Ocean Discovery

FOURTH GRADE

Our Ocean Discovery field trip program helps to meet multiple Florida Standards.
Please see Table of Contents for specific standards.

Ocean Discovery 4th Grade Activities

Table of Contents

Pre Field Trip Activities

Caught up in a Food Web!

Science (Food Web/ Energy Transfer)

Standards: SC.4.L.17.2, SC.4.L.17.3

- Students will color an image of the Antarctic food web to identify the primary producers, primary consumers, secondary consumers and the apex predator.

Symmetrical Sea Creatures

Mathematics (Lines of symmetry)

Standards: MAFS.4.G.1.3

- Students will find lines of symmetry on different sea creatures and complete the images.

What about Whales?

Science (Observation Comparison, Genetic vs. Environmental Characteristics) / English Language Arts (Various Standards)

Standards: LAFS.4.L.1.1, LAFS.4.L.1.2, LAFS.4.L.2.3, LAFS.4.L.3.4, LAFS.4.L.3.6, LAFS.4.RF.4.4, LAFS.4.RI.3.7, LAFS.4.RI.4.10, LAFS.4.SL.1.2, SC.4.L.16.2, SC.4.N.1.2

- Students will learn about four species of whales. They will write a short paragraph about each whale containing at least three facts about the species. Students are asked to choose two of the species to compare and contrast.

Field Trip Activities

In the Shows: Training Tips

Science (Innate vs Learned Behaviors)

Standards: SC.4.L.16.3

- Students will learn about the animal training field and the basics behind training animals at SeaWorld® using positive reinforcement.

"How did you get them to do that?!" Training Activity

Science (Records Keeping)

Standards: SC.4.L.16.3

- Teachers and chaperones will conduct a short activity with their students using the same positive reinforcement training techniques that SeaWorld uses to train an animal to do a simple behavior.

Shark Encounter®: Food for Thought

Science (Food Web)

Standards: SC.4.L.17.2, SC.4.L.17.3

- Teachers and/or chaperones will share the provided information about the food web and energy flow with their students while at Shark Encounter.

Shark Encounter: Count and Identify the Sharks

English Language Arts (Vocabulary Acquisition)/ Science (Classification, Seasonal Changes, Migration)

Standards: SC.4.N.1.5, SC.4.N.1.6

- Students going through the Shark Encounter will tally and identify the sharks they see. They will compare their counts with others.

TurtleTrek: Mermaids, Myths and Legends

English Language Arts (Myths)/Science (Environmental Impact)

Standards: LAFS.4.RL.3.9, SC.4.L.17.4

- Teachers and/or chaperones will share the provided information about the legends and myths about manatees and sea turtles while visiting TurtleTrek.

Whales and Sharks: Killer Whale and Shark Adaptations

Science (Animal Behavior, Food Web, Environmental impact)

Standards: SC.4.L.16.3, SC.4.L.17.2, SC.4.L.17.4

- Teachers and/or chaperones will share the two pages of provided information about killer whales and sharks while at Shark Encounter®, Shamu® Underwater Viewing or Shamu Stadium.

Wild Arctic: Arctic Adaptations

Science (Seasonal Changes, Adaptations)

Standards: SC.4.L.16.2, SC.4.L.16.3, SC.4.L.17.1

- Teachers and/or chaperones will share the provided information with their students about the Arctic environment and adaptations of the animals that live there.

Post Field Trip Activities

Arctic Artist

Science (Characteristics) / Visual Arts (Artistic Connection, Analytical Skills, Skill Development)

Standards: SC.4.L.16.2, VA.4.C.3.3, VA.4.H.3.1, VA.4.S.3.2

- Students replicate a drawing of a beluga whale using the provided image and grid.

Manatees to Mermaids: How Myths are Made!

English Language Arts (Reading and Writing Comprehension, Storytelling)

Standards: LAFS.4.L.1.1, LAFS.4.L.1.2, LAFS.4.L.2.3, LAFS.4.RF.4.4, LAFS.4.RL.2.4, LAFS.4.RL.3.9, LAFS.4.W.1.3, LAFS.4.W.2.4,

- Students will read a short story about the creation of the myth of the mermaid. They will answer some questions about what they read. They will write a short myth of their own.

The Legend of the Killer Whale

English Language Arts (Reading and Writing Comprehension, Storytelling)

Standards: LAFS.4.L.1.1, LAFS.4.L.1.2, LAFS.4.L.2.3, LAFS.4.RF.4.4, LAFS.4.RL.2.4, LAFS.4.RL.3.9, LAFS.4.W.1.3, LAFS.4.W.2.4,

- Students will read a short story about killer whales based on a legend from the Tlingit and Haida cultures of the Pacific Northwest. They will answer some questions about what they read. They will write a short legend of their own.

Training and Behavior Basics

Science (Innate vs. Learned Behaviors)

Standard: SC.4.L.16.3

- Students will learn about innate versus learned behaviors in humans and animals through a basic worksheet with examples of both.

Caught Up in a Food Web!

