ENVIRONMENTAL CHANGE SOLUTION

differentiated passages

LEXILE

790L

Name: _____ Date: _____

Shady Chocolate

Many people love chocolate as a delicious treat. Chocolate is made from beans. The beans are grown on cacao trees. These trees grow in tropical climates near the equator. The beans are harvested and then go through several steps before becoming the chocolate people enjoy.

The inside of a cocoa bean.

Unfortunately, there is a problem with growing cacao trees. Many farmers plant their trees in sunny areas. These areas have become sunny because forests have been cleared to make room for the cacao farms. Growers don't want other trees competing with the cacao trees for sunlight and nutrients in the soil. Demand for products made from cacao beans is always growing, too. That means more and more forests are being torn up. Organisms living in those forests suffer when their habitats are destroyed. Often chemical fertilizers and pesticides are used, as well. This lessens the quality of the soil. It isn't good for wildlife in the area either.

In Brazil, however, farmers have tried growing cacao trees under existing trees. This protects the cacao trees from getting too much sun. It also doesn't require the clearing of forest trees. Cacao trees grown in full sun were thought to produce more beans. Researchers have found that not to be true. Allowing existing trees to remain helps the planet fight climate change and global warming. It also improves soil quality. It prevents disease

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Shady Chocolate Questions

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Solution

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MagCORE

3rd Grade NGSS 3-LS4-4

ABOUT LEXILE LEVELS

MagiCore Learning, LLC is a certified Lexile® Partner. These texts are officially measured and approved by Lexile and MetaMetrics® to ensure appropriate rigor and differentiation for students.

The Lexile Framework® for Reading measures are scientific, quantitative text levels. When the Lexile of a text is measured, specific, measurable attributes of the text are considered, including, but not limited to, word frequency, sentence length, and text cohesion. These are difficult attributes for humans to evaluate, so a computer measures them.

Common Core State Standards uses Lexile level bands as one measure of text complexity. Text complexity ranges ensure students are college and career ready by the end of 12th grade. Lexile measures help educators scaffold and differentiate instruction as well as monitor reading growth.

Grade Band	Lexile® Bands Aligned to Common Core Expectations
K-1	N/A
2-3	420L-820L
4-5	740L-1010L
6-8	1185L-1385L

Keep in mind when using any leveled text that many students will need scaffolding and support to reach text at the high end of their grade band. According to Appendix A of the Common Core Standards, "It is important to recognize that scaffolding often is entirely appropriate. The expectation that scaffolding will occur with particularly challenging texts is built into the Standards' grade-by-grade text complexity expectations, for example. The general movement, however, should be toward decreasing scaffolding and increasing independence both within and across the text complexity bands defined in the Standards."

Environmental Change Solution

3rd grade

Table of Contents

Each passage set includes two differentiated passages on a third-grade level (one at the beginning of the band, one towards the end) and a question set geared towards comprehension and science mastery. The first question is differentiated to include a fill-in-the-blank diagram (lower complexity) or an open-ended diagram (higher complexity).

How to Use This Resource

This resource was created with the NGSS Science Standards in mind. It includes seven differentiated passages aligned to the following standard:

3-LS4-4 Environmental Change Solution

Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. (Systems and System Models)

Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.

Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.

Here are some suggestions for using these passages:

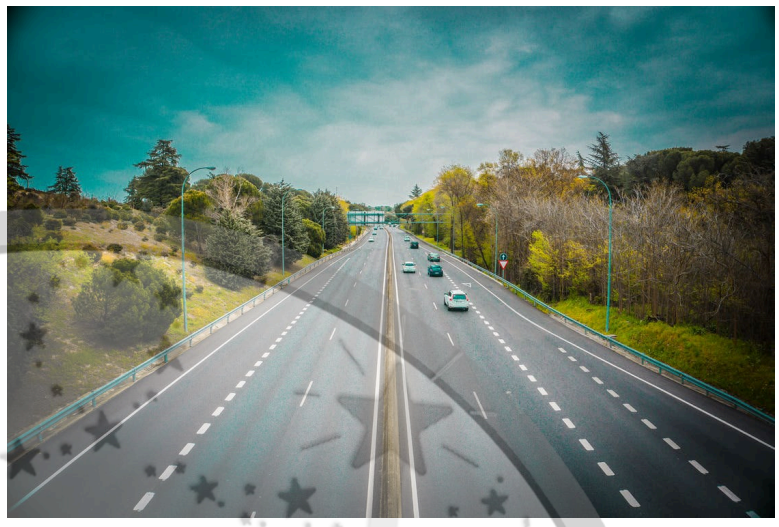
- Use as independent work after you have taught an overview of this standard. Assign the different levels based on the passage students can read and comprehend independently.
- Use as a reading center to reinforce key comprehension and science concepts at the same time!
- Use as a homework or review packet.
- Use as an intervention for students who need to revisit science concepts.

