.Content.K.CC.C.6; CCSS.Math.Content.K.CC.C.7; CCSS.Math.Content.K.MD.A.1; CCSS.Math.Content.K.MD.A.2; CCSS.Math.Content.K.MD.B.3; CCSS.Math.Content.K.CC.A.1; CCSS. Math. Content.K. CC.A.2; CCSS.Math.Content.K.CC.A.3; CCSS.Math.Content.K.CC.B.5;</p> <p>Common Core ELA CCSS.ELA.RI.K.1; CCSS.ELA.RI.K.3; CCSS.ELA.W.K.2; CCSS.ELA.W.K.5; CCSS.ELA.W.K.7; CCSS.ELA.SL.K.1; CCSS.ELA.SL.K.3; CCSS.ELA.SL.K.5;</p> <p>NAEYC 2.G.02; 2.G.03; 2.G.04; 2.G.05; 2.G.06; 2.G.07; 2.G.08; 2.H.02; 2.H.03</p> <p>21st Century Skills Interdisciplinary themes; Learning and innovation skills; Information, media and technology skills; Life and career skills</p>

Key Vocabulary	Definition
Adaptation	Adaptations are features that people, plants, and animals possess that help them to live in their habitats.
Chemical	A chemical is any solid, liquid, or gas that is part of our environment.
Climate	Climate is the weather conditions in an area over an extended period of time.
Conservation	Conservation is to restore or protect something in the natural environment.
Compost	Compost is different types of decayed material mixed together that goes back into the soil.
Disaster	A disaster is an unexpected event that causes damage to animal, plants, people, and the environment.
Drought	A drought is a long period of dry weather with very little rainfall.
Earth	Earth is the planet where we live.
Environment	The environment is the conditions and objects including living things that are in our surroundings.
Extinction	Extinction is when a species of plant or animal disappears from the earth.
Garbage	Garbage is made up of everything we can no longer use, such as spoiled food, or other waste.
Habitat	A habitat is a place in nature where plants, animals, and people grow and live.
Prevent	To prevent is to stop something from taking place.
Pollution	Pollution is anything that we can see, smell, hear, and taste that is harmful to animals, plants, people, and the environment.
Recycle	To recycle something is to use it more than one time.
Reduce	To reduce is to make something smaller or to make less of it.
Reuse	To reuse is to use something more than one time.
Seasons	Earth has different seasons at different times during the year because of patterns in the weather and the amount of sunlight.
Waste	To waste is to use something carelessly.
Weather	Weather is the daily conditions over a particular area that includes temperature, precipitation, cloud cover, and air pressure.

Teacher Background Information

If you wish to have students create a blog, you may find the following website that contains blogging sites useful: <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=blogging%20sites%20for%20teachers>. If you choose to use a student blog, you should have parents give their consent for students to create posts.

You may choose to have students each create an entry for the blog or newsletter or you may wish to have students work in teams of 3 to create a short illustrated “article” for the publication.

It is important to consistently utilize the key vocabulary words throughout this lesson to reinforce conceptual awareness of environmental change.

Lesson Preparation

Assemble all materials for each day. Have the student STEM Notebook entries copied for each student as the STEM Notebooks will be used every day. Students will be outdoors during the Habitat Helpers activity in this lesson. Check the weather and make appropriate accommodations (e.g. raincoats, umbrellas, hats, etc.). If you plan to plant a tree (see Activity/Investigation), be sure to receive permission from the school and/or park where the tree is to be planted.

Learning Plan Components

Introductory Activity/Engagement

Continue to chart, graph, identify, describe and analyze patterns of your local weather to make connections about among climate, changes in the environment, localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats.

Continue to document plant growth using replicated STEM Notebook Entry #8 on the “Super Sunflower” investigation P.O.E. observation form. Compare, chart, and graph [\geq <] daily growth. This will be conducted until the sunflower seeds have sprouted and are large enough to be transplanted outdoors for eventual harvesting. Allow students to videotape plant growth with I-pads/phones/tablets, etc.

Begin the lesson with a class discussion about what happens when the five basic needs of living things are not met, asking:

- What happens when all five basic needs are not met?
- Why is it important for all living things to have these basic needs met at all times?
- What are some reasons these basic needs may not be met? (Pollution)
- What can we do to make sure the basic needs of all living things are always met?

Document student responses on chart paper and post on classroom wall [utilize to assess prior knowledge; preconceptions; and misconceptions]. (Keep up throughout module)

Tell students that during this class they will create their newsletter or blog (see the My Environment Newsletter pages in the STEM Research Notebook). Hold a discussion about the importance of sharing information, asking students:

- What is the purpose of a newsletter (or a blog)?
- How could a newsletter about the local environment be helpful to people?
- What kind of information could we include in a newsletter for the community?

Introduce to students the importance of being aware of what is happening in the environment. Students will watch the “Change the World in 5 Minutes” video (see below), creating a STEM Notebook Entry both before and after they view the video.

STEM Notebook Entry #18 (before viewing):

- Students will document their “wonderings” about environmental awareness and how they can impact the environment in their STEM Notebook before the video (with both words and pictures)
- Document student responses on and post on classroom wall
-

Show the Video: “Change The World In 5 Minutes - Everyday at School”:

<https://www.youtube.com/watch?v=oROsbaxWHOM> (This video is 4:31 minutes long)

STEM Notebook Entry #19:

- Students will document what they learned in their STEM Notebook after the video (with both words and pictures)
- Document student responses on chart paper and post on classroom wall.
-

Tell students that their challenge is to do something helpful for the local environment. They will report on this in their newsletter. Ask students what they could do. For example, students could pick up litter or plant a tree.

Activity/Investigation

Healthy Habitats

Students will decide on something helpful they can do for the local environment that they will report in their newsletter. For example they may choose to pick up litter or plant a tree.

Show students the “How to Plant a Tree” video (see below), creating STEM Notebook Entries before and after viewing the video

STEM Notebook Entry #22 (before viewing):

- Students will document their “wonderings” about planting trees in their STEM Notebook before the video (with both words and pictures)
- Document student responses chart paper and post on classroom wall.

Show the Video: “How to Plant a Tree” <http://www.timeforkids.com/tree> (This video is 2:20 minutes long)

STEM Notebook Entry #23:

- Students will document what they learned in their STEM Notebook after the video (with both words and pictures)
- Document student responses on chart paper and post on classroom wall.

Have students create a plan and dedicate a day (or two if they choose more than one activity) of the lesson to initiating their plan, being sure to take photographs to include in their newsletter.

Newsletter/Blog Creation

Have students use the “My Environmental Newsletter” pages at the end of the STEM Research Notebook to create basic information their newsletters. You may wish to assign student teams various components of the newsletter (i.e., a litter team to concentrate on neighborhood litter, an animals team to concentrate on neighborhood animals), with each team providing more detailed information and photographs of things they observed in the neighborhood. You can then collect team entries to create a single newsletter that can be distributed to area residents.

Extend/Apply Knowledge

Day 24 (~30 minutes)

Assessment

Mathematics class: (Continue to chart, graph, identify, describe and analyze patterns of your local weather to make connections about among climate, changes in the environment, localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats).

(Continue the “Reduce, Reuse, Recycle” program in the classroom to help facilitate healthy environment. Sort, count, chart, and graph [amount and weight] recyclables brought in each day. Compare [\geq <] daily tallies. Once the class has collected 100 cans, return the cans for money to donate and continue the chart and graph.)

(Continue to document plant growth using replicated STEM Notebook Entry #8 on the “Super Sunflower” investigation P.O.E. observation form. Compare, chart, and graph [\geq <] daily growth. This will be conducted until the sunflower seeds have sprouted and are large enough to

be transplanted outdoors for eventual harvesting. Allow students to videotape plant growth with I-pads/phones/tablets, etc. Teacher will document students' observations on a Venn diagram.)

(Continue to fill in the "Our Neighborhood Environmental Health" investigation STEM Notebook Entry #15 observation form. Allow students to videotape each other with I-pads/phones/tablets, etc. Teacher will graph student observations.)

Social Studies class: Continue doing something helpful for the local environment. For example:

- Pick up litter (recycle)
- Plant a tree (air pollution)

ELA class: As a class, post all of these findings on the "Our Neighborhood Kindergarten Environmental Health Blog."

Social Studies class:

Module Assessment:

Student teams will present their "Playlist" of the videos that they took throughout this module and then upload on their blog.

Assessment continued

Day 25 (~30 minutes)

Mathematics class: *(Continue to chart, graph, identify, describe and analyze patterns of your local weather to make connections about among climate, changes in the environment, localized effects of climate change, erratic weather conditions, and the effects of climate and weather on local animal habitats).*

(Continue the “Reduce, Reuse, Recycle” program in the classroom to help facilitate healthy environment. Sort, count, chart, and graph [amount and weight] recyclables brought in each day. Compare [\geq <] daily tallies. Once the class has collected 100 cans, return the cans for money to donate and continue the chart and graph.)

(Continue to document plant growth using replicated STEM Notebook Entry #8 on the “Super Sunflower” investigation P.O.E. observation form. Compare, chart, and graph [\geq <] daily growth. This will be conducted until the sunflower seeds have sprouted and are large enough to be transplanted outdoors for eventual harvesting. Allow students to videotape plant growth with I-pads/phones/tablets, etc. Teacher will document students’ observations on a Venn diagram.)

(Continue to fill in the “Our Neighborhood Environmental Health” investigation STEM Notebook Entry #15 observation form. Allow students to videotape each other with I-pads/phones/tablets, etc. Teacher will graph student observations.)

Social Studies class: Continue doing something helpful for the local environment. For example:

- Pick up litter (recycle)
- Plant a tree (air pollution)

ELA class: As a class, post all of these findings on the “Our Neighborhood Kindergarten Environmental Health Blog.”

Performance Tasks

Social Studies class: Student teams will present their “Playlist” of the videos that they took throughout this module and then upload on their blog.

Student teams will present their “Playlist” that documents changes in the where they live.

Other Measures

Teacher observations.

STEM Notebook entries.

Participation in their teams during investigations.

See assessment rubric at the end of this module.

Internet Resources

- Animated Lesson to learn about Water Pollution:
<https://www.youtube.com/watch?v=y1ObvXZDQNs>
- Blogging Sites for Teachers: <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=blogging%20sites%20for%20teachers>
- Change The World In 5 Minutes - Everyday at School:
<https://www.youtube.com/watch?v=oROsbaxWHOM>
- Climate Kids: <http://climatekids.nasa.gov/>
- Clean Air Kids: www.clearn-air-kids.org.uk
- Differentiated Instruction:
<http://steinhardt.nyu.edu/scmsAdmin/uploads/005/120/Culturally%20Responsive%20Differentiated%20Instruction.pdf>
- Diverse Learners: <http://www.edutopia.org/blog/differentiated-instruction-ways-to-plan-john-mccarthy>
- Drinking Water: Bottled or From the Tap?
<http://kids.nationalgeographic.com/kids/stories/spacescience/water-bottle-pollution/>
- Educational environmental video for kids
https://www.youtube.com/watch?v=Z_eApyjB8sM
- EPA Climate Change Impacts and Adapting to Change:
<http://www.epa.gov/climatechange/impacts-adaptation/>
- Federally Funded NASA 'Educates' Children About Global Warming on 'Climate Kids' Web Site: <https://www.youtube.com/watch?v=aT37M383uAc>
- Gifted Students: <http://educationnorthwest.org/sites/default/files/12.99.pdf>
- Global Warming: <http://www.neok12.com/Global-Warming.htm>
- Going Green: <https://www.youtube.com/watch?v=8DJ45Yc3urg>
- How to Plant a Tree: <http://www.timeforkids.com/tree>
- Land Pollution: http://www.ducksters.com/science/environment/land_pollution.php
- Martha Speaks | The Pollution Players | PBS KIDS:
<https://www.youtube.com/watch?v=qCvtyKd5Rdl>
- National Geographic-Climate and Weather:
<http://www.watchknowlearn.org/Video.aspx?VideoID=3929&CategoryID=2671>
- Predict, Observe, Explain: Activities Enhancing Scientific Understanding: <http://static.nsta.org/files/PB281Xweb2.pdf>
- Scaffolding Strategies: <http://www.edutopia.org/blog/scaffolding-lessons-six-strategies-rebecca-alber>
- Sesame Street: Recycling Aluminum Cans:
<https://www.youtube.com/watch?v=BKpoCzt03B8>
- The Environment Water Pollution:
http://www.ducksters.com/science/environment/water_pollution.php
- The Four Seasons: <http://www.livescience.com/25202-seasons.html>
- "The Lorax" (reading) Dr. Seuss: <https://www.youtube.com/watch?v=aa82mcXO9AQ>
- The Lorax cartoon: <https://www.youtube.com/watch?v=8V06ZOQuo0k>

- The Oil Spill: <https://www.youtube.com/watch?v=SakDOUIDWDs>
- The Wump World – A Reading: <https://www.youtube.com/watch?v=PORV4ZnKwdA>
- This land is your land: <https://www.youtube.com/watch?v=3C4iRf9gOdY>
- Time for Kids: <http://www.timeforkids.com/minisite/environment>

Books

- Bergen, L. (2009). *Don't Throw That Away!: A Lift-the-Flap Book about Recycling and Reusing*. New York: Little Simon.
- Berger, M. (1994). *Oil Spill*. New York: Harper Collins.
- Cherry, L., & Braasch, G. (2008). *How we know what we know about our changing climate: Scientists and kids explore global warming*. Nevada City, CA: Dawn Publications.
- Cherry, L. (1992). *A river ran wild : an environmental history*. San Diego, CA: Harcourt Brace Jovanovich
- Cherry, L. (1990). *The Great Kapok Tree: A Tale of the Amazon Rain Forest*. New York: Scholastic.
- Donald, R. (2001). *Air Pollution*. New York: Children's Press.
- Donald, R. (2001). *Water Pollution*. New York: Children's Press.
- Ehlert, L. (1991). *Red Leaf, Yellow Leaf*. San Diego, CA: Harcourt Brace & Company.
- Koehler, C., Bloom, M. A., & Milner, A. R. (2015). The STEM road map for grades K-2. In C. C. Johnson, E. E. Peters-Burton, & T. J. Moore (Eds.), *STEM road map: A framework for integrated STEM education* (pp. 41-67). New York, NY: Routledge.
- Lawrence, E. (2014). *Global Warming*. New York: Bearport Publishing.
- Lishak, A. (2008). *Global Warming: What's that got to do with me?* North Mankato, MN: Smart Apple Media.
- Morgan, S. (2007). *Waste Disposal*. North Mankato, MN: Sea-to-Sea Publications.
- Robinson, F. (1995). *Recycle That!* Chicago: Children's Press.
- Robinson, F. (1995). *Too Much Trash!* New York: Children's Press.
- Rogers, K. & Alexander, J. (2000). *Paper Crunch*. Crystal Lake, IL: Rigby Literacy.
- Siddals, M. (2010). *Compost Stew: An A to Z Recipe for the Earth*. New York: Tricycle Press.
- Simon, S. (2010). *Global Warming*. New York: HarperCollins.