Name: _____

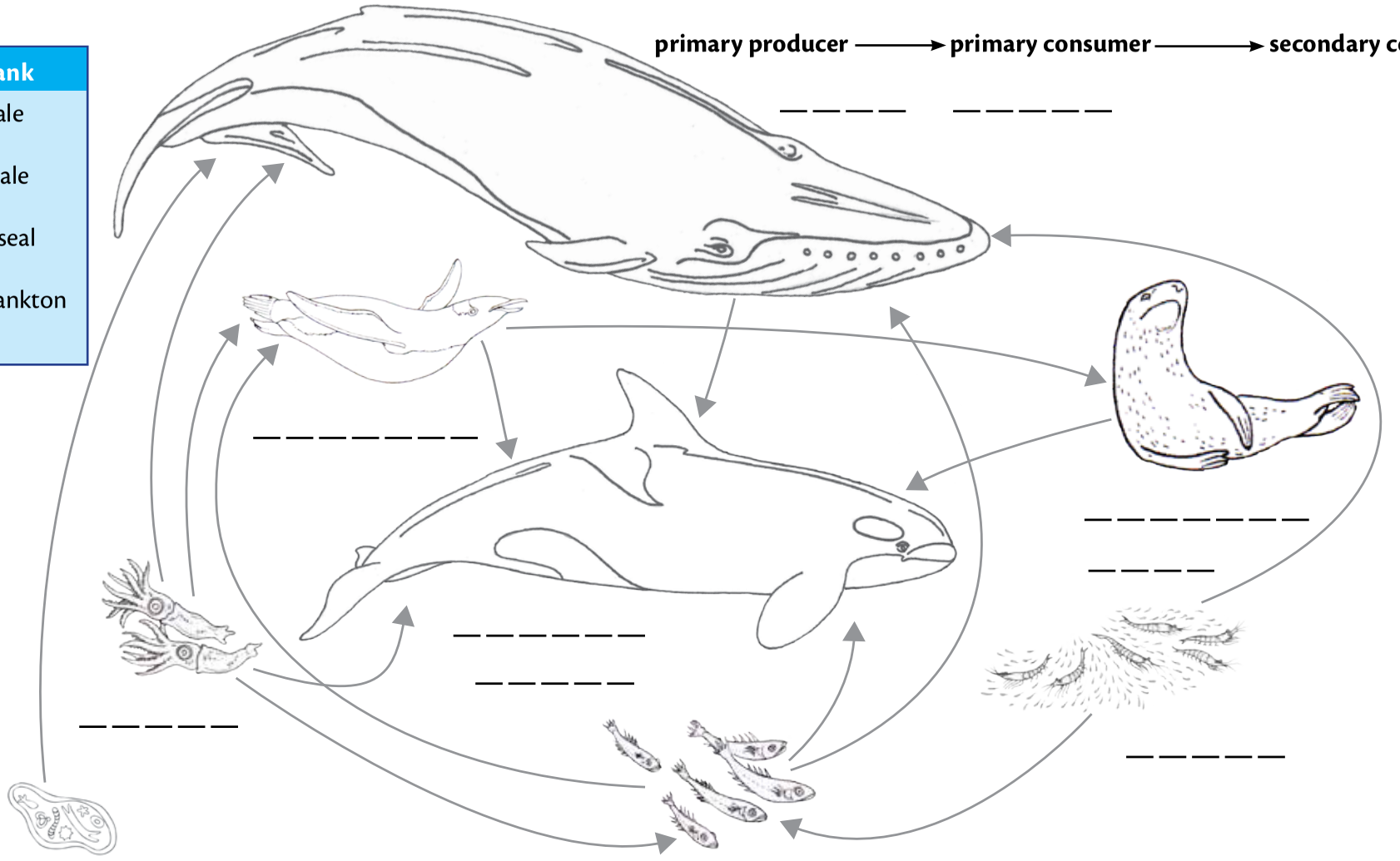
All life on Earth starts with the Sun. The energy the Sun radiates to Earth is used by plants and other **primary producers** to create stored energy in the form of sugars from a process called **photosynthesis**. These plants are then eaten by **primary consumers**, which in turn are eaten by **secondary consumers**. An animal that eats other animals but is not preyed upon by any other animal is known as an **apex predator**. In the ocean, the food web starts with phytoplankton (tiny floating plants and algae) and ends with the apex predator of the ocean, the killer whale.

Directions: The picture below represents part of the Antarctic food web. Color the primary producers green, primary consumers yellow, the secondary consumers orange and the apex predator red. Then label the images using the words from the Word Bank.

Word Bank

Blue whale
fish
killer whale
krill
leopard seal
penguin
phytoplankton
squid

primary producer ⟶ **primary consumer** ⟶ **secondary consumer**



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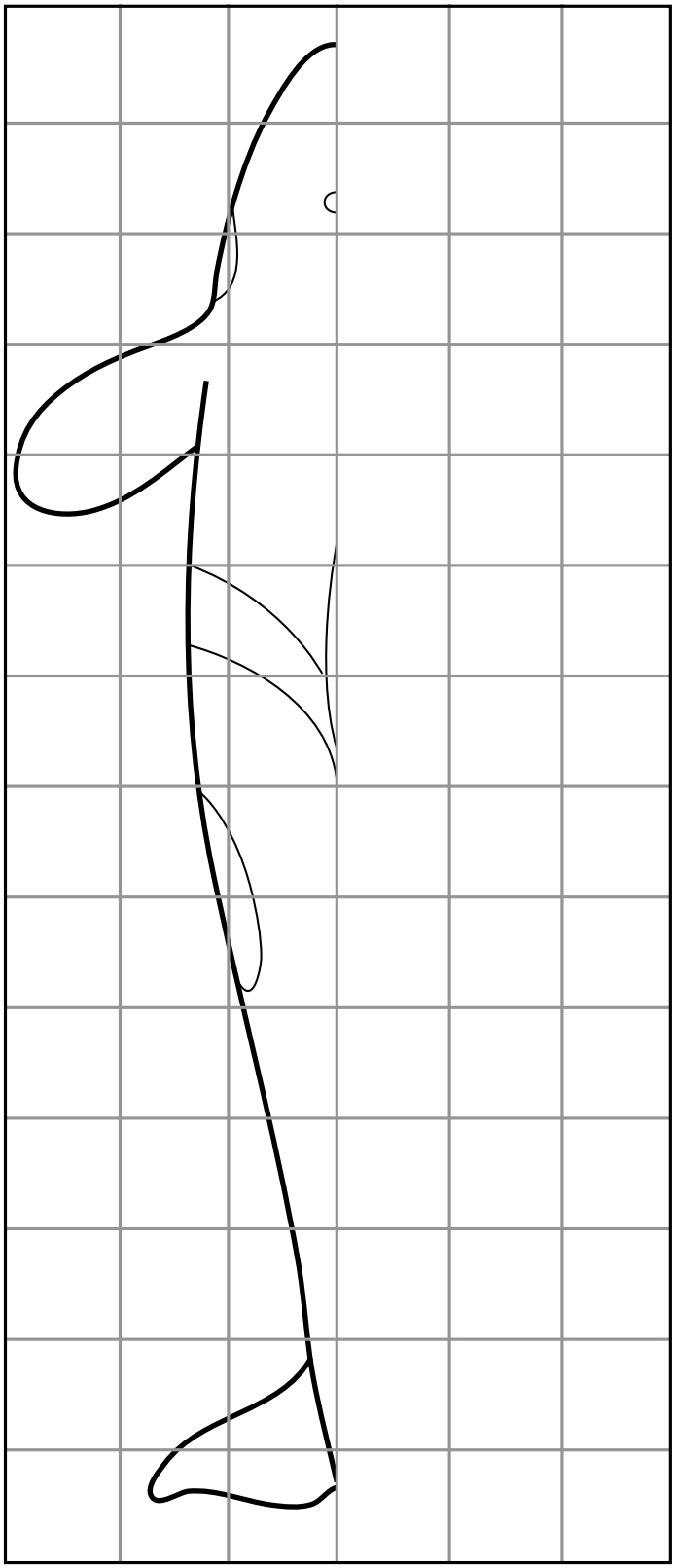
Deeper Depths: Which part of the food web is the most important? Why?