520L

Name: _____ Date: _____

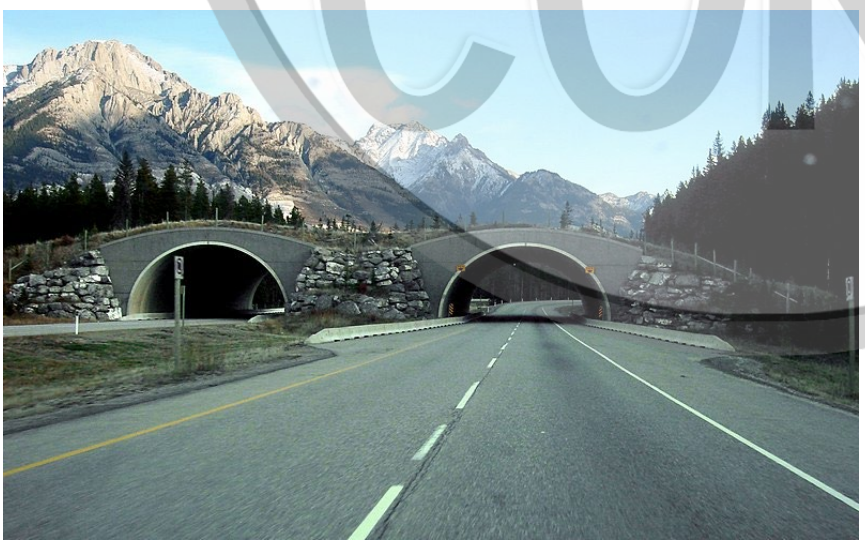
Safe Passage

The Cascades are mountains. They run from California through Oregon and Washington. They end in British Columbia, Canada. This mountain range has forests, slopes, and lakes. Many different **organisms** live in these mountains. Gray wolves and deer are a few **mammals** in the Cascades. Fish and reptiles are part of this **ecosystem**. Birds and insects also live there.



Highway animals cannot cross.

People live in the Cascades, too. They travel through the area. One major highway is Interstate 90, or I-90. This highway cuts across the Cascades. It carries over 28,000 cars a day. I-90 causes a problem. Its location affects wildlife movement in the Cascades. It stops safe **migration**. Accidents happen when animals cross the highway. Animals and people die in these crashes.

