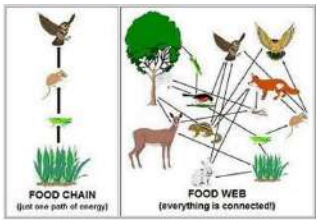
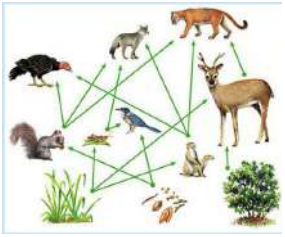
Week of April 13-17	Grade Level: 7th Subject: Science (ADV)
Directions: Choose either a High Tech, Low Tech, or No Tech activity for each subject. All work should be submitted to the teacher of that content.	

Date	HIGH TECH (USE WITH LAPTOP)	LOW TECH (USE WITH CELL PHONE)	NO TECH (NO TECHNOLOGY)	EXTENSION ACTIVITIES
Science	**Lesson:** **What are the interactions and adaptations that help animals survive in ecosystems?** **Day 1:** "What do you already know about adaptations?" and "What do animals need to survive?" "What is the connection between adaptations and mutations?" WatchLiving things change https://www.youtube.com/watch?v=xDSFlRunlrU On Canvas, answer the following prompt: give an example of your favorite animal, one	**Lesson:** **What are the interactions and adaptations that help animals survive in ecosystems?** **Day 1:** Watch video on phone or other device. Answer questions on paper. • What things do animals need to survive? Name at least three, • In your own words, what is an adaptation? • Give an example of an adaptation that your favorite animals has and tell me how it helps the	**Lesson:** **What are the interactions and adaptations that help animals survive in ecosystems?** **Day 1:** Read "Living things change" Answer questions on paper. • What things do animals need to survive?Name at least three. • In your own words, what is an adaptation? • Give an example of an adaptation that your favorite animals has and tell me how it helps the animal survive.	**ADAPTATION EXTENSION:** **Once Upon a Time in Adaptationland...** Create a storyboard using this template (https://media.newsela.com/article_media/extra/Storyboard.pdf) or an online storyboard program (storyboardthat.com). Tell the story of an animal who has a mutation that makes him/her different from the parents. In your story, the mutation should be helpful--an ADAPTATION. Show how that adaptation helps the animal

	adaptation it has, and how that adaptation helps it survive. **<u>Day 2</u>:** Think you remember everything about adaptations from Elementary School? You better make sure--test yourself with this IXL: https://www.ixl.com/science/grade-4/introduction-to-adaptations **<u>Day 3</u>:** Google slides with sample food chains and review of 3rd grade vocabulary (producer, consumer, decomposer) https://docs.google.com/presentation/d/1wEQH6cch7mEVmyZDuZdJ2XlLiuki41ocNl0MgWLHbBM/edit#slide=id.g723c3779dc_0_132 Food chains (simple activity) Organize organisms in the last two Google slides into food chains. **<u>Days 4 and 5</u>:** Compare and contrast Food chains and food webs--watch video and use the website a resource to complete Venn diagram: https://www.generationgenius.com/difference-between-food-webs-food-chains/ Use this template and pdf editor to create a	animal survive. **<u>Day 2</u>:** Download the IXL app to your phone and complete "Introduction to Adaptations" (4th grade, N.1). Don't have login information? Contact your science teacher. **<u>Day 3</u>:** <--pick which works for you→ Read and review the Google slides presentation. On a separate sheet of paper (or the back of Google slides), write or draw the food chains using the organisms from the last two slides. **<u>Days 4 and 5</u>:** Compare and contrast Food chains and food webs--watch video: https://www.generationgenius.com/difference-between-food-webs-food-chains/ Use this template to create a Venn diagram (can print or use pdf editor: https://www.studenth	**<u>Day 2</u>:** Complete paper version of IXL **<u>Day 3</u>:** Review Food Chain vocabulary with the Google slides presentation. On a separate sheet of paper (or the back of Google slides), write or draw the food chains using the organisms from the last two slides.. **<u>Days 4 and 5</u>:** Read the printed pages from website On a separate sheet of paper, create a Venn Diagram to compare and contrast Food Chains and Food Webs. OR Create a t-chart to show the similarities and differences between food chains and food	survive. **...and everyone lived happily ever after (except the animals that get eaten by predators).** **FOOD CHAIN/FOOD WEB EXTENSION:** Make a food WEB in Google slides using the sun and at least 8 of the following organisms: • Grass • Oak tree • Blackberry bush • Squirrel • Red tailed hawk • Black rat snake • Grasshopper • Mouse • Red Fox • Rabbit • Raccoon • Great Horned Owl • Bobcat • Coyote • White Tailed Deer • Mushroom • Bacteria • Worms Here are some examples of other food webs: 