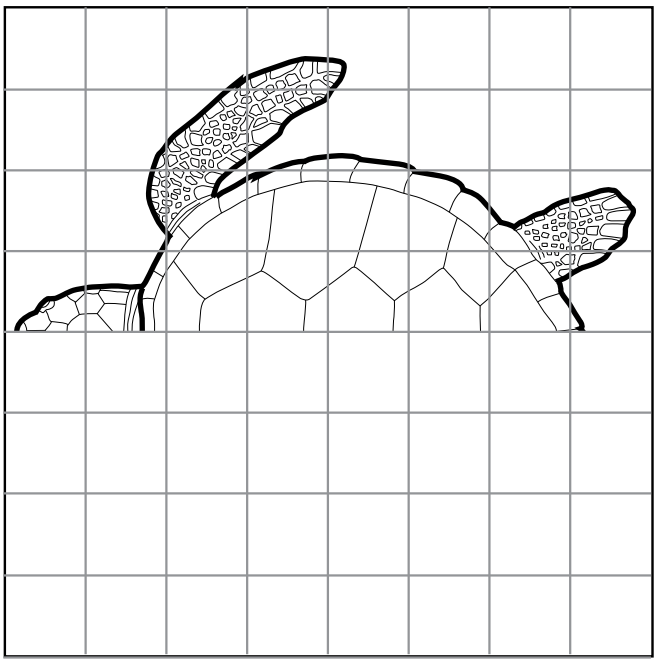
Symmetrical Sea Creatures

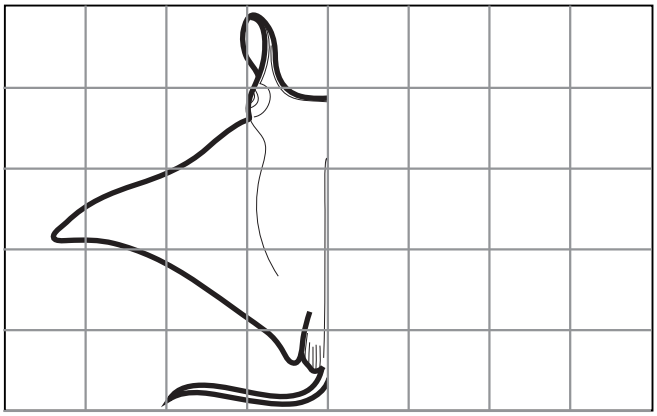
Name: _____

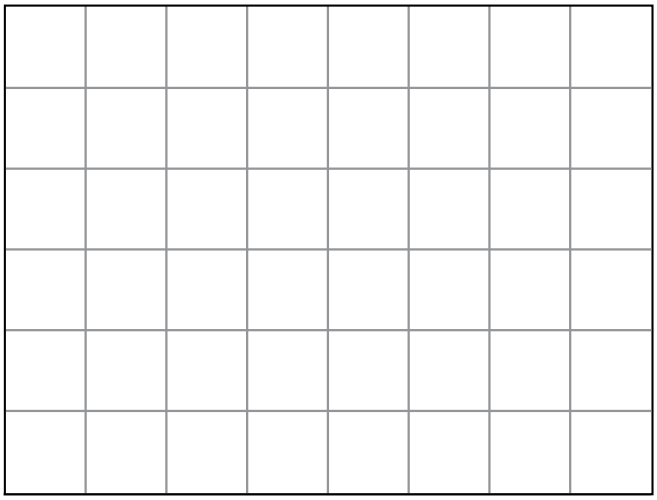
Symmetry appears in nature in many different animals. Some animals have bilateral symmetry, which means they have one line of symmetry along their body. Other animals have radial symmetry and have more than one line of symmetry around their body. There are also animals that may be asymmetrical without any lines of symmetry at all.

Directions: Use the grids to complete the bilateral animals. Use the blank grid to create an animal with radial symmetry or asymmetry.









What About Whales?

Name: _____

Around the world, there are over 80 types of whales. Blue whales are the largest species of whale while vaquitas are the smallest species. All whales have some things that are the same and some things that are different.

Directions: Read about the whales below. Write three facts about each whale in the space given. Be sure to use complete sentences with proper grammar and punctuation.

Killer Whale (*Orcinus orca*)

- Females - about 15 feet long.
- Males - about 25 feet long.
- Live in all of the oceans around the world.
- Eat fish, marine mammals, sharks and squids.
- Fun Fact - Males are bigger but females lead the group or "pod".

Beluga Whale (*Delphinapterus leucas*)

- Beluga whales - about 10 feet long.
- Males - usually longer.
- Only live in the ocean around the North Pole.
- Eat fish, squid and crabs.
- Fun Fact - Have a dorsal ridge instead of a dorsal fin.

What About Whales? (continued) Name:_____

Humpback Whale (*Megaptera novaeangliae*)

- Grow up to 50 feet long.
- Females - usually bigger.
- Live in all oceans around the world.
- Eat small shrimp and very small fish.
- Fun Fact - Sing to each other with special sounds

Bottlenose Dolphins (*Tursiops truncatus*)

- Grow up to 8 feet long.
- Males - usually bigger than females.
- Live in warm waters around the world.
- Usually eat fish and squid.
- Fun Fact – Jump up to 16 feet in the air.

Deeper Depths: On a new piece of paper, pick two of the whales to compare and contrast. Write about three ways they are the same and three ways they are different. Hint: You can use the pictures next to each whale to help you.

In the Shows: Training Tips

Objectives: Students will learn the basics of animal training.

Teacher and Chaperone Corner: Animal training techniques can be seen during our shows and you may also find training sessions occurring at Dolphin Cove® and many other animal areas. Training is an important aspect of providing a healthy environment for the animals at SeaWorld®. Training sessions help keep the animals stimulated and involved with their environment.

SeaWorld Educators are located at Pacific Point Preserve®, Dolphin Nursery and Shamu® Underwater Viewing to assist with questions and provide additional information.

Share this information with your students.