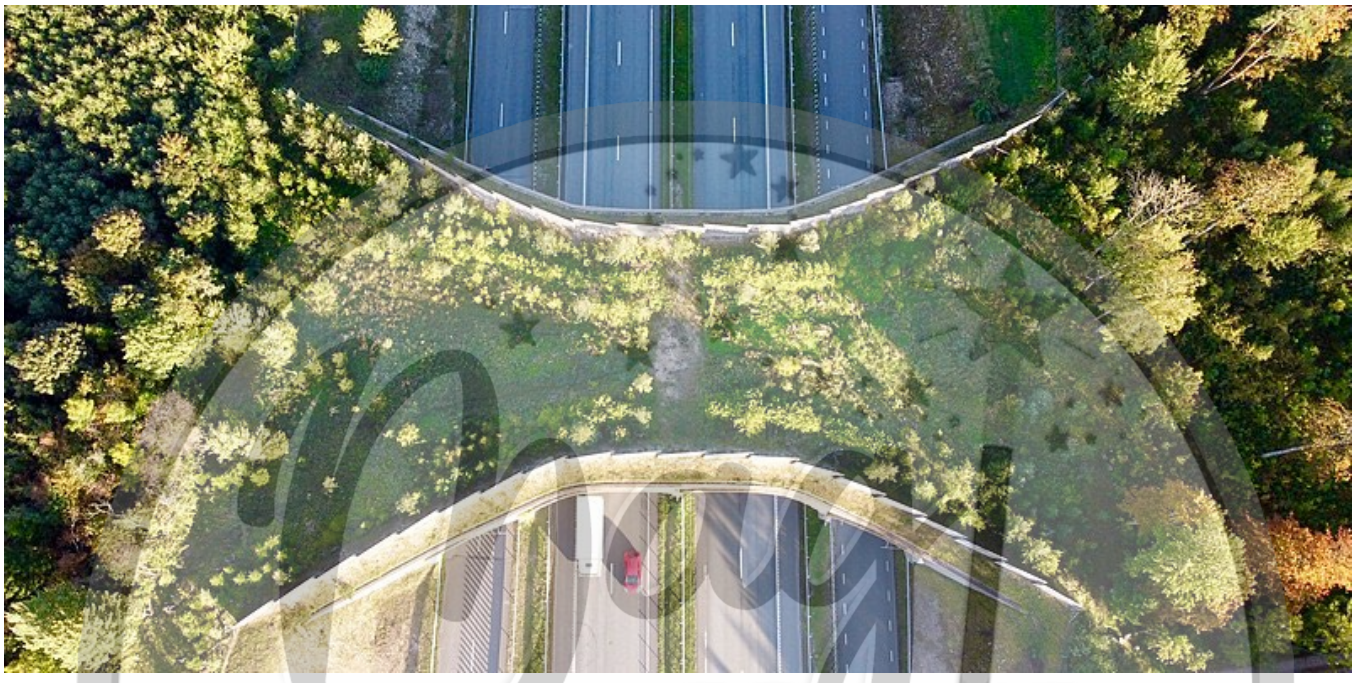


Example of a wildlife bridge in Canada.

I-90 has other effects, too. It blocks animal movement. This makes finding food hard. I-90 also makes finding new mates tricky. The animals won't be reproducing as much. Their numbers could decrease. I-90 is a danger to animal **survival**.

Builders have made wildlife bridges to solve the problem. Some of

these bridges are built over highways. This keeps animals out of traffic. One wildlife overcrossing is near Snoqualmie Pass in Washington. This bridge looks natural to animals. It has dirt and plants. High walls protect animals. Fences along the highway guide animals to the overpass.



Aerial view of a wildlife bridge.

Below the bridge are two arches for cars to drive under. The bridge costs over $6 million. It's doing its job. Many species have been seen crossing I-90 without harm. It didn't take them long to figure out how the bridge worked either. Coyotes and elk are some of the animals using the bridge. Many animals in the Cascades are able to live in this **environment** without danger from the highway.

Wildlife bridges are one **solution**. The only problem has been humans entering these bridges that are for wildlife. Humans on the bridges may stop animals from using them. Signs have been posted. They ask people to stay out. The bridges are also being watched.

Safe Passage Questions

1. Use the chart below to describe the problem and solution described in the article.

Problem	Solution
Interstate 90 carries 28,000 cars daily through the Cascade Mountains. This puts animals and humans at risk from accidents.	

2. Describe the problem the interstate has caused in the Cascades mountains in more detail.

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3. Is the solution in the article effective at solving the problem? Give reasons from the text to support your answer.

790L

Name: _____ Date: _____

Shady Chocolate

Many people love chocolate as a delicious treat. Chocolate is made from beans. The beans are grown on cacao trees. These trees grow in tropical climates near the equator. The beans are **harvested** and then go through several steps before becoming the chocolate people enjoy.

The inside of a cocoa bean.

Unfortunately, there is a problem with growing cacao trees. Many farmers plant their trees in sunny areas. These areas have become sunny because forests have been cleared to make room for the cacao farms. Growers don't want other trees **competing** with the cacao trees for sunlight and nutrients in the soil. Demand for products made from cacao beans is always growing, too. That means more and more forests are being torn up. Organisms living in those forests suffer when their habitats are destroyed. Often chemical **fertilizers** and **pesticides** are used, as well. This lessens the quality of the soil. It isn't good for wildlife in the area either.

Cacao tree with cocoa beans.

In Brazil, however, farmers have tried growing cacao trees under existing trees. This protects the cacao trees from getting too much sun. It also doesn't require the clearing of forest trees. Cacao trees grown in full sun were thought to produce more beans. Researchers have found that not to be true. Allowing existing trees to remain helps the planet fight climate change and global warming. It also improves soil quality. It prevents disease in the cacao trees, as well. Animals that use the forests for habitats get to keep their homes, too.

The trick now is to convince farmers to grow cacao trees in the shade. Many of them fear a change in farming practices will affect production. They need support in switching their methods. It's possible, however, to have our beloved chocolate and care for the planet at the same time.

Shady Chocolate Questions

1. Use the chart below to describe the problem and solution described in the article.

Problem	Solution

2. Describe the problem chocolate growing has caused for the environment. Give at least 2 examples of what has happened or could happen because of this problem.

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3. Is the solution in the article effective at solving the problem? Give reasons from the text to support your answer.

520L

Name: _____ Date: _____

Welcome Back, Wolves

Elk grazing in Yellowstone National Park.

Yellowstone National Park is the world's first national park. It runs through Wyoming, Montana, and Idaho. Yellowstone has **geysers**. Most of the land is forests. Some areas are grassland. Elk and coyotes are found in the park.