	Venn diagram: https://www.studenthandouts.com/00/200811/venn2.pdf	andouts.com/00/200811/venn2.pdf OR Use a Google doc to create a t-chart to show the similarities and differences between food chains and food webs.	webs.	 Show more than one connection for each living thing. Use www.animaldiversity.org to research what animals eat.

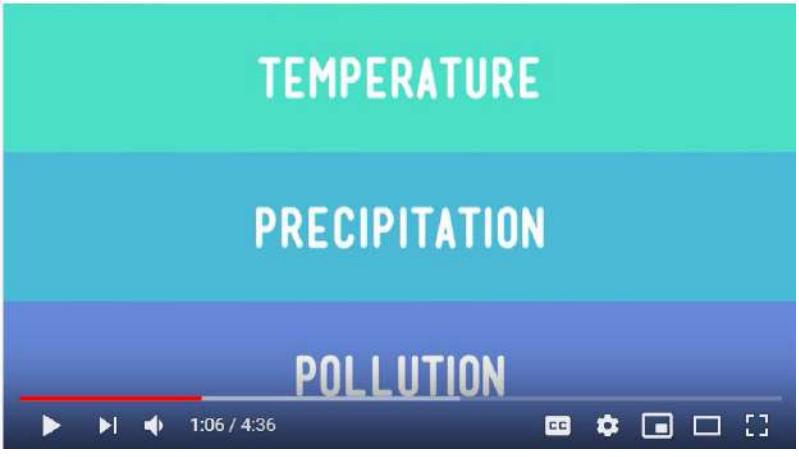
DAY 1: Crash Course Kids Living Things Change

Hopefully by now, you realize that our world is always changing. Landforms change, weather changes, even molecules change. With all of that change going on, living things had better be able to keep up.
And they do.

When the world around them changes, living things change too, sometimes in a big way. So what can happen to living things when the world around them changes?

You may recall that once upon a time we talked about pineapples, and we said they were picky because they can only grow in lovely, lush, tropical climates. No pineapples at the poles, right?That's because the environment at the tropics is perfect for growing pineapples.

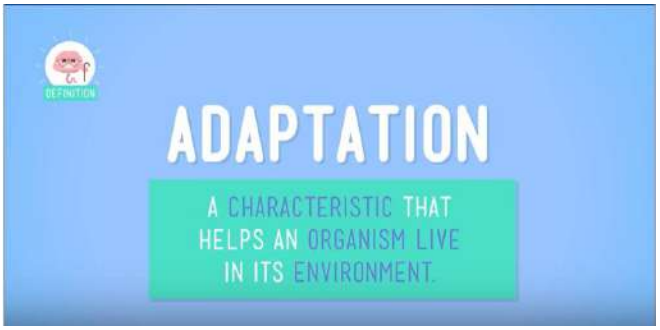
An environment is made up of the conditions around a living thing. Now that might sound kind of like the definition of the word ecosystem, but the word “environment” is usually used to talk just about non-living things in an ecosystem, like temperature or the amount of rain or even how much pollution there is.



So while the environment at the poles isn't great for growing pineapples, it suits other living things just fine. Like penguins in Antarctica or polar bears at the North Pole. If we put these animals into a

pineapple field, they'd get pretty hot and unhappy. That's because they have adaptations for the cold.

An adaptation is a characteristic that helps an organism live in its environment.