- Animal training can be a rewarding career but it does require a lot of patience and hard work. SeaWorld looks for training applicants that are in good physical condition, with strong swimming skills, working knowledge of animal behavior and are comfortable talking in front of large crowds.
- Training uses the animal's innate behaviors to create a learned behavior. **Innate behaviors** are behaviors that an animal is born knowing how to do. Breathing and blinking are innate behaviors for humans. By teaching the animal to do the behavior when asked to, it can become a learned behavior. **Learned behaviors** can also be advanced into new behaviors such as somersault or flip.
- Training is more successful when done using positive reinforcement. **Positive reinforcement** means that behaviors that are desired and asked for are rewarded, while unwanted or un-asked for behaviors are disregarded or ignored.
- A **Least Reinforcing Scenario** (LRS) is a way of indicating to the animal that they did not do what the trainer was looking for. A LRS is a neutral, calm response that lasts for about 3 seconds before the trainer repeats the request for the behavior or moves on to a different behavior. If the behavior still doesn't occur as asked, the trainer can give a brief "recess" or break from the training session.
- By keeping training sessions positive, the animals are more likely to want to participate with the trainers. Positive rewards can include primary reinforcers like food or secondary reinforcers like toys, rub downs, bubbles, playtime, etc.
- Training is done in small steps called **approximations**, that build up to bigger behaviors. Trainers can use a whistle or bridge to tell the animal that the behavior was done correctly and to return for a reward. Tools like target poles (long sticks or poles with a buoy or target on the end) can be used to assist the animals by indicating where the trainer would like the behavior to occur.
- Daily sessions may include training for husbandry or medical care, exercise, learning a new behavior, play, relationship building and shows. Sessions may also combine all of these elements into one training session. Sessions vary each day so that the animals stay interested in participating.
- Animal training is successful only when the animal wants to participate. If the animal decides that it does not wish to participate, then the session, or the show, may be cancelled or delayed.

"How did you get them to do that?!" Training Activity

Objectives: Students will see and experience a training session to better understand how positive reinforcement training works.

Background: Animal training has been around for centuries. Hunters have trained dogs and falcons to help them hunt for food. Cattle, horses and elephants have been trained for transportation. Even your family pet might have had some training. In zoological facilities, training is an important way for animals to stay mentally stimulated, physically active and for trainers to be able to closely monitor the animals in their care.

Vocabulary:

Hand target – a basic behavior when the animal touches its nose, rostrum or flipper to the trainer's hand.

Hand signal – a movement of the hands used to ask for a behavior like placing your finger to your lips to ask everyone to quiet down.

Bridge – a word or sound that the animal recognizes as having done the behavior correctly.

Least Reinforcing Scenario (**LRS**) – A dull, neutral response that is given when the animal behaves incorrectly. It is considered neither negative nor positive.

Directions: Use the steps below in conjunction with "In the Shows: Training Tips" infosheet to conduct a training activity. Before the activity begins, think up a simple action you want the student to complete. For example: touching their head, jumping up and down or spinning in a circle. Do not tell the students the desired behavior. This activity is designed to take no more than 5-10 minutes

1. Have the students name some of their favorite rewards. This may include money, candy, riding roller coasters or time to play with their friends.
2. Explain to the students that positive reinforcement training uses rewards the animals like. It thanks them for doing the behavior correctly. An LRS is used to indicate that the behavior the trainer was looking for did not occur.
3. Select a student. Look for a volunteer who is excited and willing to participate, which is the same thing that trainers look for when stepping up for a training session with their animal.
4. Select a bridge word for the student. A good one to use is the word "okay". Notify the student of what the bridge word is. You can also use candy, stickers or simply a cheer to reinforce or reward the behavior in connection to the bridge.
5. Start out with a basic hand target (high five or hand shake) to begin the training process. Each time the student does an action in the right direction, use the bridge word and reward that behavior. If the student does an incorrect behavior or doesn't respond, simply pause for a few seconds with a neutral reaction and then, continue with the session. Try not to use any additional verbal directions. You are trying to get them to respond using the target. Continue using small steps (approximations) towards the full behavior until you have success.
6. Optional: Once you have had the student fulfill the full behavior, you can start pairing it to a hand signal before guiding the student through the behavior. Eventually, you should be able to do the hand signal and the student will do the behavior without any outside guidance.

Shark Encounter®: Food for Thought

Objective: Students will discover the important role that predators play in the environment.

Teacher and Chaperone Corner: At Shark Encounter, students will encounter some of the most mysterious and misunderstood animals of the sea. Barracuda and sharks all have frightening reputations. However, it's important to remember that every animal plays an important role in the ecosystem.

The Shark Shallows, located near the front of the building, is an excellent place to observe sharks and other species. This area also provides a convenient meeting spot for your group for further discussion or instruction.

Share this information with your students.

- Animals that eat other animals are called **predator**s. Animals that are eaten by predators are called **prey**. Some animals, like stingrays, can be both a predator and prey.
- Most predators feed on weak, injured or ill animals that can be easily caught and are less likely to fight back.
- Sharks very rarely attack people. In fact, hippos and cows are more dangerous to people than sharks. Yet, people hurt and destroy over 100 million sharks every year.
- A **food web** is an organizational chart that depicts which prey animals are eaten by which predator animals. If part of the food web is taken away, the entire web collapses. This means that both predators and prey are important to the survival of the other.
- Predators are often thought of as "bad animals", but they play an important role by helping to keep overall populations of animals healthy. They help to prevent one type of animal from out numbering the others (**overpopulation**). They help to maintain the health and balance of the natural environment.
- Human activities such as pollution, overhunting and overfishing can harm predators either directly or by hurting the animals they rely on for food.
- Most predators have a good sense of smell that allows them to smell food from miles away. For example, some sharks can smell a concentration of one part of blood per billion parts of water.

Shark Encounter®: Count and Identify the Sharks

Name: _____

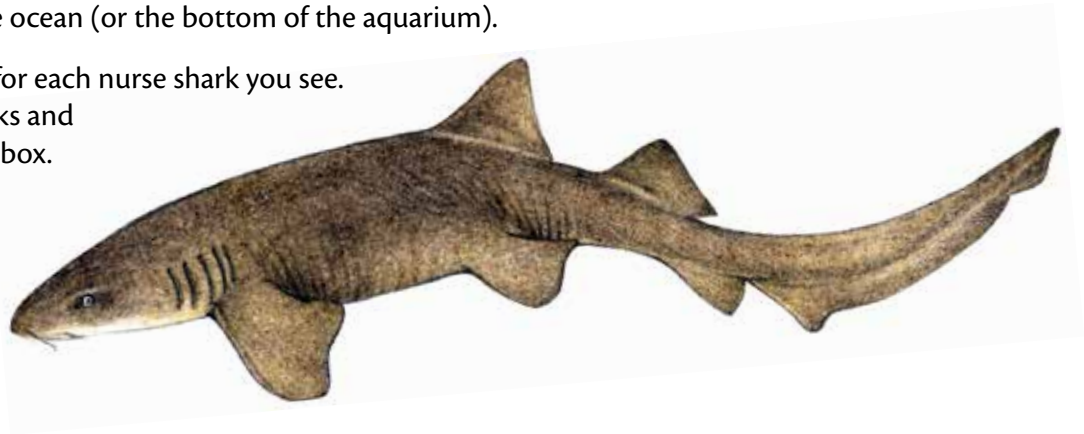
Scientists study animal populations to find out how many animals are present in an environment. As you move through the shark tunnel, choose one species of shark and count how many of that species you see. Divide class into teams and each team should count these sharks.