MY STEM NOTEBOOK

OUR CHANGING ENVIRONMENT



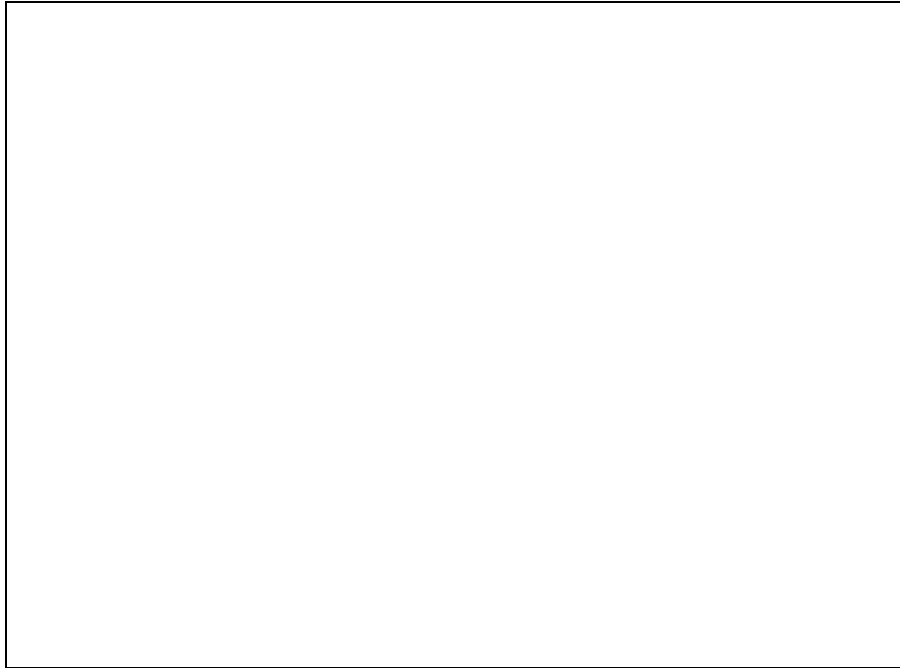
SAVE THE PLANET

NAME:

STEM Notebook #1 (Lesson Plan 1)

NAME _____ **DATE** _____

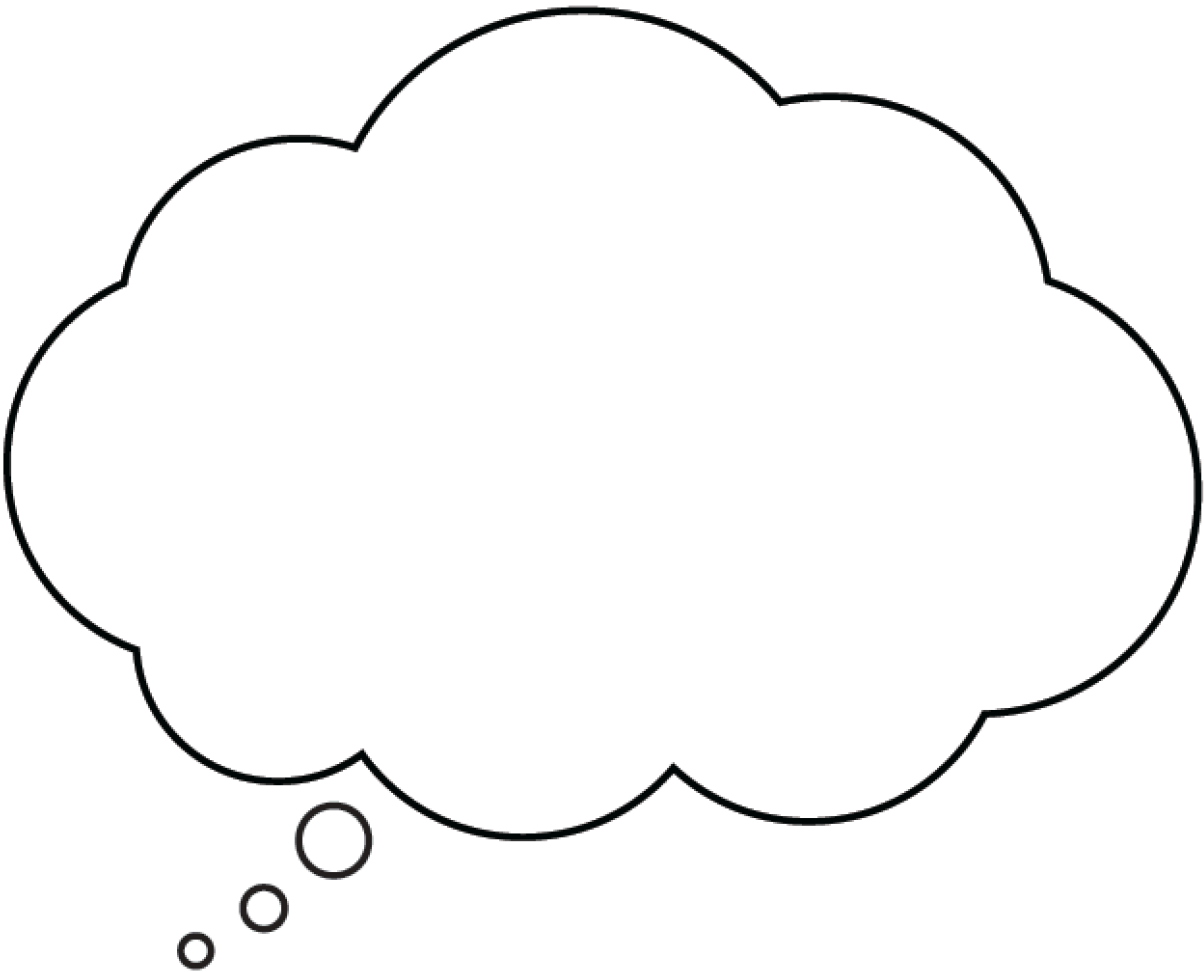
Draw and label two different habitats you have seen (e.g. forest, prairie, desert, wetland, tundra, ocean, mountain, etc.).



STEM Notebook #5 (Lesson Plan 1) (Before reading the book)

NAME _____ DATE _____

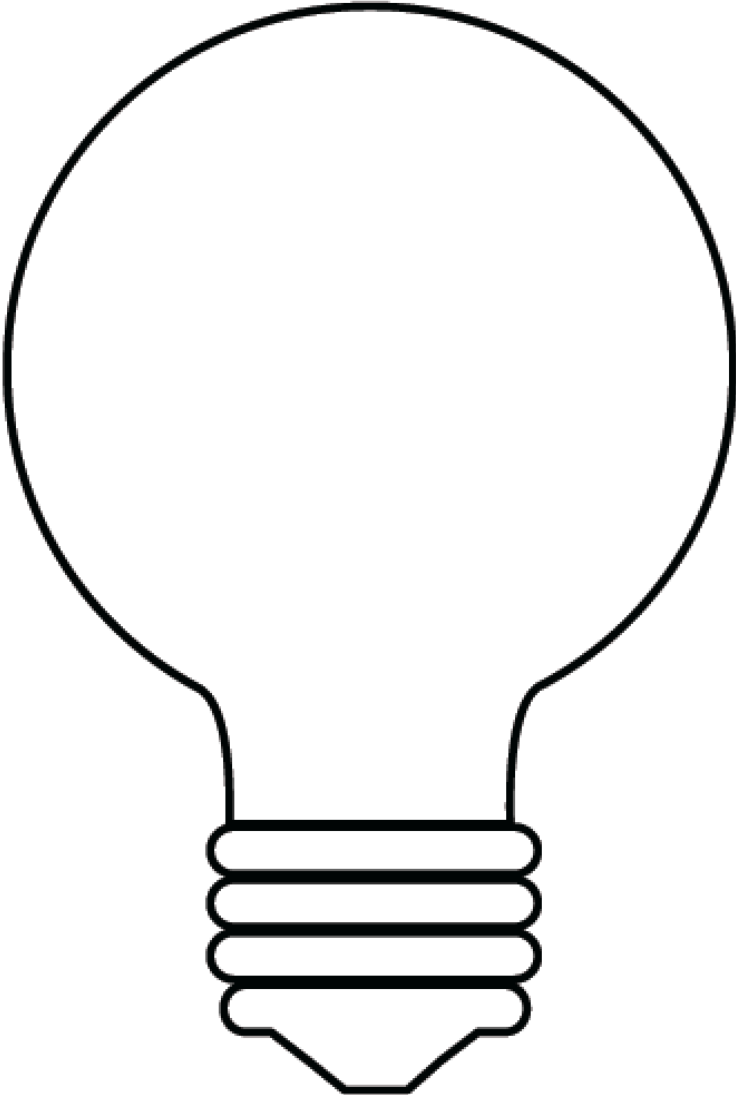
I wonder...



STEM Notebook #6 (Lesson Plan 1) (After reading the book)

NAME _____ DATE _____

I learned...



STEM Notebook #7 (Lesson Plan 1)

NAME _____ DATE _____

“Super Sunflowers”

Circle or write in your predictions.

Investigation #1 (This seed will be properly watered and have appropriate sunlight):

QUESTIONS	PREDICTIONS
What does your seed need to sprout into a seedling?	Light Water Both
How long will it take for your seed to sprout into a seedling?	~One week ~One month ~One year
How much will your seedling grow each week?	~One inch ~One foot ~One yard

Continued below...

Investigation #2 (This seed will be properly watered but not have sunlight [to simulate particulate matter in the air]):

QUESTIONS	PREDICTIONS
What does your seed need to sprout into a seedling?	Light Water Both
How long will it take for your seed to sprout into a seedling?	~One week ~One month ~One year
How much will your seedling grow each week?	~One inch ~One foot ~One yard

Continued below...

Investigation #3 (This seed will not be watered but have appropriate sunlight [to simulate drought conditions from global warming]):

QUESTIONS	PREDICTIONS
What does your seed need to sprout into a seedling?	Light Water Both
How long will it take for your seed to sprout into a seedling?	~One week ~One month ~One year
How much will your seedling grow each week?	~One inch ~One foot ~One yard

STEM Notebook #8 (Lesson Plan 1)

NAME _____ **DATE** _____

“Super Sunflowers”

Observations

Circle:

Investigation #1 (This seed will be properly watered and have appropriate sunlight)

Investigation #2 (This seed will be properly watered but not have sunlight [to simulate particulate matter in the air])

Investigation #3 (This seed will not be watered but have appropriate sunlight [to simulate drought conditions from global warming])

HEIGHT MEASURED: _____

ILLUSTRATE OBSERVATION

STEM Notebook #9 (Lesson Plan 1)

NAME _____ **DATE** _____

“Super Sunflowers”

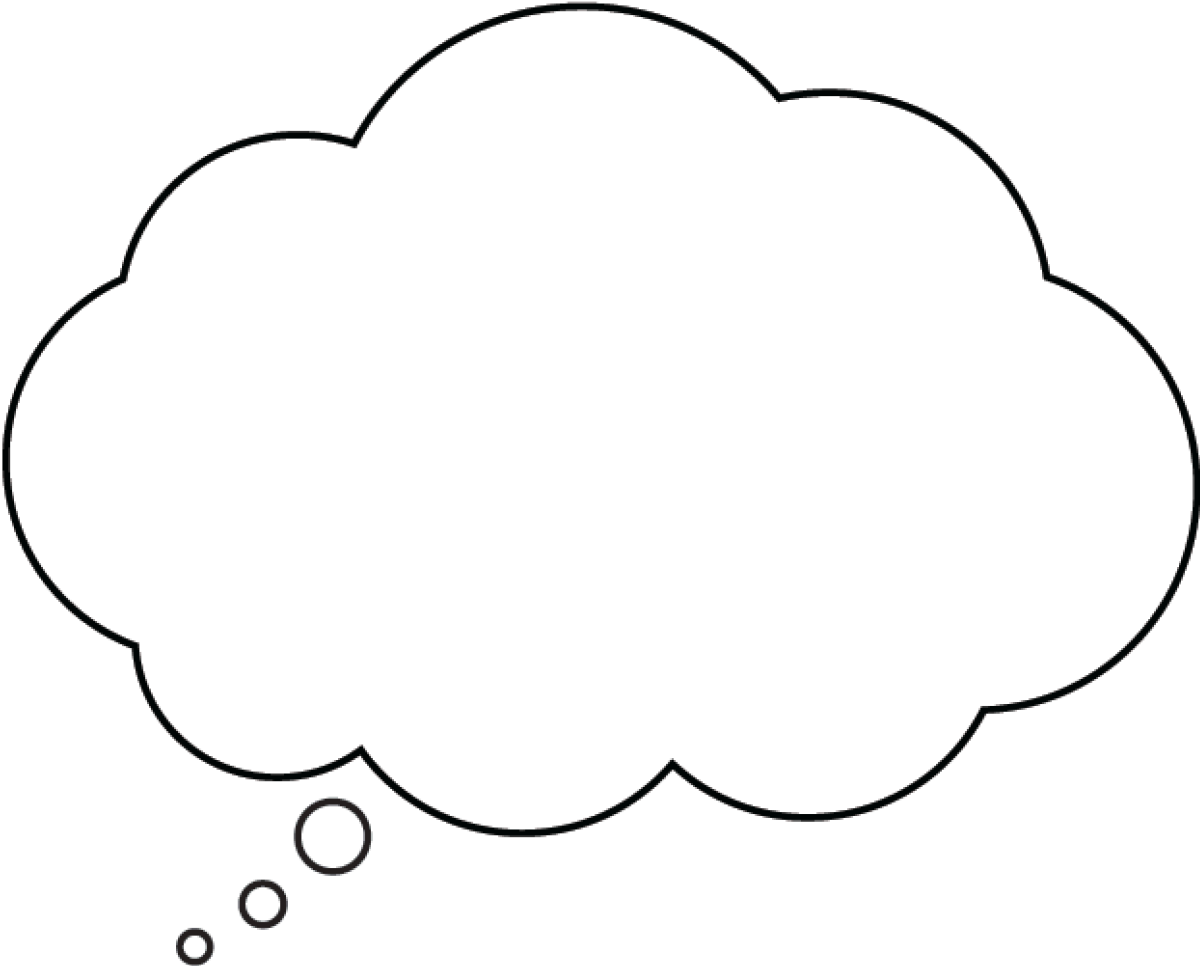
Write explanations (cause and effect).

EXPLANATIONS		
QUESTIONS	CAUSE	EFFECT
What did your seed need to sprout into a seedling?		
How long did it take for your seed to sprout into a seedling?		
How much did your seedling grow each week?		

STEM Notebook #10 (Lesson Plan 2) (Before reading the book)

NAME _____ DATE _____

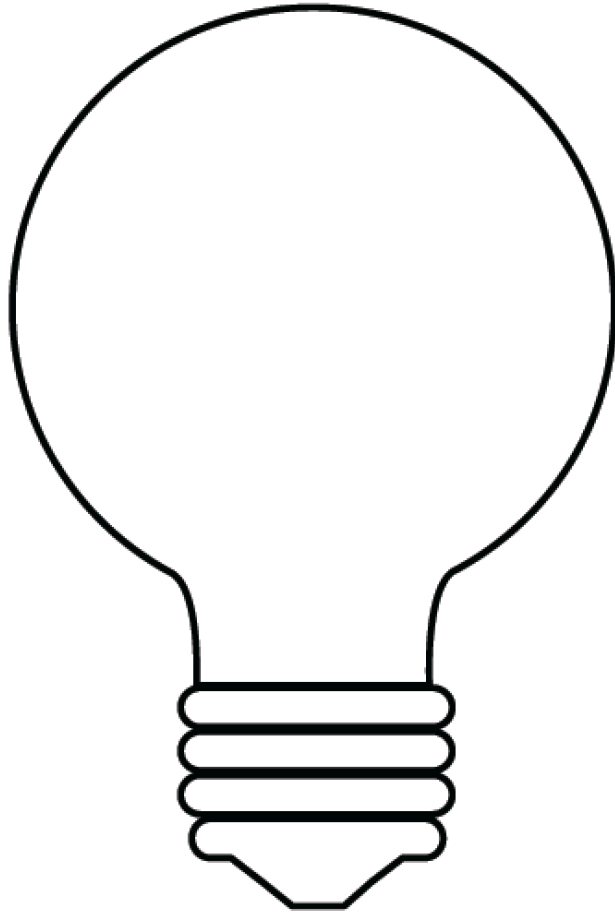
I wonder...