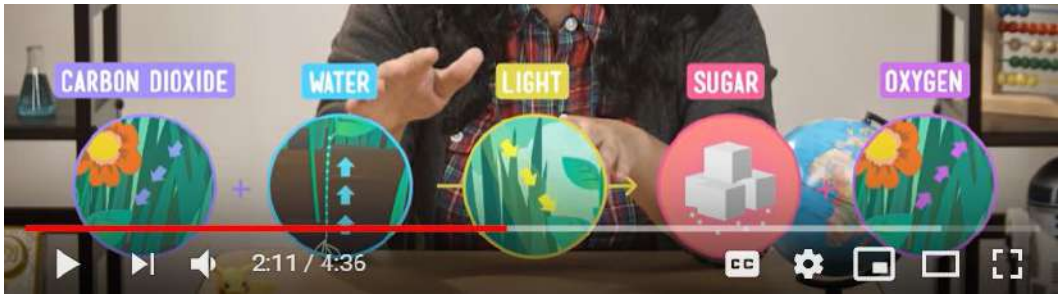
But sometimes, when an environment changes, it upsets the delicate balance of the food chains in an ecosystem.

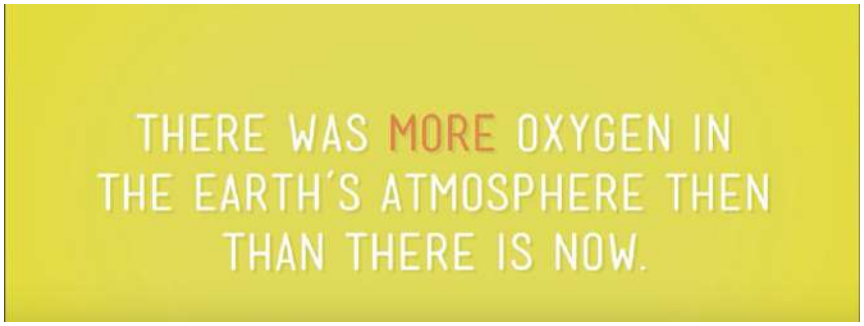
For example, about 360 million years ago, the Earth looked a lot different than it does now. The Earth was much warmer and the land was covered with lots of forests and swamps.

And the animals that lived then? Let's talk about centipedes that were 2 meters long, amphibians that were 6 meters long, and dragonflies that were the size of large birds.

Clearly none of these creatures are still around, so what happened? The environment changed. Over several million years, the climate became drier and cooler and many plants didn't have adaptations that help them survive in this new, cool, dry environment, so they became extinct.

And that was a problem. Plants are at the bottom of the food chain. They make chemical energy through photosynthesis and then they release oxygen. All of those plants made lots and lots of oxygen.





There was more oxygen in the Earth's atmosphere than there is now--enough to support all of those giant insects. But when those plants became extinct, the animals that depended on all of that oxygen could no longer survive. Good bye giant insects!

And the amphibians and other animals that ate those insects had less food, so they didn't do much better. See you, giant amphibians!

But let's take a look at how adaptations can **help** a living thing fit into its environment using another, smaller insect. Meet the peppered moth.

Cute, right? And it comes in two types: light and dark.

As you can probably tell, the dark colored moths are a lot easier to see when they're resting on trees, and easier to see means they're more likely to become snacks for birds and other predators. **That means the light moths have an adaptation that helps them live in their environment.** So if we went through the woods looking for moths, we'd expect to catch more dark moths than light ones.

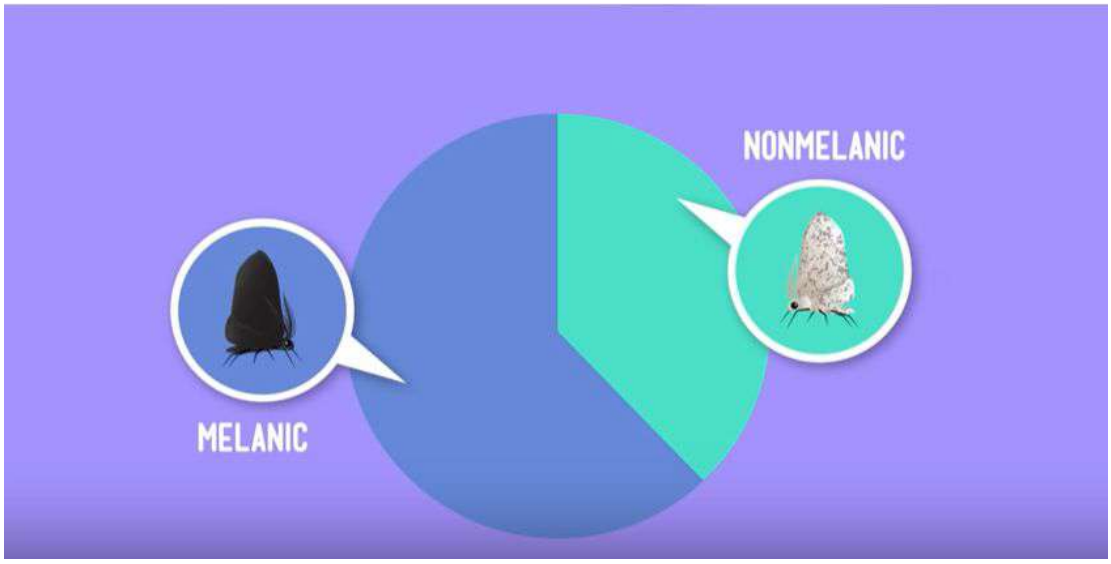
Now, what would happen if the environment changed? It did, true story. A couple hundred years ago, people started burning a lot of coal for fuel, and this made a lot of pollution. The pollution coated the trees, turning them dark with dirt and soot.