How many of each type of shark can you find?

Nurse Shark (*Ginglymostoma cirratum*)
Nurse sharks have a flat body with two whisker-like barbels located to the sides of the mouth. They are often found resting along the bottom of the ocean (or the bottom of the aquarium).

Directions: Make a tally mark for each nurse shark you see. Count the number of tally marks and record the number in the total box.

Tally Marks



☐ = Total number of nurse sharks

Sand Tiger Shark (*Carcharias taurus*)
Sand tiger sharks have thick bodies with two dorsal fins of approximately the same size and 2 to 5 rows of teeth can be seen protruding from the mouth. Looks like they are smiling or grinning at you.

Directions: Make a tally mark for each sand tiger shark you see. Count the number of tally marks and record the number in the total box.

Tally Marks

☐ = Total number of sand tiger sharks

Deeper Depths
Use a separate sheet of paper to answer the questions below.

Besides sharks, what other animals did you see in the aquarium? How many of each animal did you see? How did you identify the other animals?

TurtleTrek: Mermaids, Myths and Legends

Objective: Students will learn some of the legends and myths surrounding manatees and sea turtles.

Teacher and Chaperone Corner: TurtleTrek® begins with an underwater viewing area for SeaWorld's® rescued manatees and sea turtles. Enjoy our one-of-a-kind, 360° domed theatre where you experience the life of a sea turtle in a 3D presentation. After the 3D presentation, you will exit to the above water viewing area for the manatees and sea turtles. **SeaWorld Educators are available inside of TurtleTrek and at the above water viewing area for more information.**

Share this information with your students.

Manatees:

- The manatees at TurtleTrek are a subspecies of the West Indian manatee and are known as the Florida manatee. They are related to the Antilles manatee, the Amazonian manatee, the West African manatee and the dugong.
- The dugong was occasionally spotted by sailors in the Indian Ocean. The sailors that saw the dugong sometimes came home with stories of mermaids.
- Manatees are similar in appearance to dugongs.
- Manatees communicate by a singsong like squeak. They are very curious and social. Mother manatees are attentive to their calves and will sometimes cradle them between their front flippers to keep them safe and close by.

Sea Turtles:

- Female sea turtles may lay between 50 to over 200 eggs in a nest and create 2-5 nests in a season. These numbers have led to a common misconception that there are a lot of sea turtles in the ocean.
- Sadly, only 1% of all turtle hatchlings survive to be an adult. Many are lost to natural predators before they ever reach the ocean. These threats have led to all species of sea turtles being classified as either threatened or endangered.
- Sea turtles are also harmed by plastic bags, balloons, straws and other disposable plastics that can end up in the water. Sometimes, sea turtles mistake garbage for food which can make them sick.
- For injured or ill animals, SeaWorld's rescue team is on call 24 hours a day, 365 days a year to help animals in need. After rehabilitation, all rescued animals are assessed by state and federal agencies and, if possible, returned back to the wild. If these agencies deem them unreleasable, they are given a permanent home either at SeaWorld or at another accredited facility.
- By keeping waterways clean and reducing the amount of garbage we create, we can all be everyday heroes to the animals that share the world with us.

Whales and Sharks: Killer Whale Adaptations

Objective: Students will discover some of the adaptations of killer whales that help them reign as an apex predator.

Teacher and Chaperone Corner: Share this information at Shamu® Stadium, Shamu Underwater Viewing and/or Shark Encounter®. Killer whales are well adapted for their life in the ocean. About 25 years ago, it was discovered that there were different varieties, or ecotypes, of killer whales around the world. Despite many of their adaptations, they are still susceptible to environmental issues that arise from human populations. **SeaWorld® Educators are located at Shamu Underwater Viewing if you would like additional information.**

Share this information with your students.

- Killer whales are the second most widely distributed mammal on the planet. Humans are the most widely distributed.
- There are at least 10 different **ecotypes**, or varieties, of killer whales found around the world. Even though all of the killer whales are scientifically named *Orcinus orca*, each of these groups are unique and adapted to their specific diet and habitat. Some of the best known ecotypes are the ones found in the eastern North Pacific (ENP) Ocean and include the transient, the off-shore and the resident killer whales.
    - Transient killer whales are usually heavier and bulkier than resident killer whales. They spend a lot of time traveling and hunting in deeper, open water areas. They hunt whales, dolphins, other marine mammals and sharks. They are generally only found in pods of 2-5 individuals and are quieter and less social than the resident pods.
    - Off-shore killer whales are similar to transient killer whales in appearance but seem to behave more closely to resident whales. They are the least well studied of the three in the ENP.
    - Resident killer whales are the best studied of the ecotypes. They are generally very social and vocal. They hunt primarily salmon and other fish. They tend to spend their whole lives in one specific geographic region and potentially with the same pod.
- All killer whales share some adaptations: a **blowhole** to breathe air at the surface, **pectoral flippers** to help them steer, a **dorsal fin** to keep them stabilized and **tail flukes** for movement. Their black and white coloration is **countershading** and helps them hide from prey. **Blubber** helps to keep them streamlined, **buoyant** (floating), provides them with extra energy and keeps them at a comfortable temperature.
- Killer whale pods are **matriarchal**, meaning that a dominant female is in charge of the rest of the pod and decides where they will go and when they will hunt or rest.
- Killer whales are **apex predators** at the top of the food web. They can feed on a variety of different animals and nothing preys on them. Their varied diet allows them to live in nearly every ocean.
- Unfortunately, apex predators are heavily affected by **bioaccumulation**. As toxins move up the food web from primary consumers (like plankton) to apex predators, they can become more concentrated in the tissues until they reach dangerous or deadly levels in the bodies of top predators.

Whales and Sharks: Shark Adaptations

Objective: Students will learn some of the adaptations that help sharks survive and what sets them apart from other predators.

Teacher and Chaperone Corner: Share this information with your students while at Shamu® Stadium, Shamu Underwater Viewing and/or Shark Encounter®. While most people picture the great white shark and get a shiver of fear, sharks are incredibly varied and important to the ocean ecosystem. But there are no natural protection for sharks from human impacts. Luckily, there are ways for all of us to help protect sharks and the ocean they share with us.

Share this information with your students.