STEM Notebook #11 (Lesson Plan 2) (After reading the book)

NAME _____ DATE _____

I learned...



STEM Notebook #14 (Lesson Plan 2)

NAME _____ DATE _____

"Our Neighborhood Habitat"

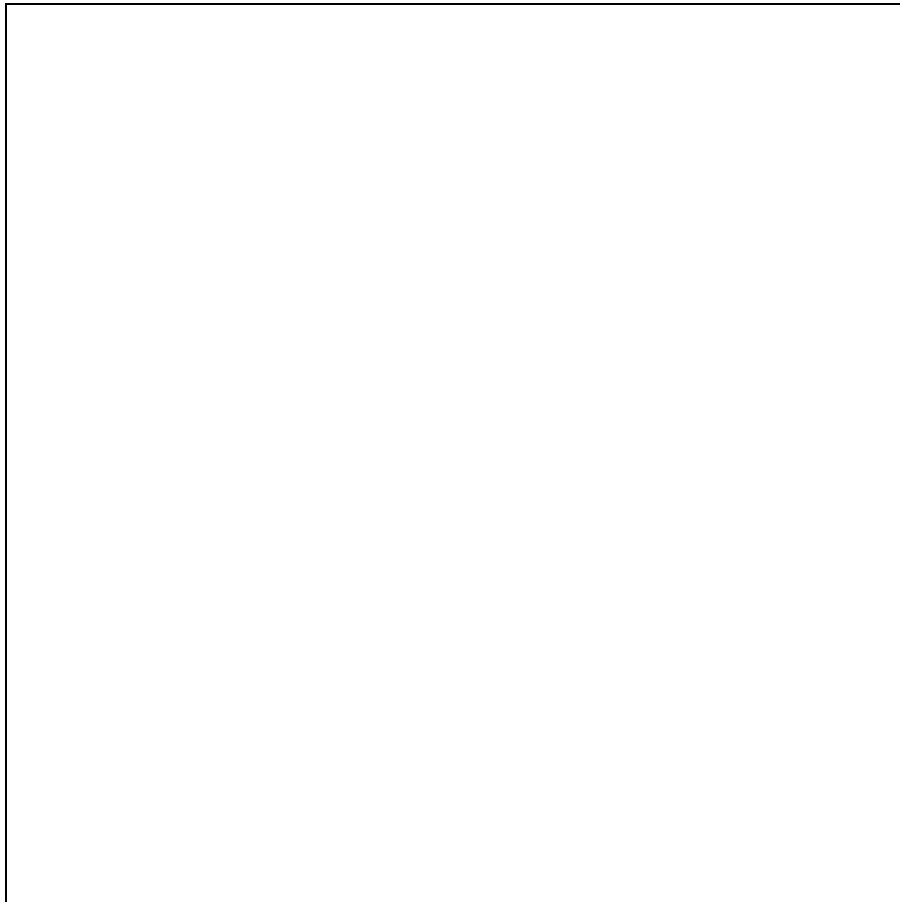
- Where are we located? (City and State)

Shade the state where we are.



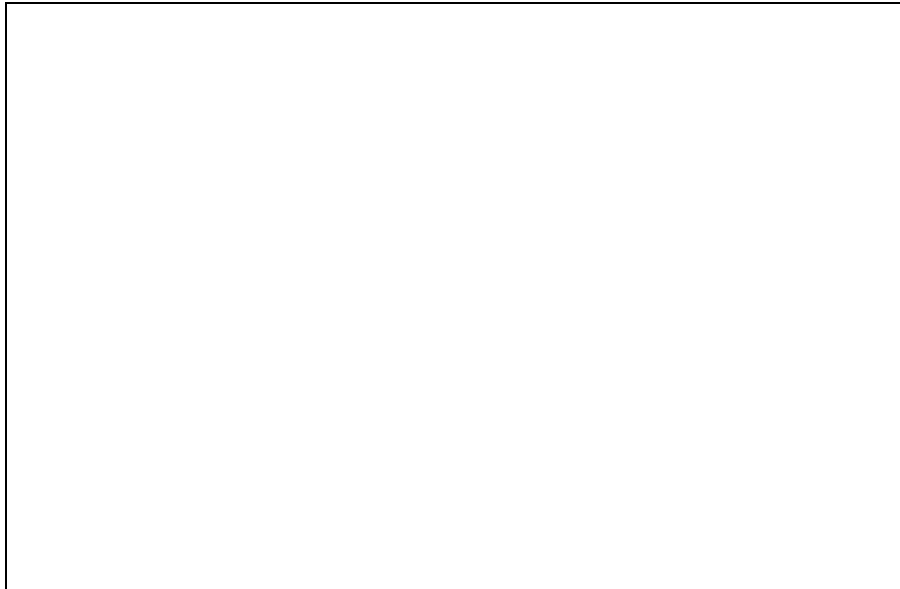
- What is the habitat like where we are? (e.g. forest, prairie, desert, wetland, tundra, ocean, mountain, etc.)

Draw a picture of the habitat where we are.



- What is the weather and climate like where we are?

Draw a picture of the weather today where we are.



- What time of year is it? How can you tell?

“Our Neighborhood Habitat”

What are the basic needs of living things?

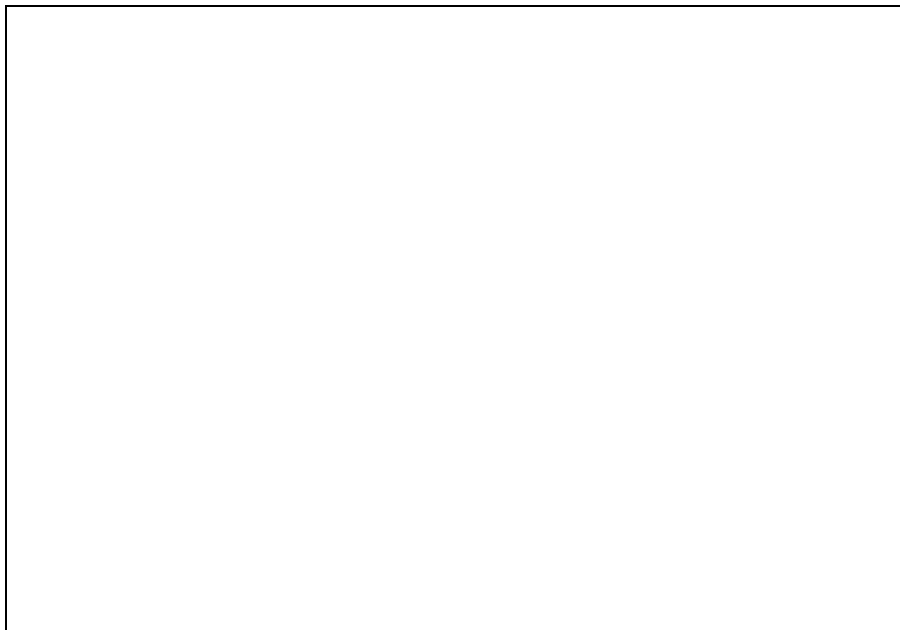
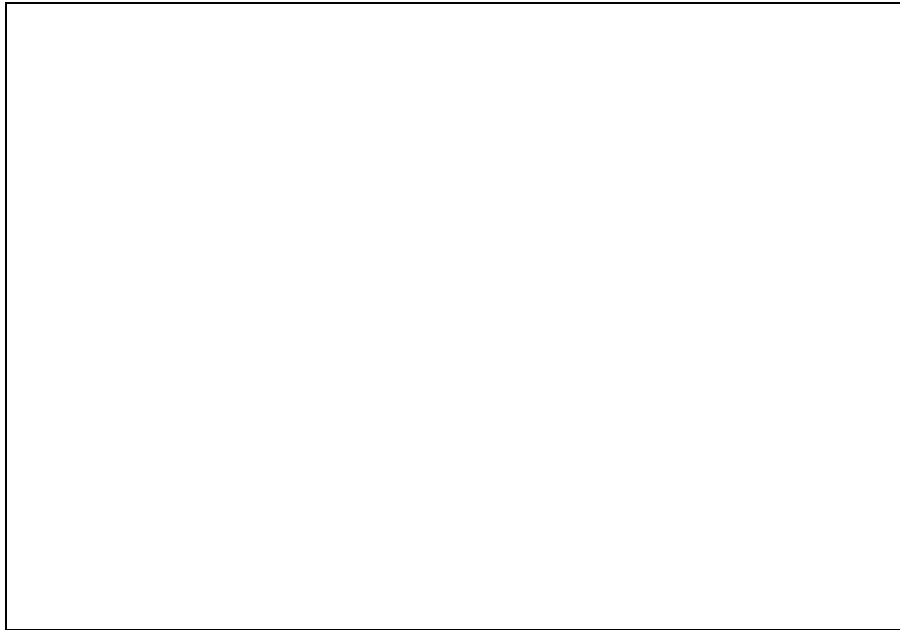
ANIMALS	
PLANTS	
PEOPLE	

STEM Notebook #15 (Lesson Plan 2)

NAME _____ **DATE** _____

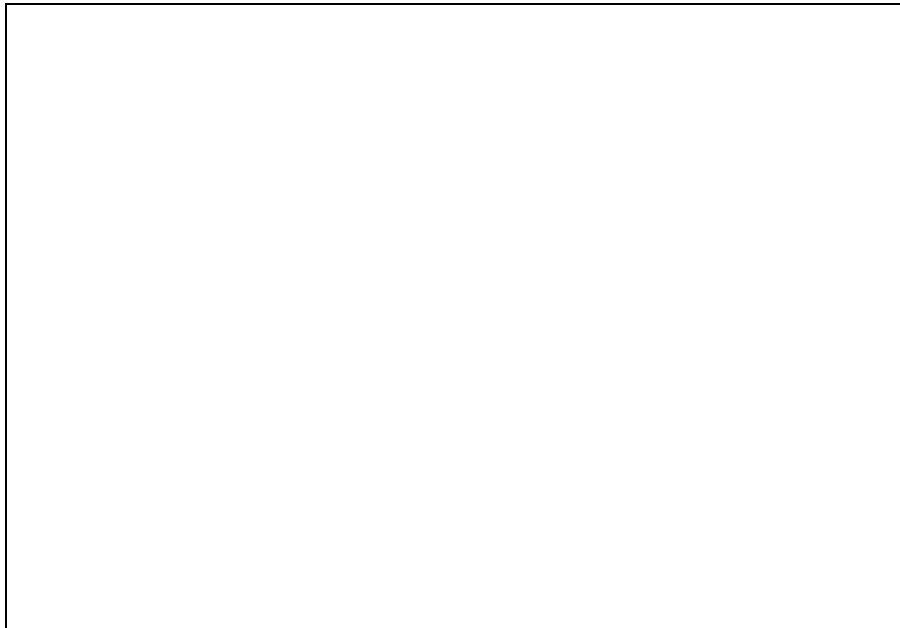
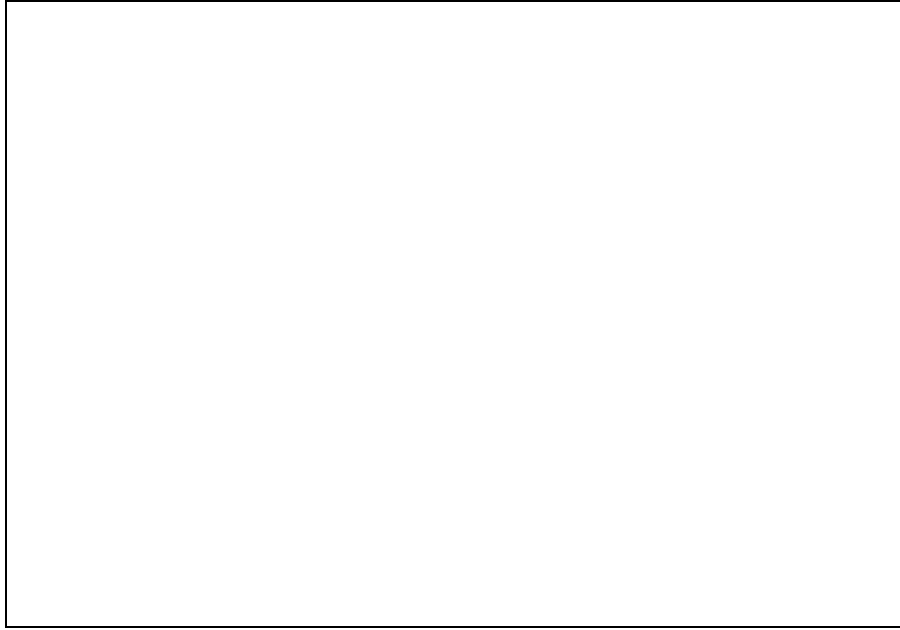
“Our Neighborhood Habitat” - walking tour part one

Draw and label two animals that you can see.



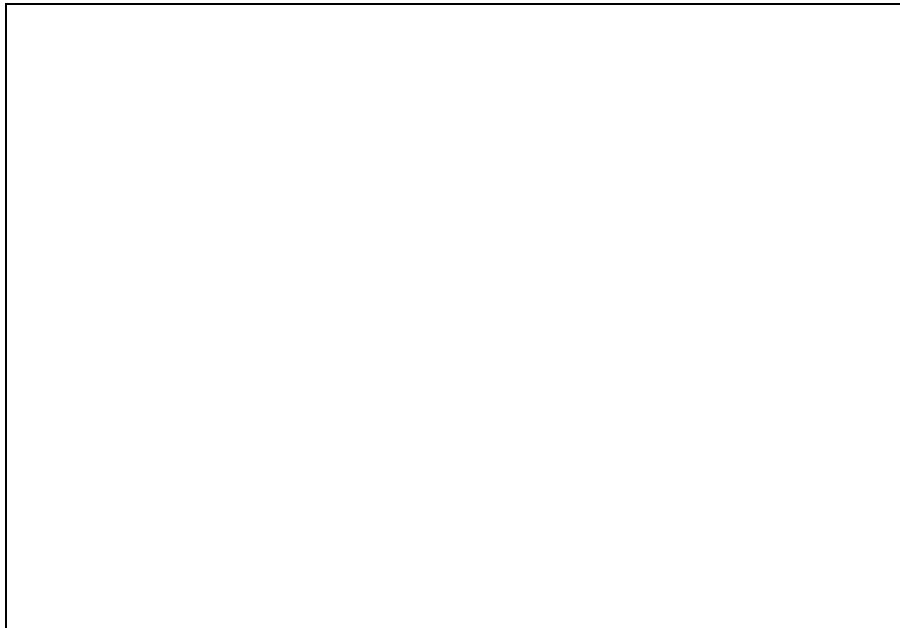
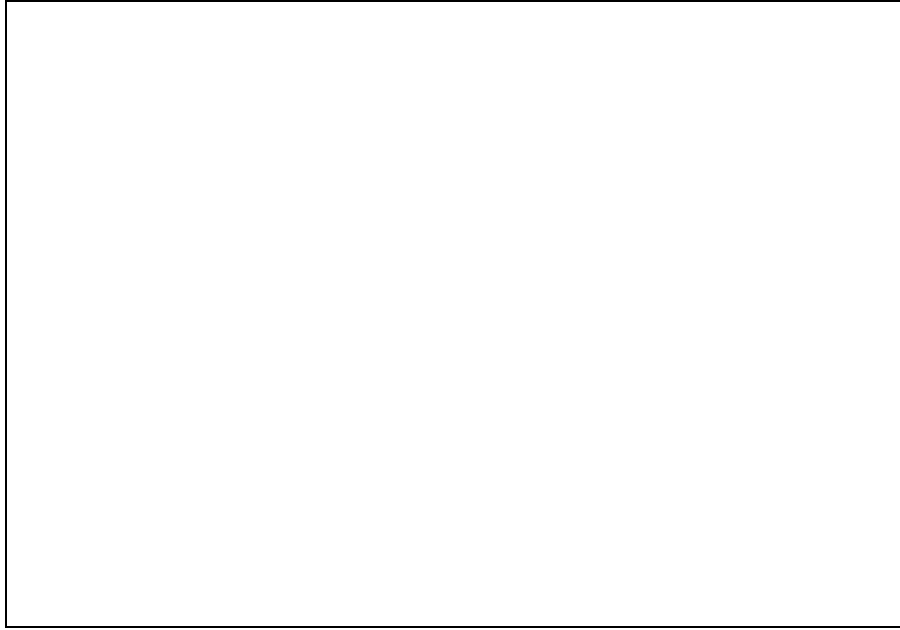
“Our Neighborhood Habitat” - walking tour part one

Draw and label two plants that you can see.