The dark moths now had the adaptation that helped them fit into the environment. They blended into the trees which were dark, too.

The moths that were lighter though, not so lucky. In the polluted environment they didn't fit in as well, so they got eaten more than the dark moths. The dark moths that lived reproduced to make more dark moths.

The results? After the environment had been polluted for a long time, there were more dark moths than light ones.

Fortunately, we've gotten to be a lot smarter about pollution. Over the last 50 years, the environment has changed from being more polluted to less polluted and the trees aren't covered with dark dirt anymore. As you can see in this diagram, the number of light-colored moths is on the rise.



In conclusion:

- All living things have characteristics that help them to fit into their environment called adaptations.
- If the environment changes, then the living things change, too.
- The living things might gain different adaptations that help them to survive in the new environment, or the result might be more severe and affect the whole food chain.

Day 2 IXL

1. Which of the following are traits of an organism? Select all that apply.
    - The way the organism looks
    - The amount of oxygen in the organism's environment
    - The way the organism behaves
    - The amount of sunshine the organism gets

2.  This picture shows an African elephant. African elephants are the largest land animals on Earth!
   Which traits does this African elephant have? Select all that apply.
    - It has a tail
    - It has a trunk
    - Its body is covered in scales
    - It walks on land

3.  African elephants have a trunk, thick skin, and tusks. These are **traits** of the elephant.
   An **adaptation** is a trait that helps an organism stay alive in its environment.
   Which sentences explain how this elephant's traits are adaptations? Select **two**.
    - The elephant's thick skin protects it from predators.
    - The elephant's tusks are long and white
    - The elephant's trunk helps it get food and water.

4. Is this sentence true or false?

   By looking at a picture of an organism, you can see all of its traits.

   TRUE FALSE

5. What is true about traits and adaptations? Select all the true sentences.
   - All land animals have the same traits and adaptations
   - An adaptation is a trait that helps keep an organism alive in its environment
   - A trait is how an organism behaves or looks.

   <u>For the following questions, remember that an adaptation should explain how a trait helps an organism survive. If there's no explanation of how it helps the organism survive, then the trait is not an adaptation.</u>

6.  The American alligator has a long, strong tail. The alligator's tail is covered with thick skin and bony plates.

   Does the paragraph above explain how the alligator's tail is an adaptation?

   YES NO

7.  The impala can run fast. It can also jump more than nine feet into the air! Running fast and jumping high can help the impala escape from predators.

   Does the paragraph above explain how the impala's ability to run and jump is an adaptation?

YES NO

8.  Spotted hyenas live in large groups called **clans**. Each clan can have up to 80 hyenas. The female hyenas control how the clan works together.

   Does the paragraph above explain how living in clans is an adaptation?

   YES NO

9.  This nopal cactus has a waxy coating. This cactus grows in hot, dry environments. The waxy coating helps keep the cactus from losing too much water.

   Does the paragraph above explain how the cactus's waxy coating is an adaptation?

   YES NO

10.  Orca whales have a thick layer of **blubber**, or fat, under their skin. Orcas swim in water that is often cold. The blubber keeps the orca warm.

    Does the paragraph above explain how the orca's blubber is an adaptation?