- There are nearly 450 different species of sharks. The smallest known sharks are the pygmy sharks (around 6" long) about the same length as a pencil and the biggest are the whale sharks (around 40' long); about as long as a school bus.
- Sharks have historically been portrayed as vicious, mindless killing machines, but current research is showing us that this mentality is likely incorrect.
- Fifty years ago, killer whales were viewed with the same mentality that sharks face today. Thanks to dedicated research and long-term studies, we have learned more about killer whales and we need to continue to learn more about sharks.
- Unlike killer whales, most sharks are solitary animals. Some sharks may school together in feeding or nursery grounds, but there is very little research showing signs of cooperative hunting among sharks, although it might occur.
- Sharks are born or hatched (depending on species) fully developed and able to survive on their own. There is little to no maternal care of young sharks. In fact, some shark mothers could potentially eat their young if the pups do not swim away quickly enough.
- Sharks prefer to eat animals that are dead, sick or dying. They have an excellent sense of smell that allows them to detect food from miles away. Sick and dying animals tend to give off irregular or erratic vibrations that the shark can feel along its lateral line, a fluid filled canal on the sides of the shark's body.
- People introduce toxins into the environment that can lead to **bioaccumulation** in animals. The breakdown of plastics in the ocean, industrial chemicals, chemicals that we might flush down the drains or use in our lawns can lead to toxins in the environment. Even small amounts of toxins can build up in the tissue of a predator over time.
- Much like killer whales, sharks are vulnerable to bioaccumulation in the natural environment. Large sharks, like great white sharks, are especially vulnerable, as they tend to eat other large predatory animals.
- Not all sharks are apex predators. Some sharks are seen as prey to other fish or even other sharks. Whale sharks are filter feeders and prey only on plankton. This makes them less vulnerable to bioaccumulation, but more vulnerable to entanglement by fishing nets, lines and garbage.
- Luckily, human related problems have human related solutions. Keep your neighborhood and local environment clean, put trash in the proper place, seek out reusable options (like shopping bags and water bottles) and recycle what you are unable to re-use. All of these steps will help keep the ocean clean for sharks, whales and people.

Wild Arctic®: Arctic Adaptations

Objective: Students will learn about the adaptations and behaviors that help animals survive in the Arctic.

Teacher and Chaperone Corner: Entry to Wild Arctic may be gained in one of two ways. Students over 42 inches (106.68cm) in height may ride White Thunder, a helicopter flight simulator, for an exciting journey to Base Station Wild Arctic. Students that are uncomfortable or unable to experience the ride may enter the attraction via the walking entrance.

Inside the exhibit, you will encounter a variety of animals including beluga whales, harbor seals and walruses. Each of these animals is well adapted to life in the variable Arctic climate. **SeaWorld® Educators are available in the upper level of the exhibit if you would like additional information.**

Share this information with your students.

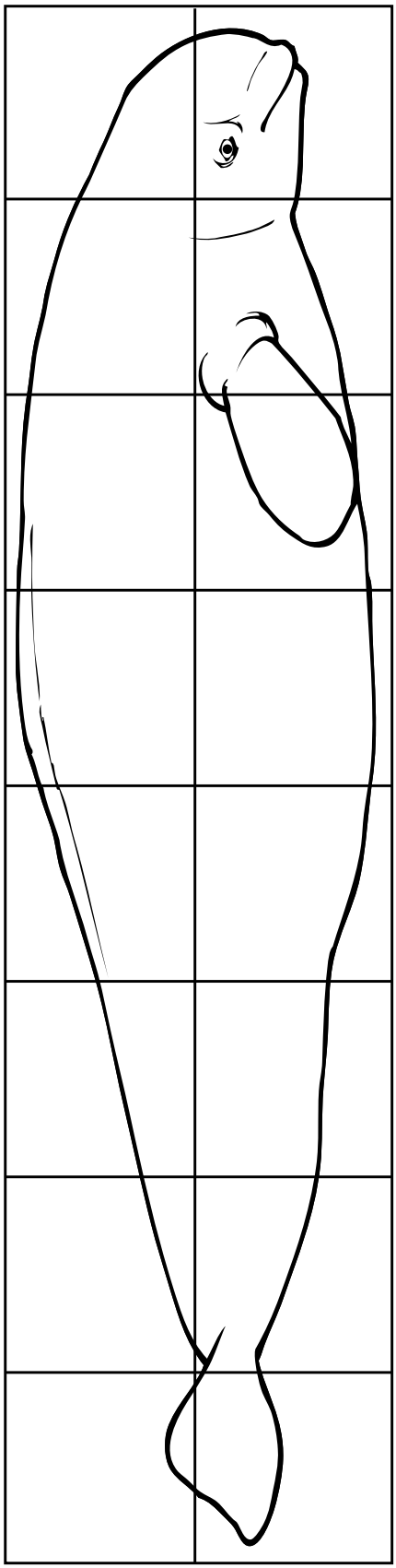
- While most people picture the Arctic Circle as a cold and desolate **environment**, it does experience all four seasons and has a very long daylight period during the summer time. The summer time temperatures in the Arctic may reach over 90°F and plants and trees will take advantage of the sunlight to grow.
- Because of the variability of the Arctic seasons, animals in the Arctic behave and look very different than animals in other parts of the world.
- Beluga whales are born dark grey. This coloration helps them **camouflage** into the mother's shadow. As they grow, their blubber (fat) layer increases until it becomes 40% of their body weight. Because fat floats, beluga whales spend a great deal of time near the surface of the water. Beluga whales lighten in coloration with age. This coloration helps them to blend into the snowy environment around them.
- Like many polar animals, beluga whales have shortened **extremities** which help them to conserve heat. This is known as Allen's Rule. Allen's Rule states that the farther north or south towards the poles an animal lives, the smaller its extremities will be. Beluga whales have very small flippers and tail flukes. Beluga whales also have no dorsal fin.
- Harbor seals are known as sub-Arctic animals. They may visit the Arctic Circle during the summer months, but will migrate south when it starts to get too cold. Other seals, like the hooded seal, the ringed seal and the bearded seal stay in the Arctic all year round. They have a thicker layer of blubber than the harbor seal.
- When seals rest on the cold ground or ice, they curve their head and feet up off of the ice into a banana-like position. This reduces the amount of body contact that they make with the cold ground and helps to conserve body heat.
- Walruses are best adapted for an icy environment, but can easily handle summer time temperatures thanks to a special circulatory adaptation. When walruses get too warm, they blush. The **capillaries** under the surface of their skin open wider so the warm blood can come to the surface and get cooled off, making the walrus feel cooler. This gives them a pink tint when they are warm. If they are cold, the capillaries tighten and keep the blood in the center of the body, making the walrus look pale brown or even almost white.