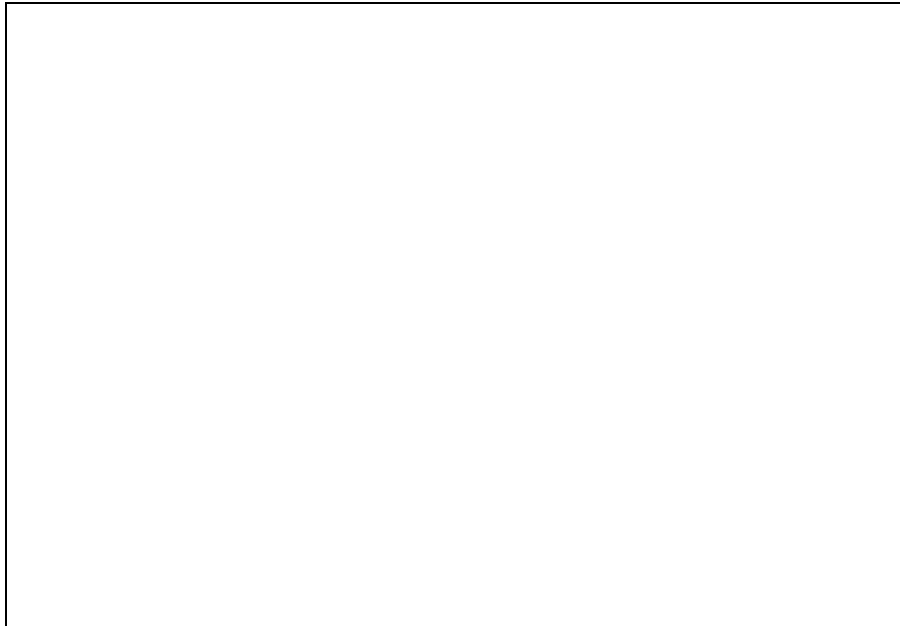
“Our Neighborhood Habitat” - walking tour part one

Draw and label two animals that you can hear.



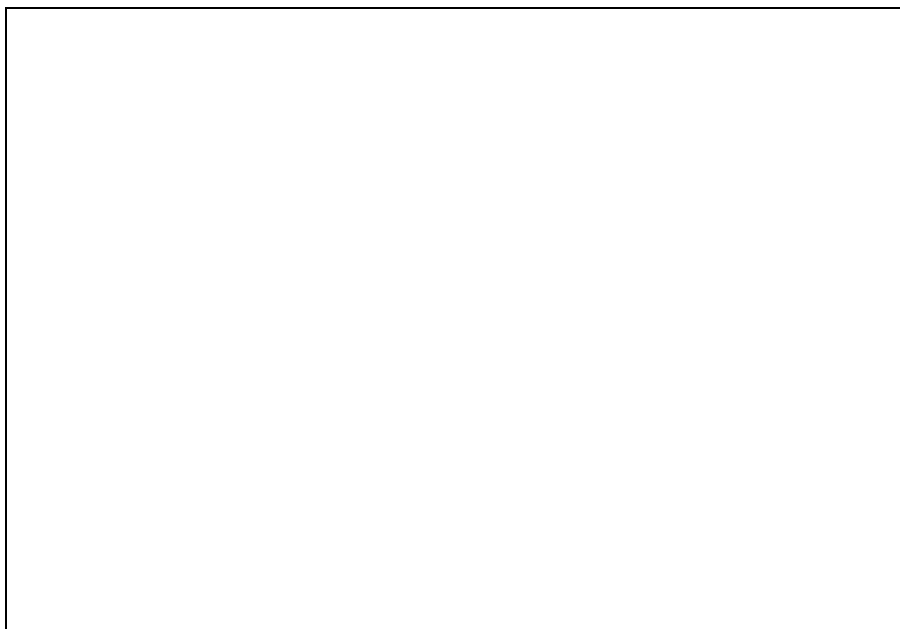
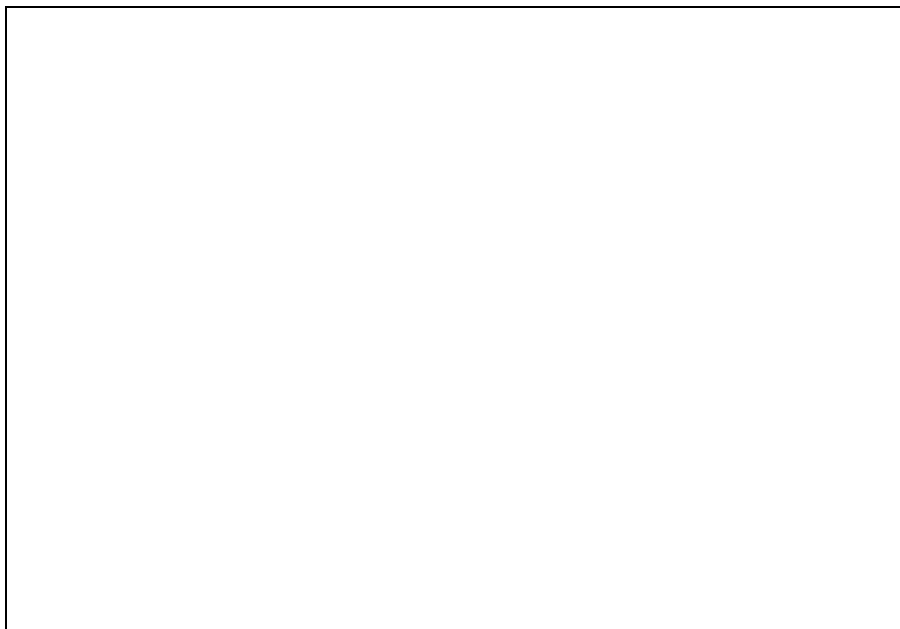
“Our Neighborhood Habitat” – walking tour part one

Draw and label two things that you can smell.



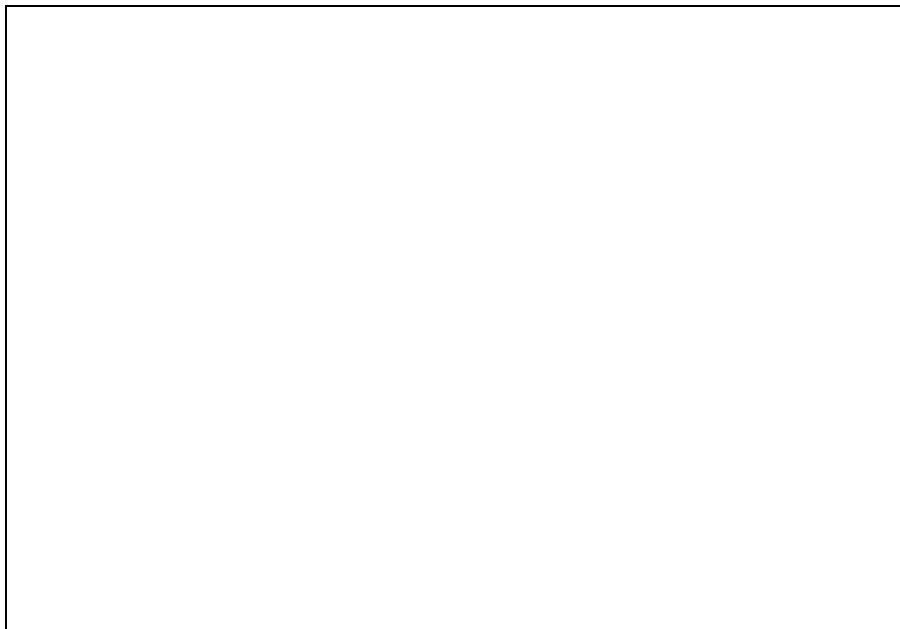
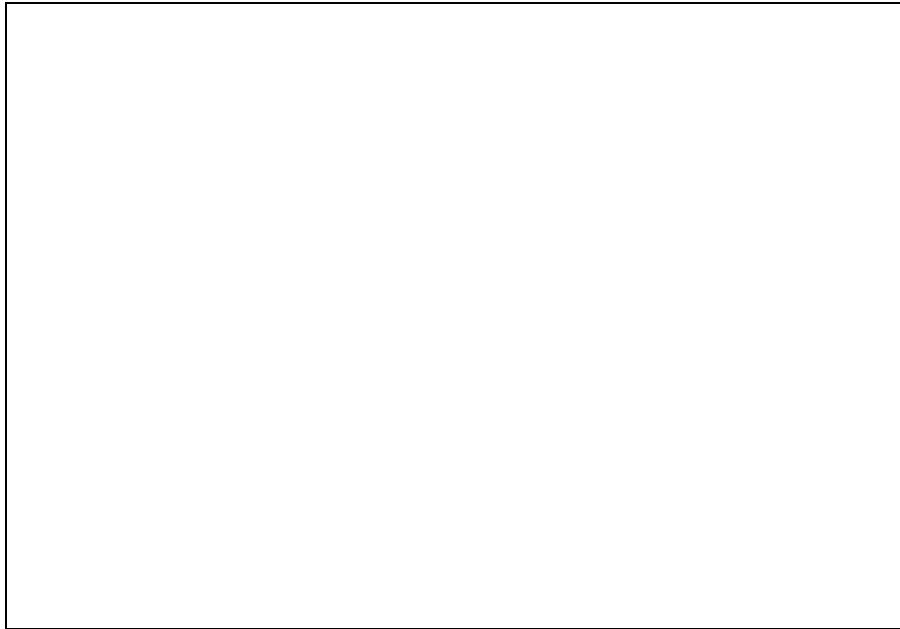
“Our Neighborhood Habitat” – walking tour part two

Draw and label two ways that weather affects animals, plants, and the people where we are.

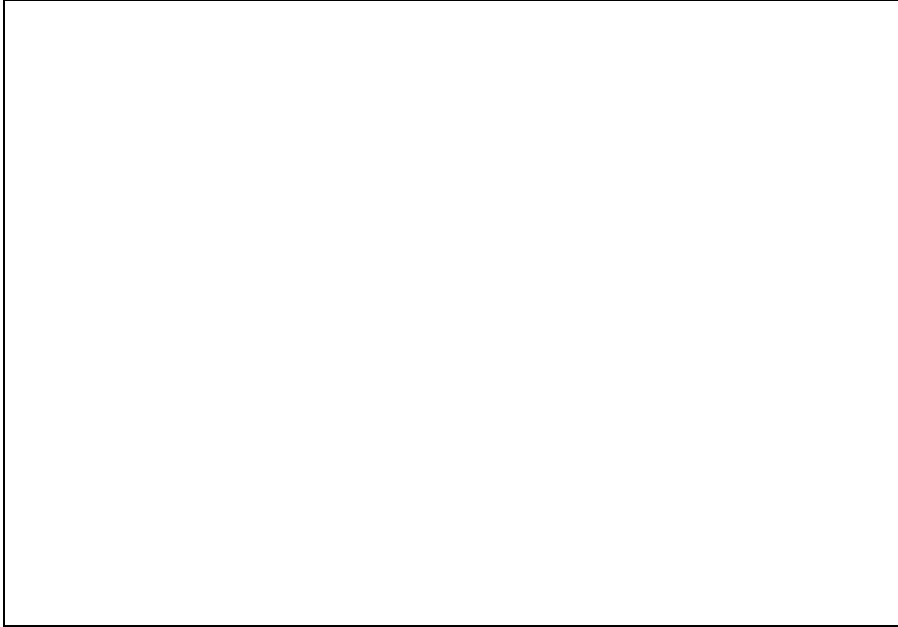


“Our Neighborhood Habitat” – walking tour part two

Draw and label four types of pollution you observe.



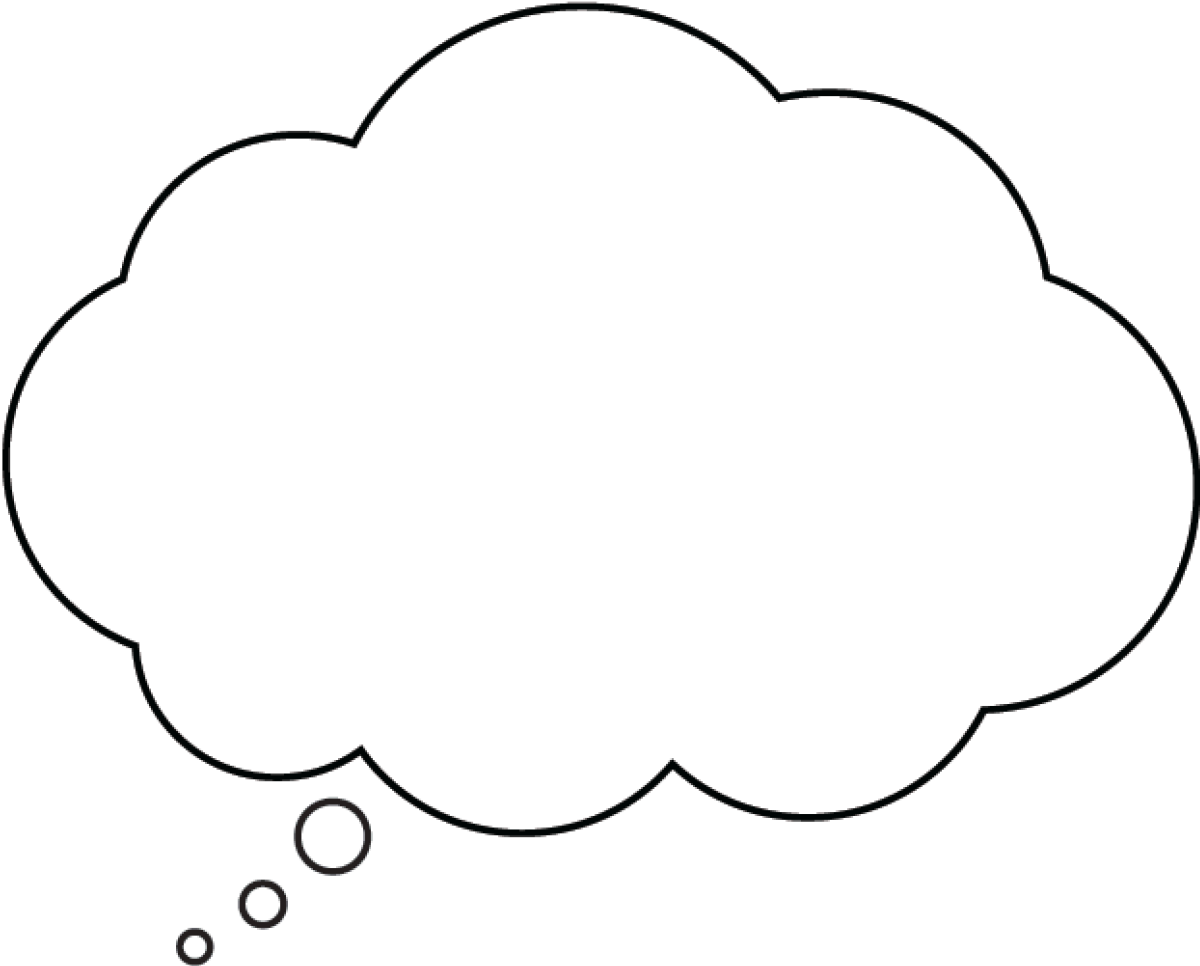
Draw and label four types of pollution you observe.