Gray wolves lived in Yellowstone National Park. too. The U.S. government allowed wolves to be killed starting in 1914. Wolves were blamed for problems with farmers. People feared them. Almost 150 wolves died between 1914 and 1926. Coyotes became the top hunter. They couldn't bring down large animals such as elk, though. Not like wolves could. Elk eats plants. Plants suffered with too many elk. One plant–willows–are needed by beavers. Large groups of elk eating willows lowered the number of beavers. The **ecosystem** in Yellowstone was unbalanced without wolves.

The loss of wolves from Yellowstone National Park put them on the **endangered species** list. The problem needed to be fixed. Wolves from Canada were brought into the park in 1995. The wolves bred. They formed packs. This lowered the number of elk. It renewed plant life. Beavers were able to get what they needed again. Gray wolves returned the balance in Yellowstone National Park.

A pack of wolves hunting elk in Yellowstone National Park.

Wolves coming back to the park was a success. Yellowstone's gray wolves are no longer endangered.

Welcome Back, Wolves Questions

1. Use the chart below to describe the problem and solution described in the article.

Problem	Solution
The wolves in Yellowstone became endangered because they were allowed to be killed. The ecosystem became unbalanced.	

2. Describe the problem killing off wolves caused for the environment. Give at least 2 examples of what has happened or could happen because of this problem.

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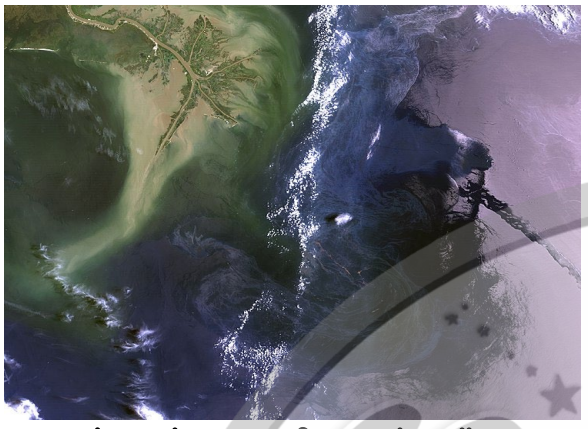
3. Is the solution in the article effective at solving the problem? Give reasons from the text to support your answer.

790L

Name: _____ Date: _____

Oil Spill Clean-Ups



Aerial view of an oil spill.

Thousands of oil spills happen in the United States every year. Most spills are small, but they still have bad effects on the environment. Large oil spills are considered **disasters**. They are caused in a number of ways. Oil pipelines break. Big ships carrying oil sink. Drilling for oil sometimes goes wrong. **Environmental changes** caused by an oil spill can linger for years after it happens. Beach and wetland habitats are the most common environments affected by oil spills.

When oil spills into an environment, plants and animals are affected. Oil coats bird wings and then birds can't fly. Nesting grounds are destroyed by oil spills. Sea otter fur loses its **insulating** qualities when covered with oil. The otters can't stay warm in colder water. Fish eggs can't survive when they come into contact with oil. Blowholes of whales and dolphins become clogged with oil. This makes breathing impossible. Oil has **toxic** substances that kill plants and animals.

One of the biggest oil spills in U.S. history was the *Deepwater Horizon* spill. This occurred on April 20, 2010. An explosion happened aboard a drilling platform in the Gulf of Mexico. The oil **rig** sank two days later. About 134 million gallons of oil leaked into the ocean. Thousands of birds, mammals, and sea turtles were slicked with oil. Many of these creatures didn't survive.

Milkweed plant.

There are a few solutions that have been tried to clean oil spills. None of them remove 100% of the oil, though. One of the more natural solutions involves **milkweed**. This plant is the only source of food for monarch caterpillars. The seed pods of milkweed plants have long **fibers**. These fibers **repel** water. They also help milkweed spread its seeds. It's been discovered, however, that these fibers are remarkable at absorbing oil. They suck up more than four times the oil that other materials can. Some companies have created oil cleanup kits that include milkweed fibers. Each low-cost kit can absorb 53 gallons of oil. A great side benefit is that more milkweed is being planted. This helps monarch butterfly populations whose numbers have been decreasing.

The best solution would be to prevent oil spills. Until that happens, solutions like milkweed kits are a tool against the damage oil spills create.

Oil Spill Clean-Ups Questions

1. Use the chart below to describe the problem and solution described in the article.

Problem	Solution

2. Describe the problem oil spills cause for the environment. Give at least 2 examples of what has happened or could happen because of this problem.

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3. Is the solution in the article effective at solving the problem? Give reasons from the text to support your answer.

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