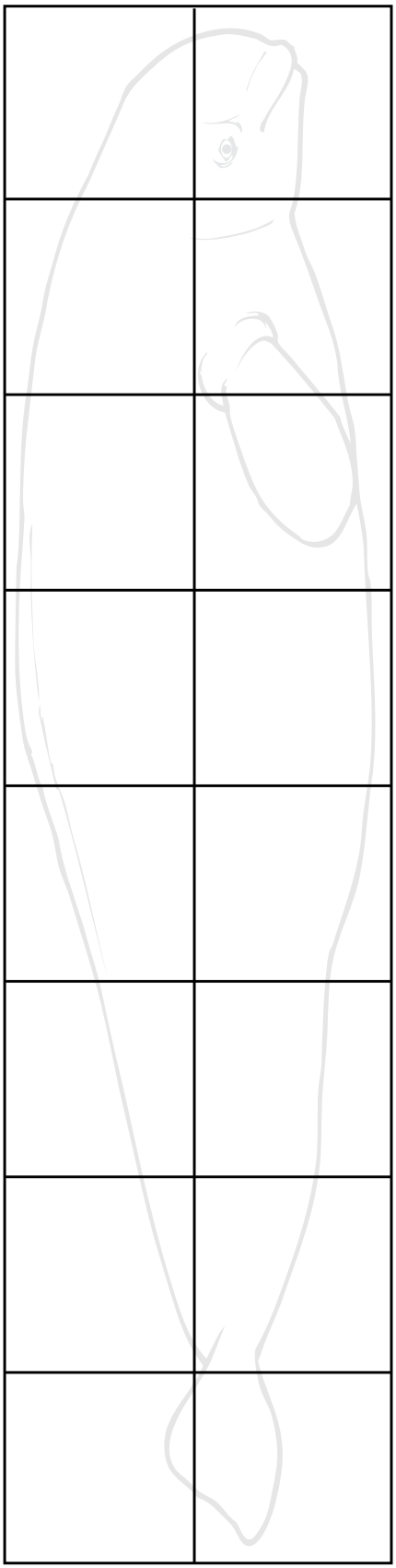
Arctic Artist

Name: _____

Scientist often sketch or photograph the animals they are studying. A grid is a tool that helps scientists break down an image into a series of lines that are easily reproduced.

Directions: Use the grid below to reproduce the picture of the beluga whales.





Manatee to Mermaids: How Myths are Made!

Name: _____

A long time ago, sailors would go out on the sea in large ships. Many of these sailors were boys who learned how to sail by watching the old sailors on the ships. The boys would hear stories of sea monsters, buried treasure and pretty mermaids. The mermaids looked like half girl and half fish. The stories said that the mermaids would sing to the sailors to get them away from the boats. The boys learned that mermaids lived in warm water near seaweed. They had long hair and a big tail that they used to swim slowly in the sea. When boats got too close, the mermaids would swim away from the boats.

The myth of the mermaid turned into books and movies. Some people even tried to go look for them. They never did find a mermaid. What they did find was an animal with a large grey body, two flippers and a large tail. These strange animals ate kelp, a long type of seaweed, along with other plants. They would squeak and squeal as if they were singing a song. They were curious, but they did not like it when boats came too close. These animals are still around today, but they are not mermaids. They are called manatees and dugongs.

Directions: Circle the correct answer for the following questions about the story you just read:

1. True or False: The boys had to go to a special school to learn how to sail a boat.

2. The easiest way to tell a mermaid apart from other sea creatures was by:
    a. Her big tail
    b. Her large teeth
    c. Her whiskers
    d. Her "Hello, My name is Mermaid" sticker

3. What did the sailors actually hear when the "mermaids" were singing?
    a. The radio
    b. The manatees squeaking
    c. The ocean waves
    d. A sailor singing in the shower

Answer these questions using the story:

4. What animals were mistaken to be mermaids? _____

5. What do manatees and dugongs eat? _____

6. Manatees and dugongs have very short hair over their whole body, so what do you think the sailors saw that made them think the manatees have long hair? _____

7. Most myths have some truth to them. As people tell the stories, they add in new stuff to make it sound better. Imagine that you have forgotten your homework and you need to tell your teacher a good reason why. On the back of this paper, write a legendary story about what happened. Remember, it has to have some truth or reasonable information to it and be believable!

The Legend of the Killer Whale Name: _____

Teacher Preface: Across the world, there are stories told that explain how certain cultures believe animals, people and objects came to be. These stories are passed down from grandparents to parents to children over many years until they become legends. This legend was originally told by the Tlingit and Haida cultures of the Pacific Northwest to explain the beginning of the killer whales.

Once upon a time, there was a man named Natselane who lived in Alaska. He could make statues and hunt for food better than anybody else. All of the people liked him, so they said he would be the chief of the tribe. His brothers were jealous and wanted him gone so that they could be the leaders. One day, they asked Natselane to go on a trip with them to an island. When they got to the island and Natselane got out of the boat, the brothers rowed away. When they got home, they told a story that Natselane was lost at sea after a big wave hit the boat. The brothers said they looked for him, but could not find him. The other people were very sad but decided that the brothers would be the new chiefs.

Back on the island, Natselane was upset at his brothers. He had nothing to eat and no place to live. Then, he saw a big sea otter and was surprised when it said his name. The otter said it would take care of him and give him food to eat. It also brought him wood to make a fire. Natselane was so happy that he made a gift to the otter. He carved a whale out of wood and left it by the water. The next day, the wooden whale was gone and the first real killer whale was in the water. The whale was black and white and said it would help him get home. He climbed on the back of the whale and they swam away.

When he got home, he saw his brothers in their boat. He asked the whale to flip the boat over so they would get wet. The whale flipped the boat and Natselane laughed at his brothers. He then asked the whale not to hurt people but to help them instead.

Direction: Circle the correct answer to these questions about the story you just read:

1. Why were the brothers jealous?

    a. They wanted a new boat and someone else got it.
    b. Natselane got more food than they did.
    c. They wanted to be the leaders of the tribe.
    d. It wasn't fair that Natselane could carve a whale.

2. Natselane fell out of the boat when a wave hit the boat. True or False

3. What type of animal helped Natselane on the island?

    a. polar bear
    b. walrus
    c. killer whale
    d. sea otter

Answer the following questions using the story:

4. Where did Natselane live? _____

5. What did Natselane ask the killer whale to do to his brothers boat? _____

    Why? _____

6. Using separate sheet of paper, write your own legend to explain things that you see or that happen in your everyday life. For example: What happens to lost socks? Where do cloud shapes come from? Why does time fly when you're having fun?

Training and Behavior Basics

Name: _____

Background information: Behavior is the way people or animals act. Some behaviors are innate and others are learned. Innate behaviors are actions that we are born knowing how to perform. Learned behaviors are behaviors that are learned through experience.

PART I

1. From the list below, circle those behaviors that would be considered learned behaviors for a person.

walking	blinking your eyes	shaking hands with someone
talking	crying	swimming
breathing	nursing	drinking milk from a glass

2. Look at the circled behaviors above, at least one of those behaviors would be considered learned for people, but innate for some animals. In the space provided below, name the behavior and list three examples of animals for which this behavior would be innate.