STEM Notebook #16 (Lesson Plan 2) (Before reading the book)

NAME _____ DATE _____

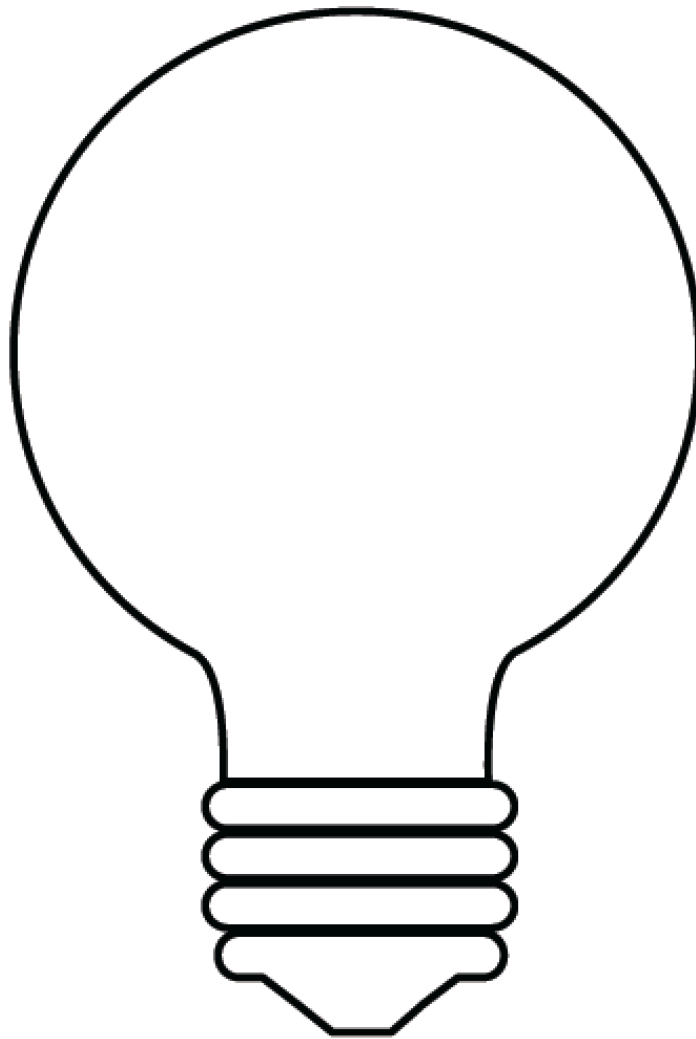
I wonder...



STEM Notebook #17 (Lesson Plan 2) (After reading the book)

NAME _____ DATE _____

I learned...

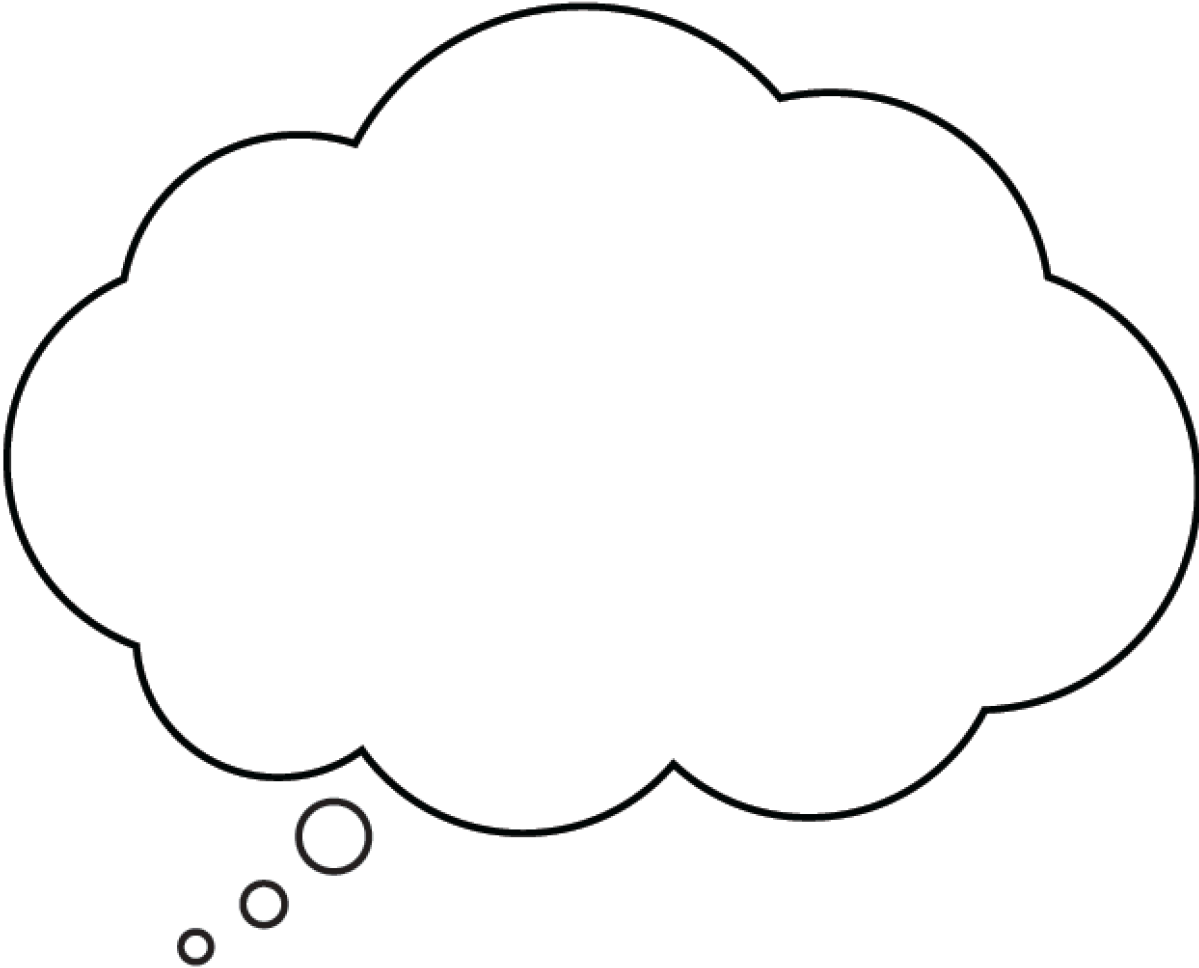


Four sets of horizontal lines for writing, each consisting of a solid top line, a dashed middle line, and a solid bottom line.

STEM Notebook #18 (Lesson Plan 3) (Before viewing the video)

NAME _____ DATE _____

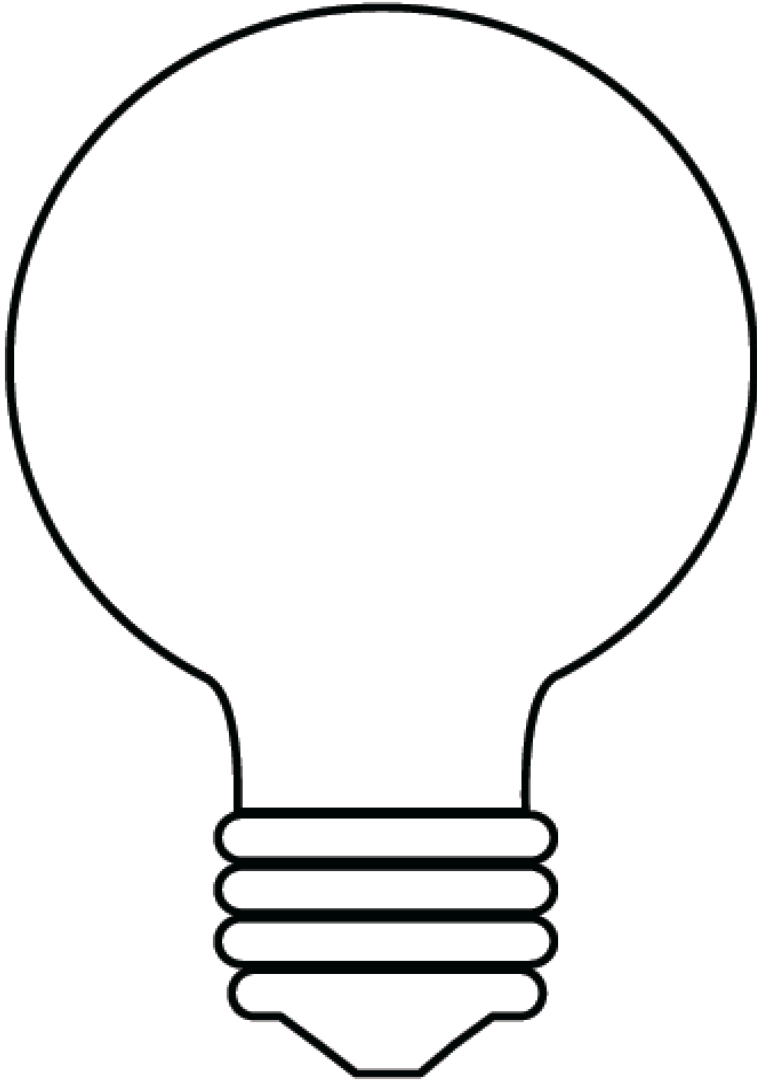
I wonder...



STEM Notebook #19 (Lesson Plan 3) (After viewing the video)

NAME _____ DATE _____

I learned...

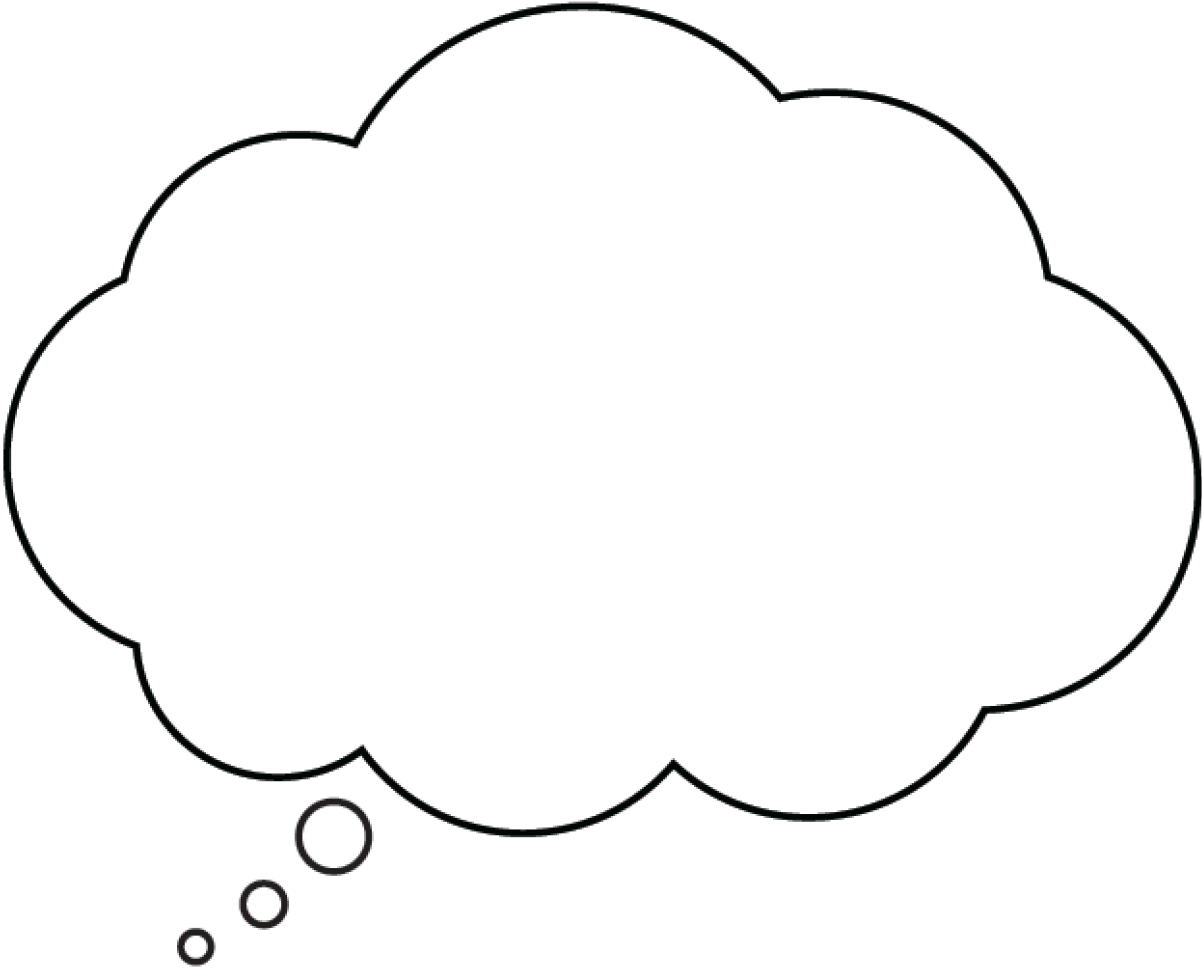


Four sets of horizontal lines for writing, each consisting of a solid top line, a dashed middle line, and a solid bottom line.