    YES NO

Day 3 Google Slides

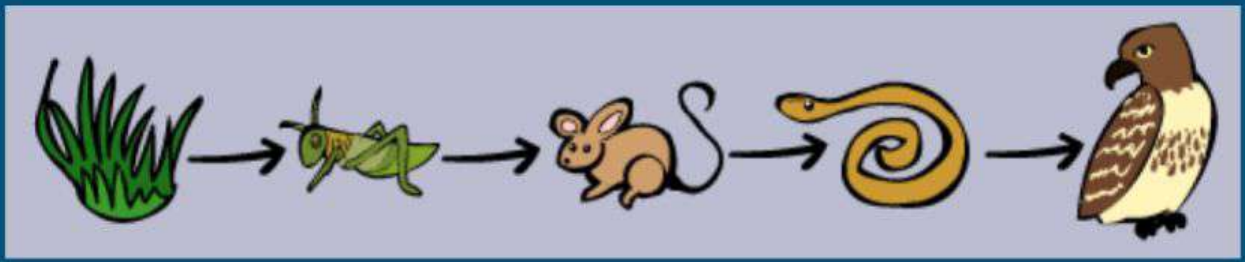
Food Chains

Vocabulary and Assignment

Food Chains

Food chains show how **food** and **energy** move through an ecosystem.

In the drawing below, the grass gets energy from the sun and makes food. The grasshopper eats the grass, the mouse eats the grasshopper, and so on. Which animals below are predators? Which are prey?



Producers

Living things that take energy from the sun and turn it into food. Producers also release oxygen when they make food.

What do we call that process?

What is another simple name for producers?

Consumers

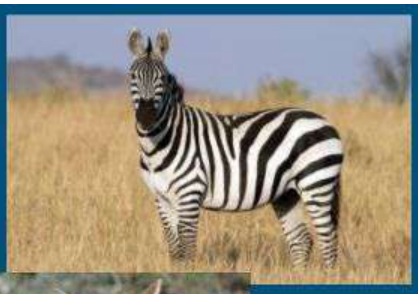
Living things that get their energy by eating other living things.

Some consumers eat plants.

Some consumers eat other animals.

Some consumers eat both plants and animals.

What do we call each of those kinds of consumers?

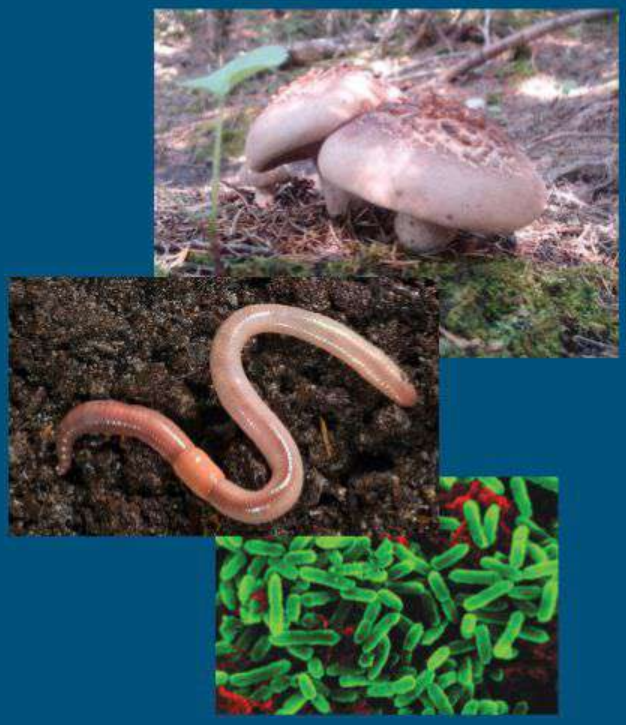


Decomposers

Break down dead organisms into small molecules and return important materials to the environment.

They turn dead things into chemicals and return them to the air, ground, or water to be used again.

Some examples are fungus, worms, bacteria, and some insects



Assignment

- Make a copy of this Google Slides presentation (File->Make a Copy) so you can edit the last two (or three) slides
- On the following slides there are organisms, names, roles in the ecosystem and arrows.
- Move the objects around on the slide to create a food chain.
- Not sure what an animal is? Use the Animal Diversity Web website to look it up: https://animaldiversity.org/
- Need to add an arrow or other graphic? That's ok but just be sure you don't delete anything!