_____

_____

_____

_____

Background information: A conditioned response is the action or behavior that a person or animal learns to perform immediately following a stimulus, through repetition. It is a type of learned behavior.

EXAMPLE

stimulus: The door bell rings.
conditioned response: You walk to the door to see who is there.

PART II

Below is a list of various stimuli. In the space provided, write the most likely conditioned response to each.

1. stimulus - A phone rings.
   conditioned response: _____
2. stimulus - The teacher asks a classroom full of students a question to which they know the answer.
   conditioned response: _____
3. stimulus - Someone says “thank you” to you.
   conditioned response: _____
4. stimulus - The fire alarm goes off.
   conditioned response: _____
5. stimulus - A person standing behind you taps you on the shoulder.
   conditioned response: _____

Answer Key

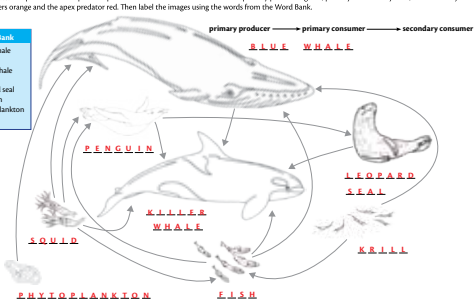
Caught Up in a Food Web!

Name: _____

All life on Earth starts with the Sun. The energy the Sun radiates to Earth is used by plants and other **primary producers** to create stored energy in the form of sugars from a process called **photosynthesis**. These plants are then eaten by **primary consumers**, which in turn are eaten by **secondary consumers**. An animal that eats other animals but is not preyed upon by any other animal is known as an **apex predator**. In the ocean, the food web starts with phytoplankton (tiny floating plants and algae) and ends with the apex predator of the ocean, the killer whale.

Directions: The picture below represents part of the Antarctic food web. Color the primary producers green, primary consumers yellow, the secondary consumers orange and the apex predator red. Then label the images using the words from the Word Bank.

Word Bank
Blue whale
fish
killer whale
krill
leopard seal
penguin
phytoplankton
squid



Deeper Depths: Which part of the food web is the most important? Why?

Manatee to Mermaids: How Myths are Made!

Name: _____

A long time ago, sailors would go out on the sea in large ships. Many of these sailors were boys who learned how to sail by watching the old sailors on the ships. The boys would hear stories of sea monsters, buried treasure and pretty mermaids. The mermaids looked like half girl and half fish. The stories said that the mermaids would sing to the sailors to get them away from the boats. The boys learned that mermaids lived in warm water near seaweed. They had long hair and a big tail that they used to swim slowly in the sea. When boats got too close, the mermaids would swim away from the boats.

The myth of the mermaid turned into books and movies. Some people even tried to go look for them. They never did find a mermaid. What they did find was an animal with a large grey body, two flippers and a large tail. These strange animals ate kelp, a long type of seaweed, along with other plants. They would squeak and squeal as if they were singing a song. They were curious, but they did not like it when boats came too close. These animals are still around today, but they are not mermaids. They are called manatees and dugongs.

1. Circle the correct answer:
   True or False: The boys had to go to a special school to learn how to sail a boat.

2. The easiest way to tell a mermaid apart from other sea creatures was by:
   Circle the correct answer:
   a. Her big tail
   b. Her large teeth
   c. Her whiskers
   d. Her "Hello, My name is Mermaid" sticker

3. What did the sailors actually hear when the "mermaids" were singing?
   Circle the correct answer:
   a. The radio
   b. The manatees squeaking
   c. The ocean waves
   d. A sailor singing in the shower

4. What animals were mistaken to be mermaids? manatees and dugongs

5. What do manatees and dugongs eat? kelp and other plants

6. Manatees and Dugongs have very short hair over their whole body, so what do you think the sailors saw that made them think the manatees have long hair? Kelp or seaweed that they eat

7. Most myths have some truth to them. As people tell the stories, they add in new stuff to make it sound better. Imagine that you have forgotten your homework and you need to tell your teacher a good reason why. On the back of this paper, write a legendary story about what happened. Remember, it has to have some truth to it and still be believable!

The Legend of the Killer Whale

Name: _____

Teacher Preface: Across the world in many different cultures, there are stories that are told to explain how animals, people and objects came to be. These stories are passed down from grandparents to parents to children over many years until sometimes they become legends. This legend was originally told by the Tlingit and Haida cultures of the Pacific Northwest to explain the origin of the killer whales.

Once upon a time, there was a man named Natselane who lived in Alaska. He could make statues and hunt for food better than anybody else. All of the people liked him, so they said he would be the chief of the tribe. His brothers were jealous and wanted him gone so that they could be the leaders. One day, they asked Natselane to go on a trip with them to an island. When they got to the island and Natselane got out, the brothers rowed the boat away. When they got home, they told a story that he was lost after a big wave hit the boat. The brothers said they looked for him, but could not find him. The other people were very sad but decided that the brothers would be the new chiefs.

Back on the island, Natselane was upset at his brothers. He had nothing to eat and no place to live. Then he saw a big sea otter and was surprised when it said his name! The otter said it would take care of him and give him food to eat. It also brought him wood to make a fire. Natselane was so happy that he made a gift to the otter. He carved a whale out of wood and left it by the water. The next day, the wooden whale was gone and the first real killer whale was in the water. The whale was black and white and said it would help him get home. He climbed on the back of the whale and they swam away.

When he got home, he saw his brothers in the boat. He asked the whale to flip the boat over so they would get wet. The whale flipped the boat and Natselane laughed at his brothers. He then asked the whale not to hurt people but to help them instead. The whale has kept his promise to this day.

Direction: Circle the answer to these questions about the story you just read:

1. Why were the brothers jealous?
   a. They wanted a new boat and someone else got it.
   b. Natselane got more food than they did.
   c. They wanted to be the leaders of the tribe.
   d. It wasn't fair that Natselane could carve a whale.
2. Natselane fell out of the boat when a wave hit the boat. True or False
3. What type of animal helped Natselane on the island?
   a. polar bear
   b. walrus
   c. killer whale
   d. sea otter
4. Where did Natselane live? Alaska
5. What did Natselane ask the killer whale to do to his brothers boat? Flip the boat over
   Why? Teach them a lesson and get them wet
6. Using separate sheet of paper, write your own legend to explain things that you see or that happen in your everyday life. For example: What happens to lost socks? Where do cloud shapes come from? Why does time fly when you're having fun? Varies

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3. What type of animal helped Natselane on the island?
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SeaWorld.org for more information

SeaWorldOrlando.com/Teachers for additional resources just for teachers

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