STEM Notebook #22 (Lesson Plan 3) (Before watching the video)

NAME _____ DATE _____

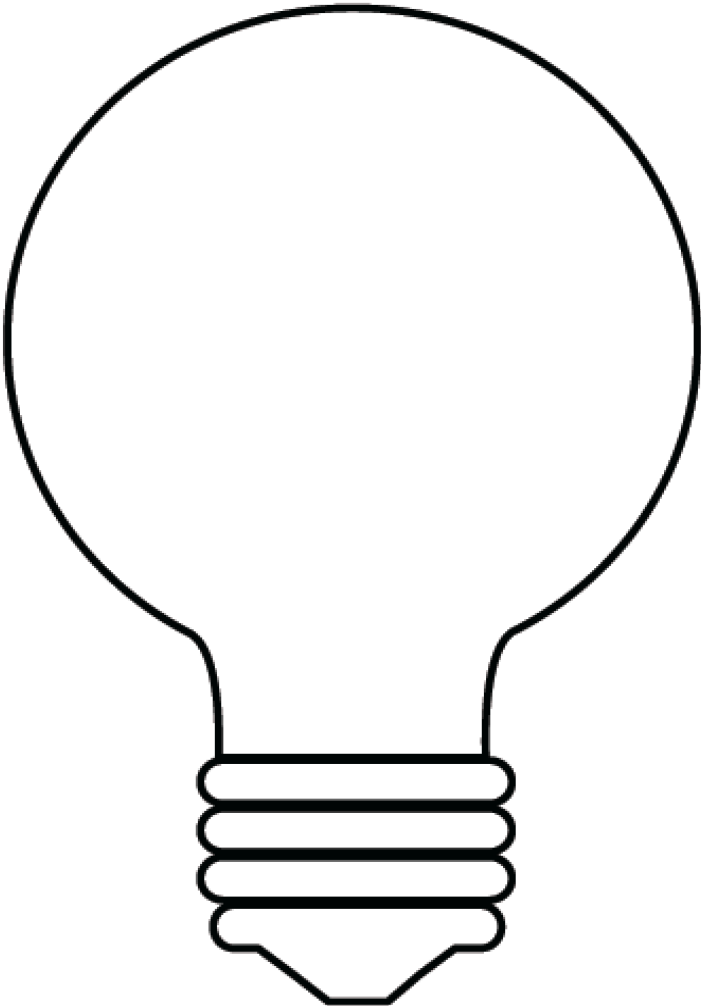
I wonder...



STEM Notebook #23 (Lesson Plan 3) (After viewing the video)

NAME _____ DATE _____

I learned...

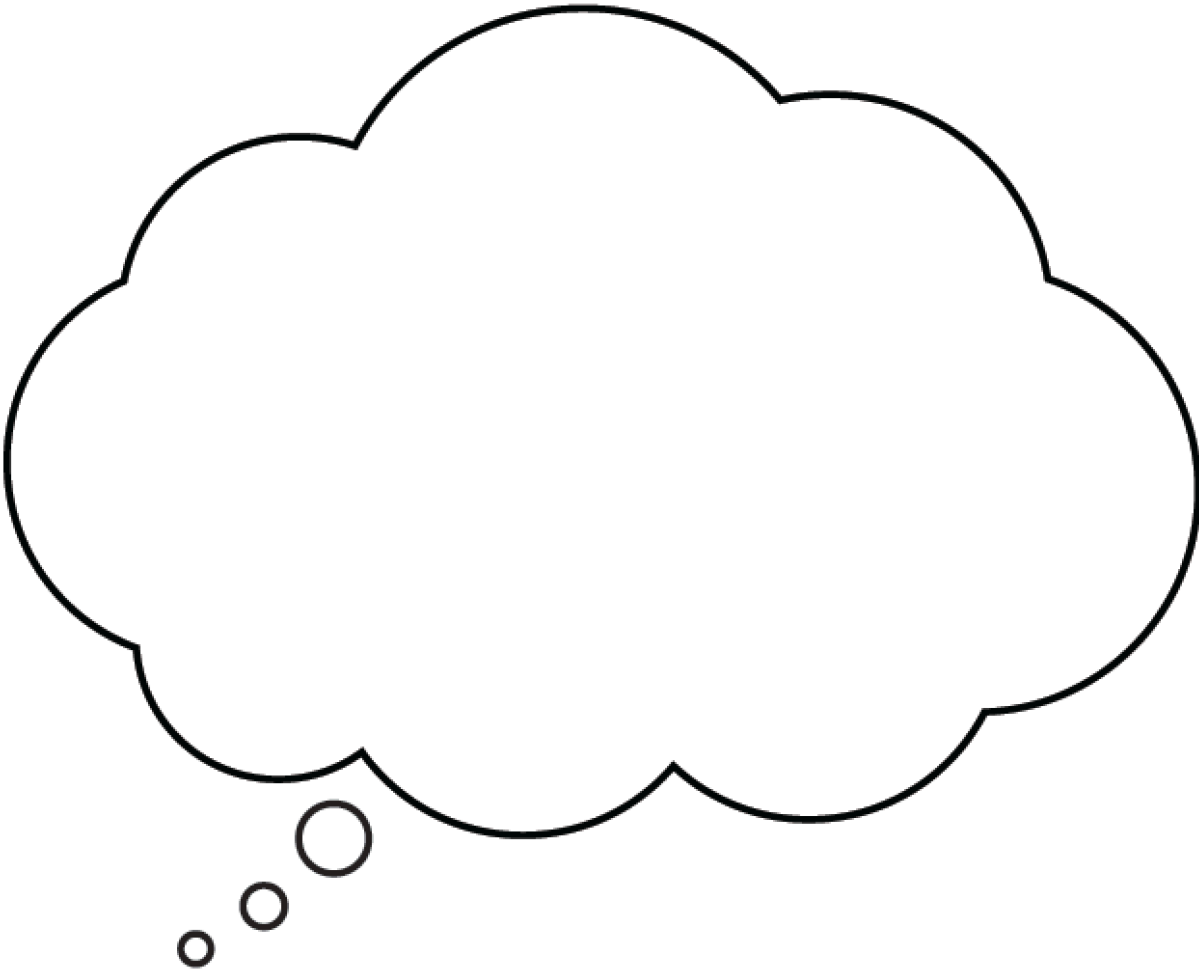


Four sets of horizontal lines for writing, each consisting of a solid top line, a dashed middle line, and a solid bottom line.

STEM Notebook #24 (Lesson Plan 3) (Before reading the book)

NAME _____ DATE _____

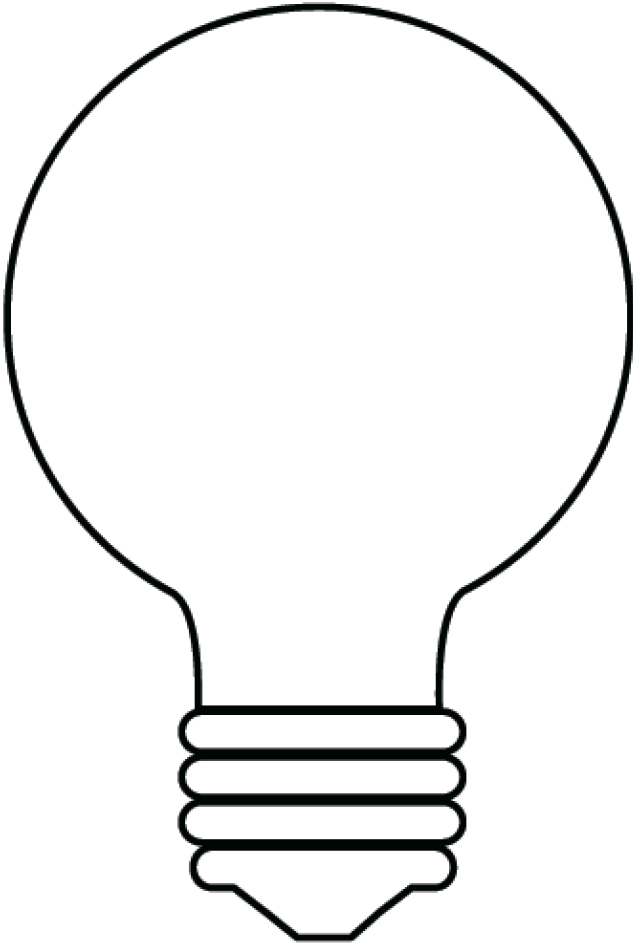
I wonder...



STEM Notebook #25 (Lesson Plan 3) (After reading the book)

NAME _____ DATE _____

I learned...



My Environment *Newsletter*



Name:

HABITATS

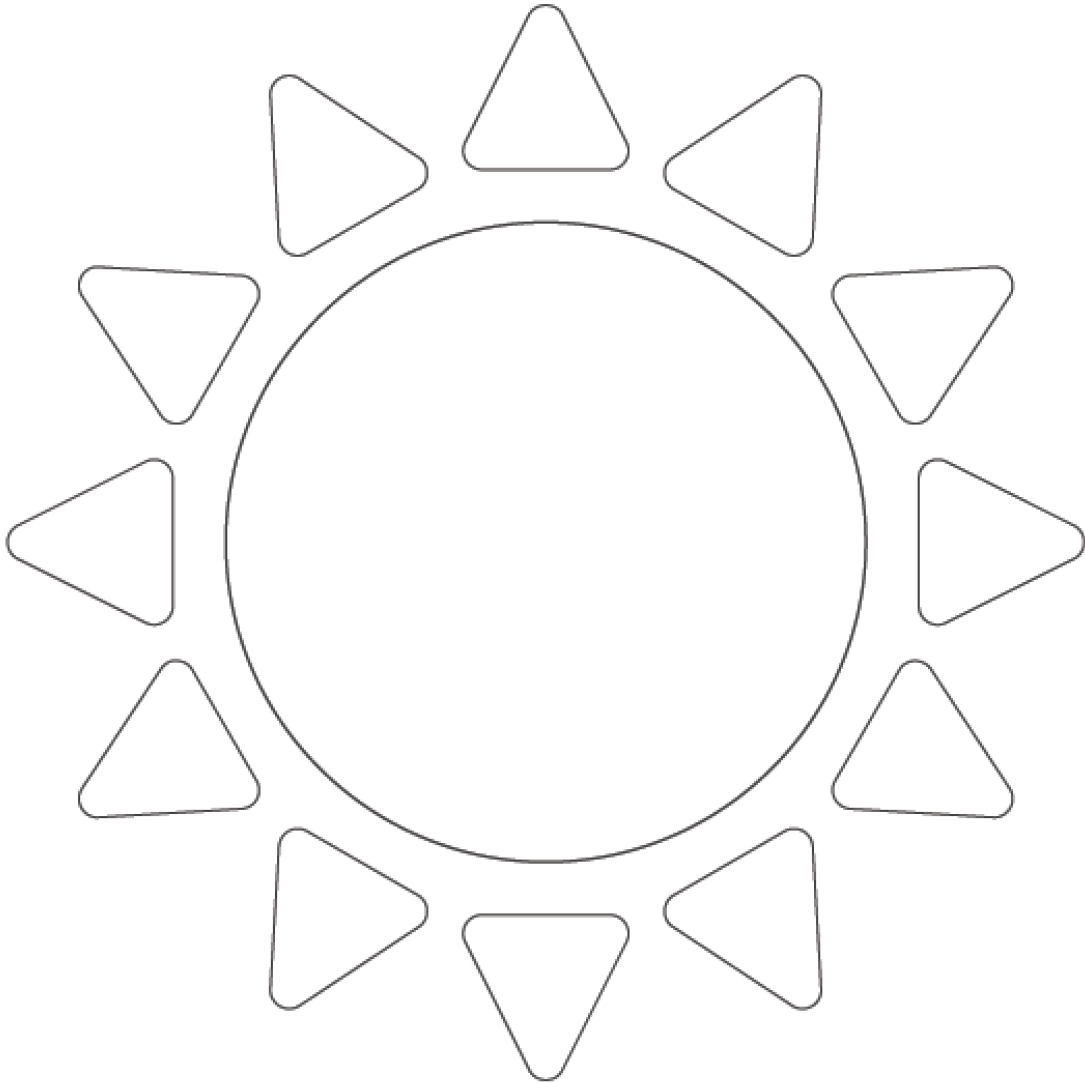
Identify the local habitat (e.g. forest, prairie, desert, wetland, tundra, ocean, mountain, etc.):

Shade in the region where your local habitat is located in the United States.



Weather and Climate

Draw a picture of the weather today in your local habitat.

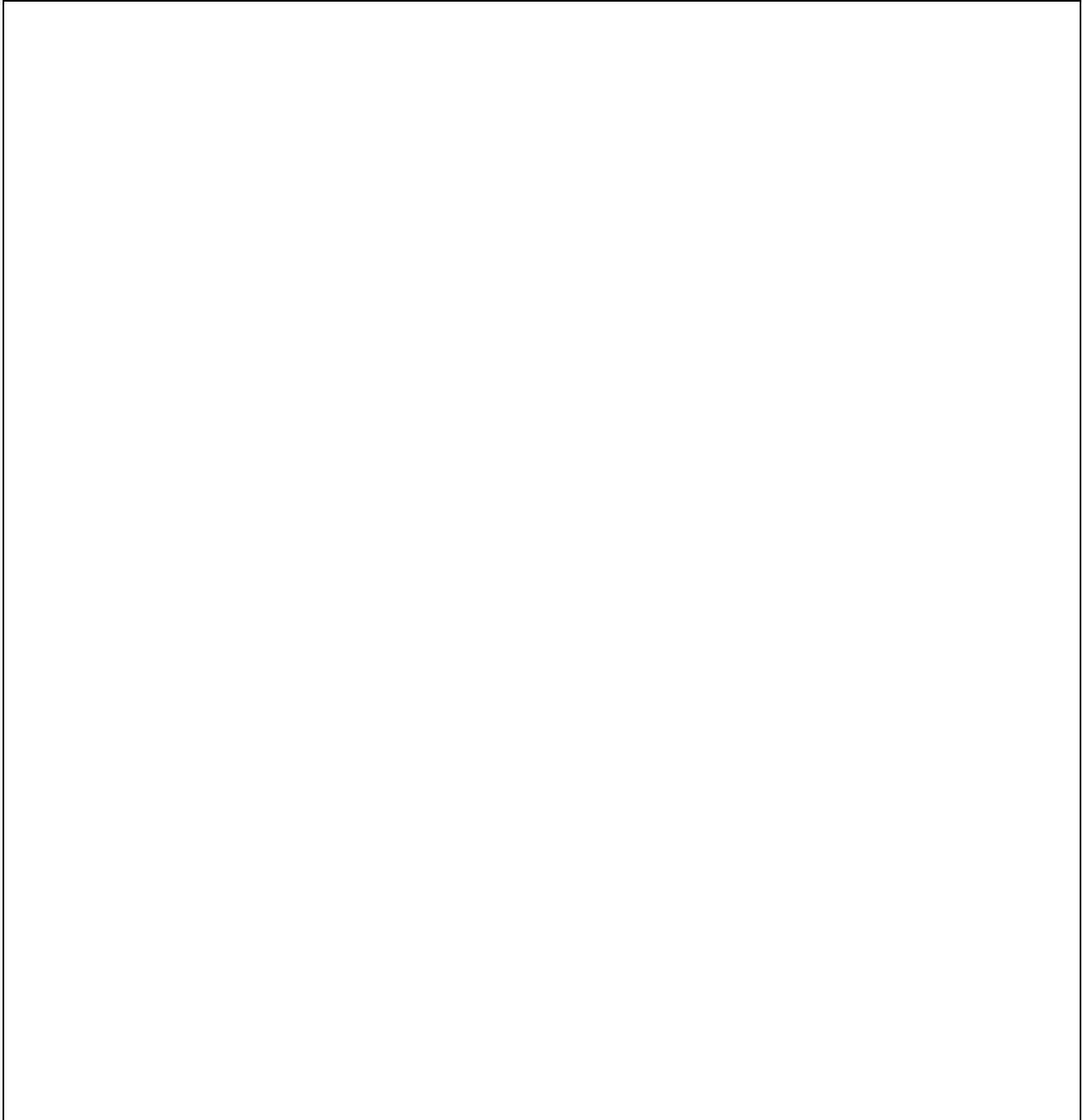


What is the climate of your local habitat?