Your Turn! Move the items below to make a food chain.





Oak tree leaves

Sun

Deer

Coyote

Mushrooms

Decomposer

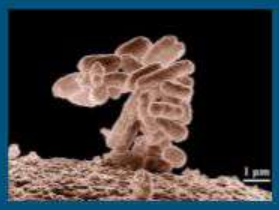
Producer

Consumer Herbivore

Consumer Omnivore

Your Turn! Move the items below to make a food chain.



Algae

Sun

Mayflies

Frog

Bacteria

Snake

Decomposer

Producer

Consumer Herbivore

Consumer Carnivore

Consumer Omnivore

Day 4 & 5

FOOD WEB DEFINITION

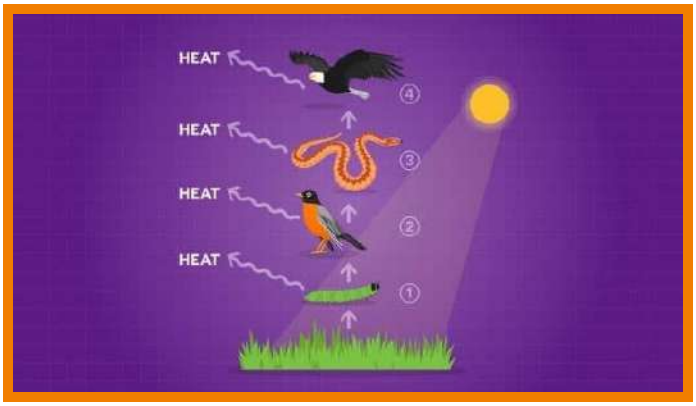
To understand how plants and animals interact, scientists make diagrams called food chains. A *food chain* shows a sequence of living things in which one organism eats the one below it. Most animals eat more than one thing, so to show ALL the feeding relationships, we use *food webs* which are made of many intersecting food chains.

To better understand the food web definition….

Energy in food can be traced back to the sun.

Living things need a constant supply of energy. The sun provides that energy, which is transformed into food by plants through photosynthesis,
Herbivores (plant-eating animals) eat the plants and receive energy. When the herbivore is eaten by a carnivore (an animal that eats herbivores), the energy from the herbivore is transferred to the carnivore. The transfer of energy from one organism to another makes up a *food chain*.

Animals eat to get energy and building blocks.



All living things need food to provide materials for growth. Food chains start with organisms that make their own food, called *producers*. Plants are the most common producers.

Animals are called *consumers* because they do not make their own food — they eat, or consume, other organisms.

A food chain typically only has a few steps (usually 4 at the most). This is because each time one organism eats another, some of that energy is used up and released as heat.
In fact, you are releasing heat energy right now as you read this because your body is burning food to keep warm! Since some energy gets used up in each step of the food chain, there can only be a few steps, otherwise there is not enough energy left for the organism at the top.

A food web is a model of intersecting food chains.

Most organisms can eat, and be eaten, by many different animals. A food chain wouldn't be able to show this. Food webs show all these connections. They are more complicated but more accurate.

In the African savannah food web shown here, we can see multiple arrows pointing to different animals. The arrows show the direction the energy is transferred. For example, we can see that zebras eat trees and grasses, so arrows from trees and grasses are pointing to a zebra.

The arrows pointing from the zebra to cheetahs, hyenas, and lions tell us that the zebra is eaten by these animals.

The lions are at the top of the food web, which means they are not eaten by any other type of animal (except by decomposers when it dies). We call this *an apex predator.*

Decomposers break down dead organisms.

One group of consumers that is often not shown in a food webs are *decomposers*. Decomposers are organisms **(mostly bacteria and fungi)** that break down dead plants and animals, eventually turning them into nutrients that will be added to soil.

These nutrients are very important to continue the cycle in the ecosystem. Slugs, earthworms, millipedes, and centipedes also help break down dead things. Without decomposers, nutrients would not get recycled and we would have dead material piled up everywhere.

T-Chart Sample for Assignment (Venn Diagram Template on next page)

Food Chains and Food Webs	
Similarities	Differences

Name: _____ Date: _____ Class Period: _____