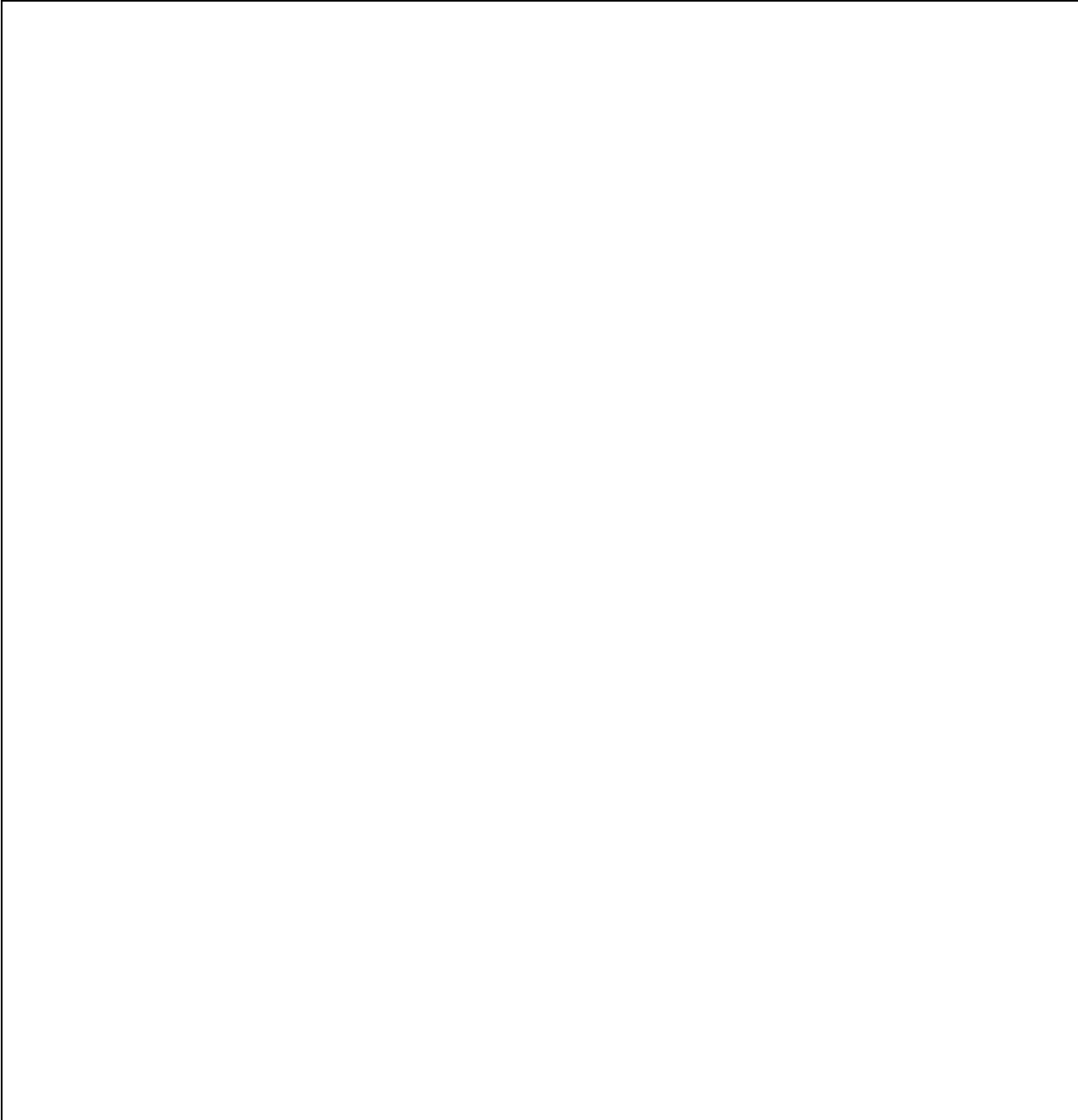
Animals

Identify, illustrate, and label two animals that live in your local habitat:

1.



2.



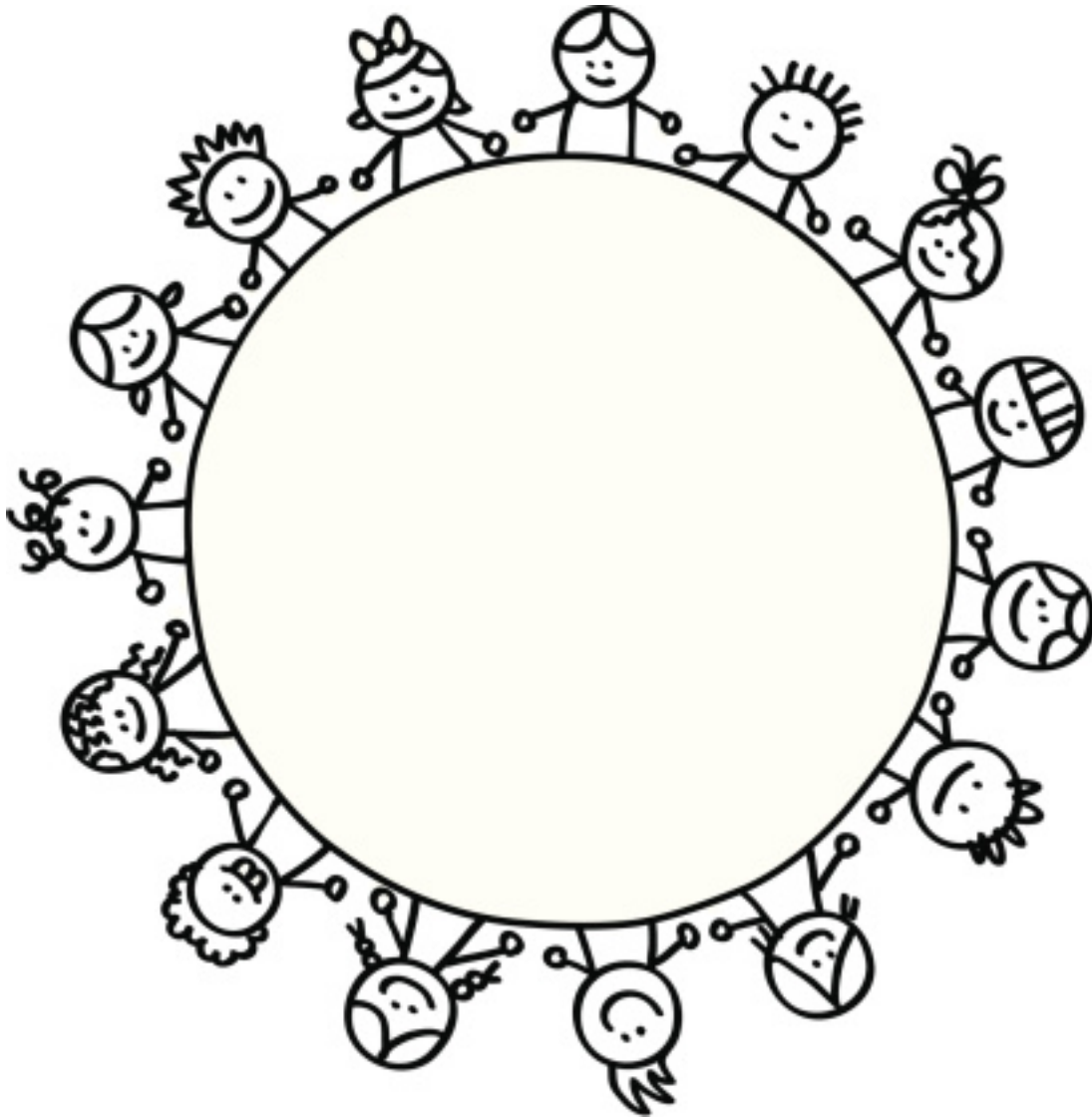
Plants

Identify, illustrate, and label three types of plants that live in your local habitat:

1.	
2.	
3.	

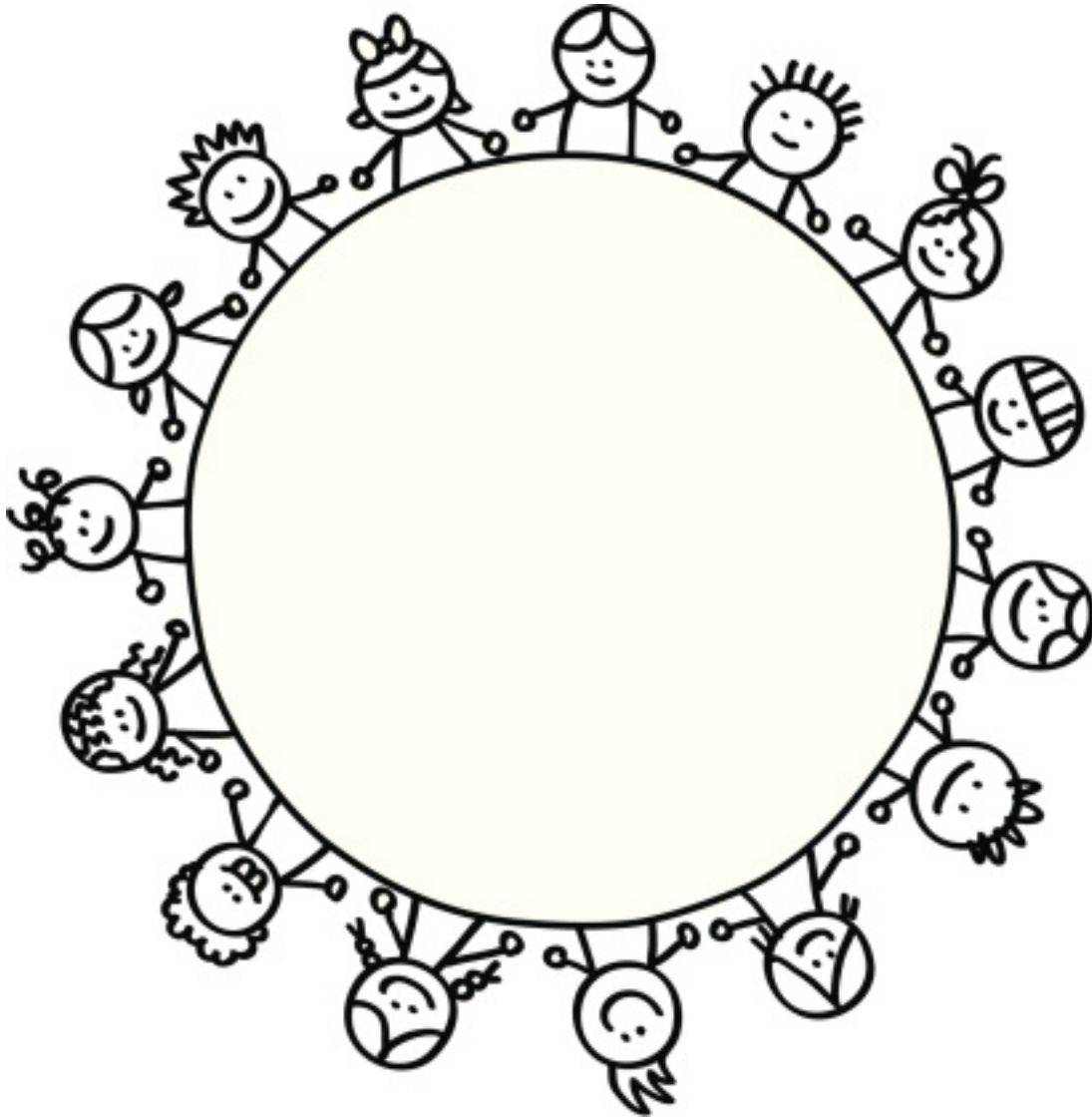
People

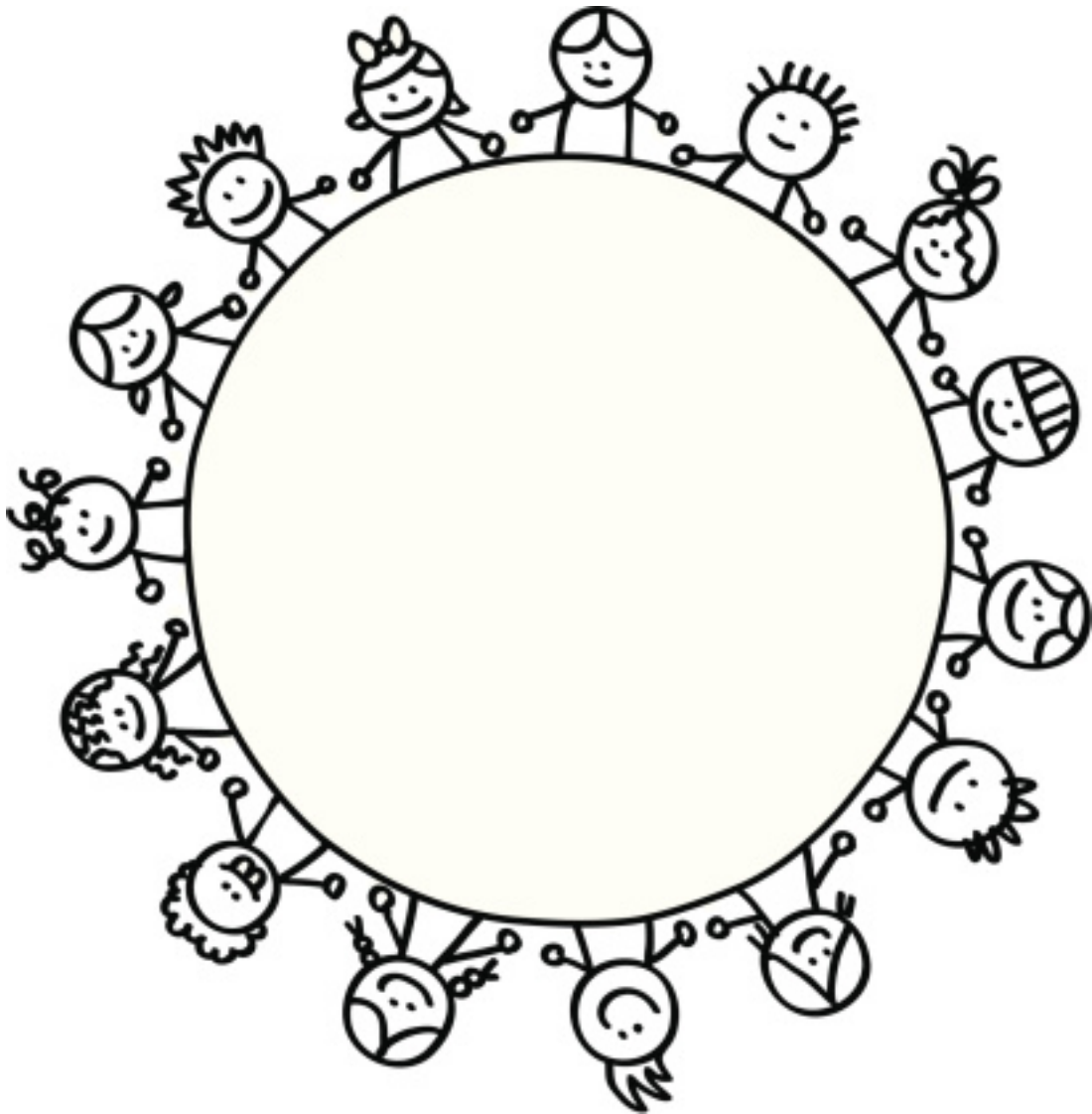
Identify, illustrate, and label one way that people adapt to life in your local habitat:

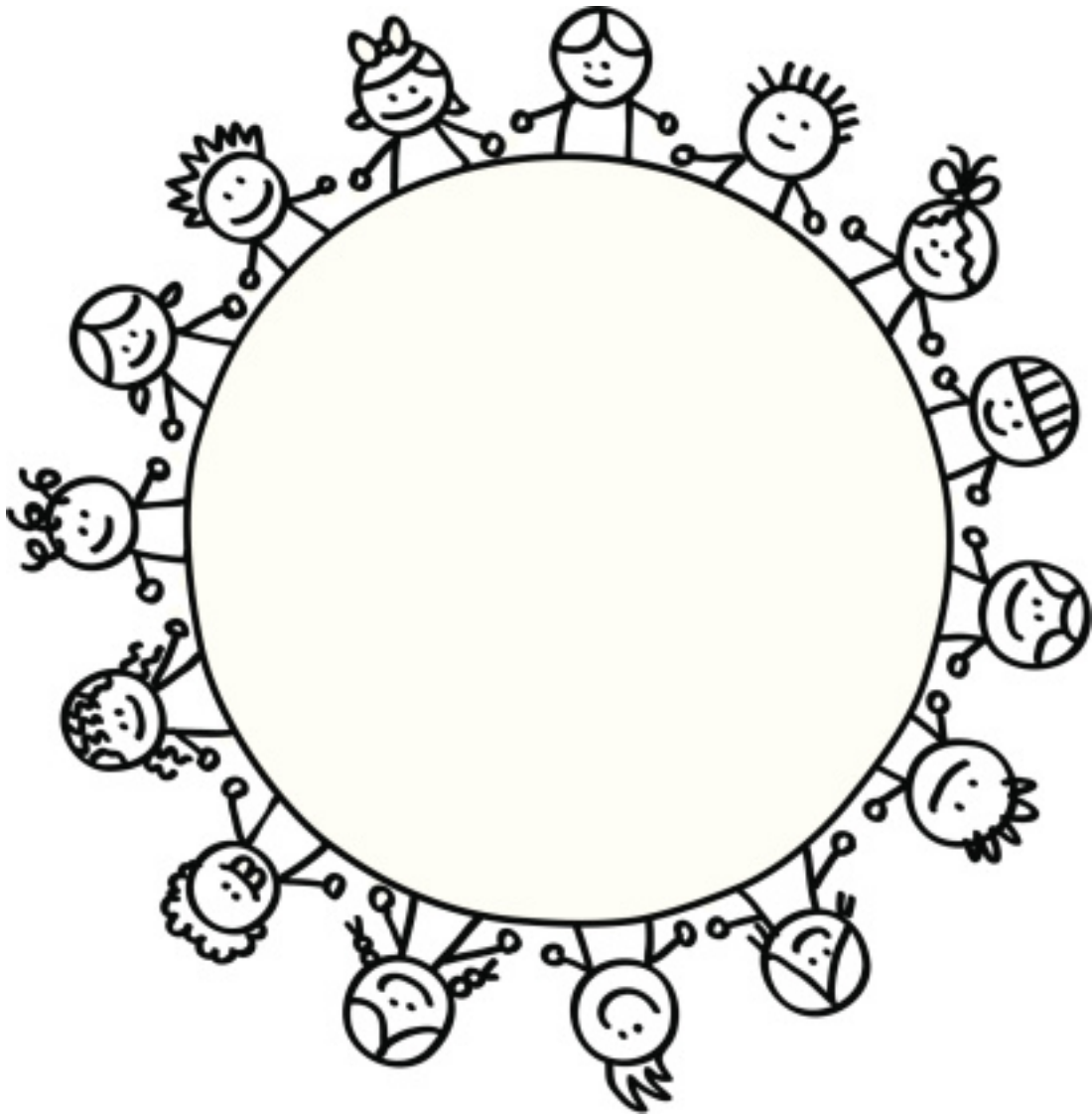


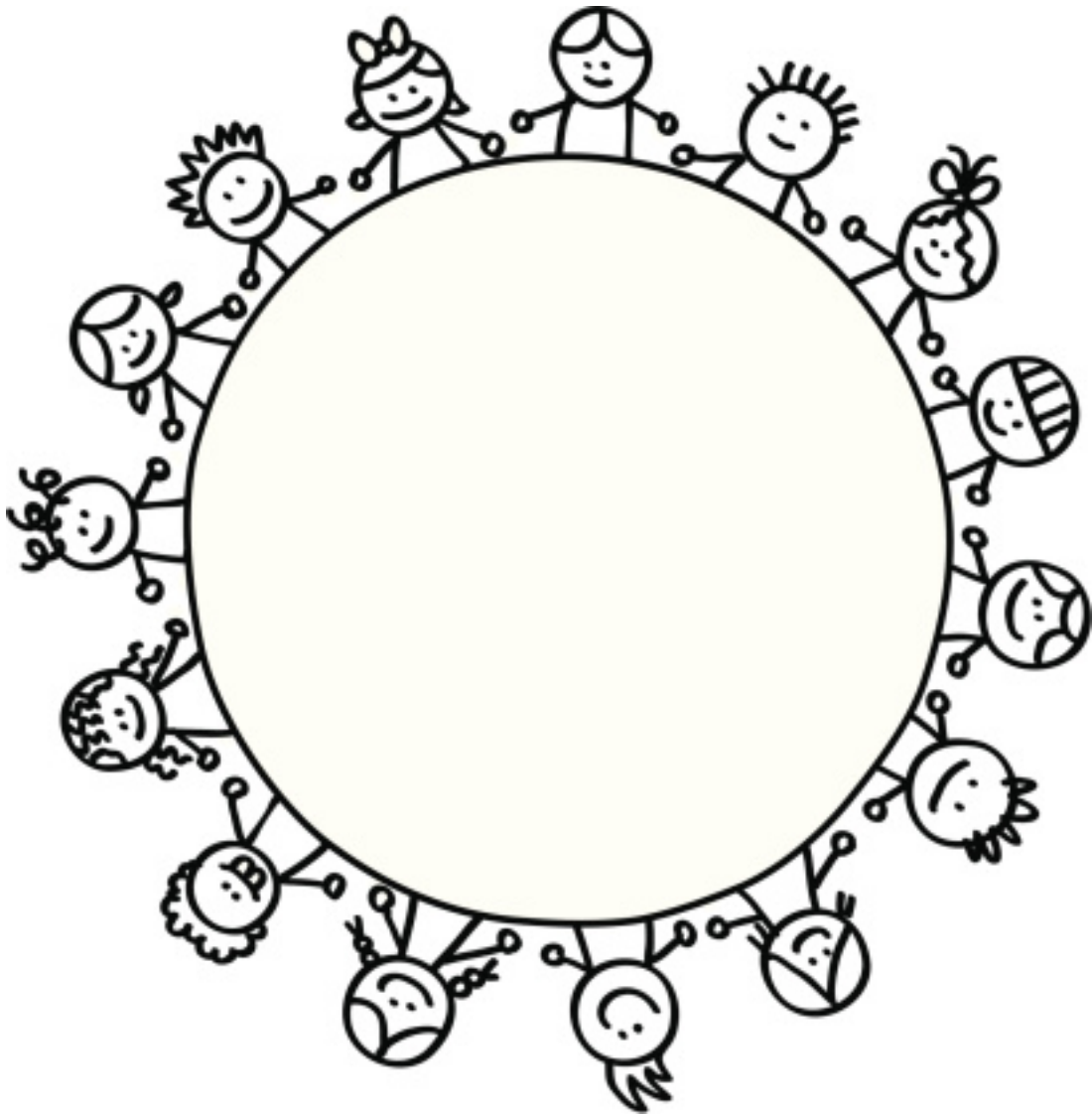
People

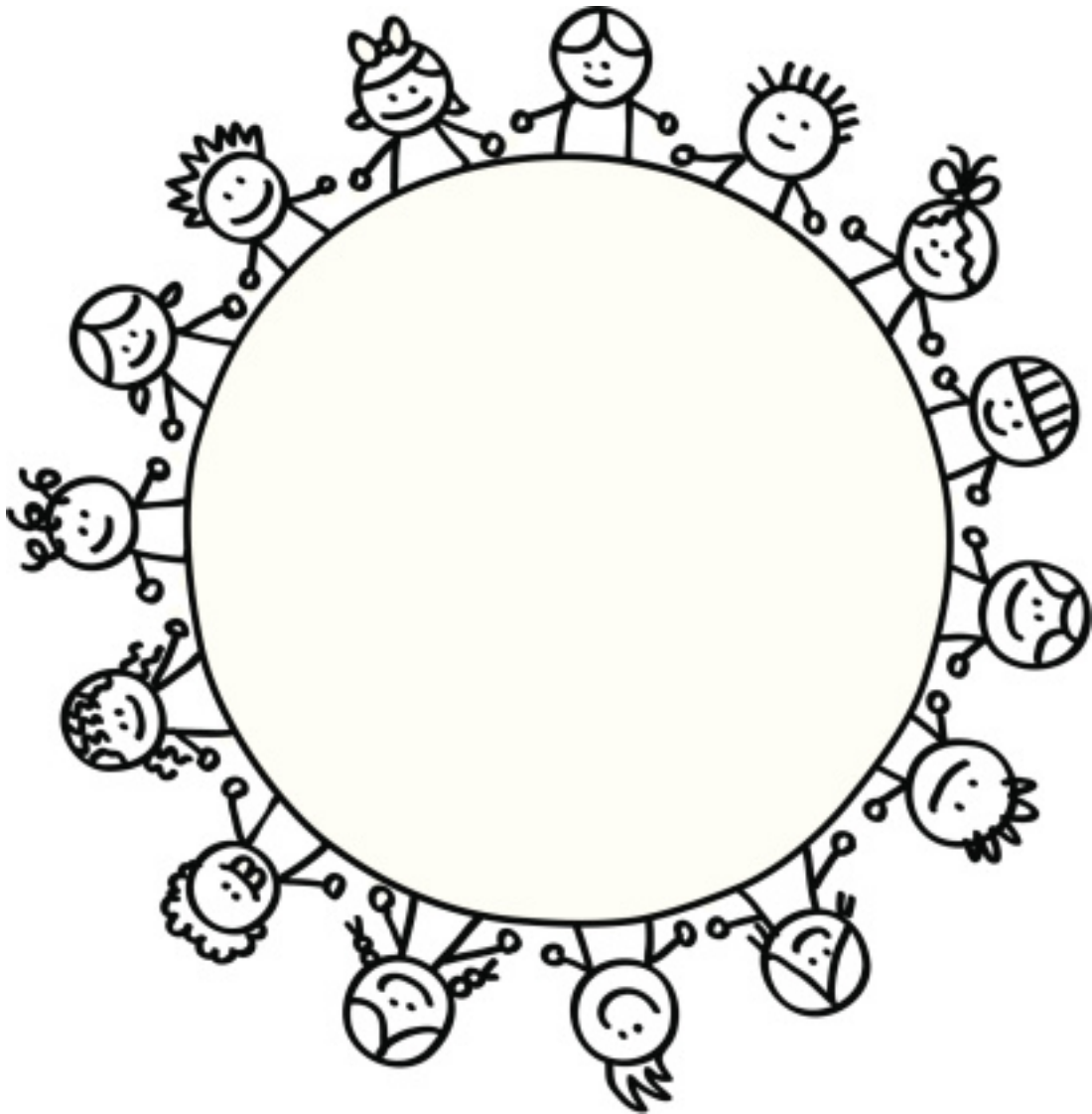
On the following pages, identify, illustrate, and label five things that people can do to help the environment:

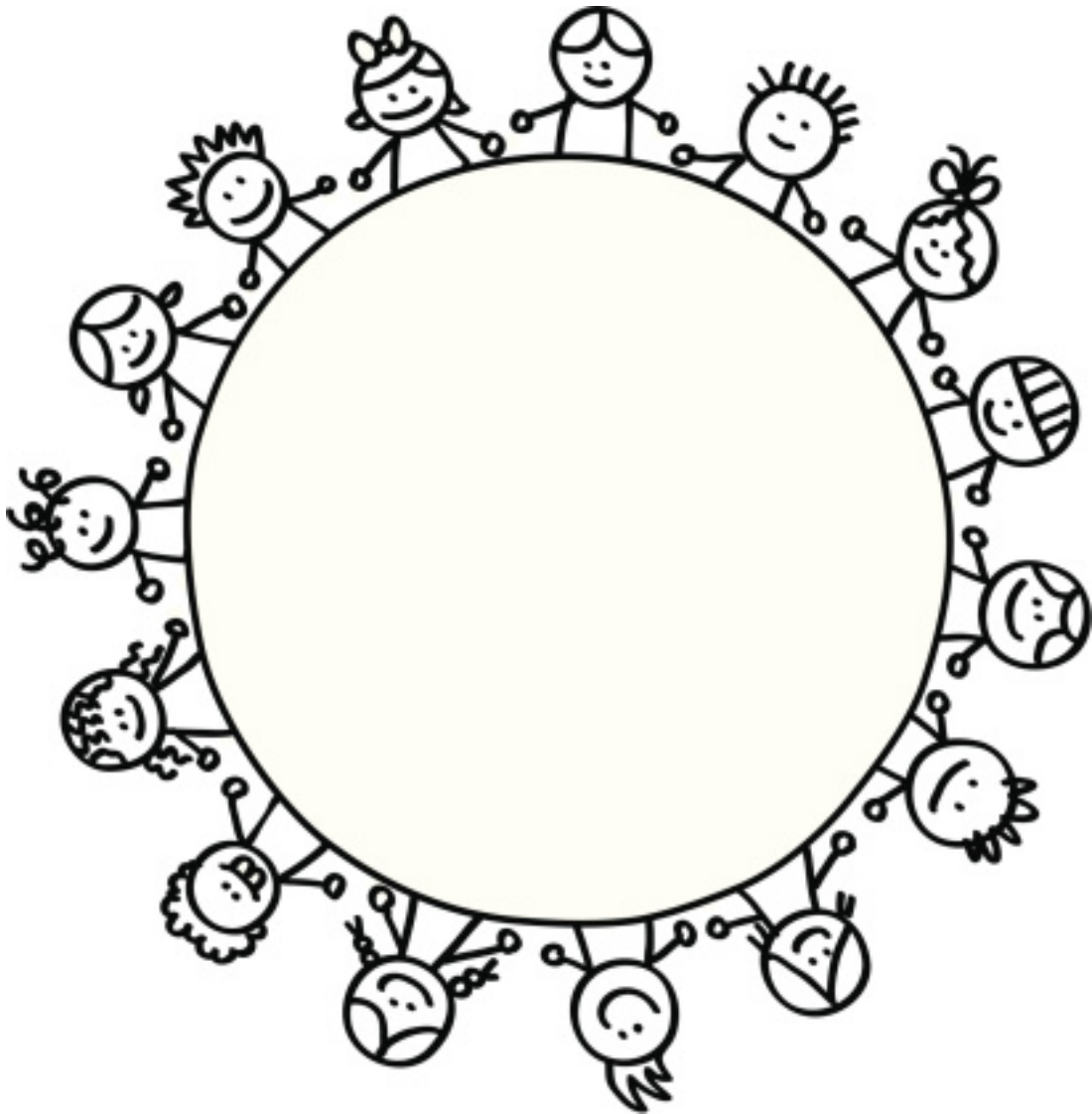












Our Healthy Habitats Project

To improve the environmental health of our neighborhood, our class did the following (draw a picture and write a sentence):

