Frenemies, Bros and Killers: A Lesson in Symbiosis

Created by Lindsey Evans and Judy McDonald

Focus on Inquiry

The student will participate in pairing organisms and explaining and debating the relationship between the two living things in terms of symbiosis.

Lesson Content Overview

Students will collaborate with classmates to explore and explain different symbiotic relationships using known relationships, and then elaborating to new organism relationships. Students will be able to compare and contrast the symbiotic relationships of mutualism, predation, commensalism, and parasitism through several discovery activities.

Duration	Setting	Grouping	PTI Inquiry Subskills
60 minutes	Classroom	Pairs, Individual, Whole Class	1.3, 3.3, 3.4, 5.3, 5.7, 6.1, 6.2, 7.2, 7.3

Lesson Components	Estimated Time	Inquiry Subskills Used	Technology Used	Level of Student Engagement	Brief Description
Engage	5 min	1.3	laptop, projector	3	Begin by showing a video clip, recognizing that different species interact with each other.
Explore	30 min	3.3, 3.4	none	3	Students will be given cards to match relationships with another student in the classroom. After this initial explore, students will be given an envelope of cards to glue to their worksheet and have to think of what they pair together and how that represent the emoticons on their sheet.
Explain	10 min	3.3, 3.4, 5.3, 6.1, 7.2, 7.3	none	2	Students explain relationships based off their pairings.
Elaborate	10 min	5.7, 6.2	computer	2	Students play Brainrush game and match animal cards with their symbiotic relationships.
Evaluate	5 min	7.2, 7.3	none	1	Students check their understanding as a formative assessment (ticket out the door).

Level of Student Engagement

1	Low	Listen to lecture, observe the teacher, individual reading, teacher demonstration, teacher-centered instruction
2	Moderate	Raise questions, lecture with discussion, record data, make predictions, technology interaction with assistance
3	High	Hands-on activity or inquiry; critique others, draw conclusions, make connections, problem-solve, student-centered

Next Generation Science Standards – Inquiry

NGSS Practice 1: Asking Questions
NGSS Practice 3: Planning and Carrying Out Investigations
NGSS Practice 6: Constructing explanations
NGSS Practice 7: Engaging in arguments from evidence
NGSS Practice 8: Obtaining, Evaluating and Communication Information

Next Generation Science Standards – Life Science

MS.LS.2.A: Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.
(MS-LS2-1): Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations

of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)
Florida Science Standards - Nature of Science SC.7.N.1.7: Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.
Florida Science Standards – Life Science SC.7.L.17.2: Compare and contrast the relationships among organisms such as mutualism, parasitism, competition and commensalism.

Materials and Advance Preparation

Materials List

Class set:

- Disney character mixer cards for pair mixer (re-usable if you laminate to have one set for the whole day) **Blackline Master #1**
- Organism mixer cards for pair mixer (re-usable if you laminate to have one set for the whole day) **Blackline Master #4**

Student materials:

- Organism envelope with stock cards (each student needs own copy) **Blackline Master #2**
- Student activity sheet (each student needs own copy) **Blackline Master #3**
- Check for Understanding worksheet (each student needs own copy) **Blackline Master #5**

Blackline Masters

1. **Blackline Master #1:** Disney Character Mixer Cards
2. **Blackline Master #2:** Organism Cutouts and Definition Sheet
3. **Blackline Master #3:** Student Activity Sheet
4. **Blackline Master #4:** Organism Mixer Cards
5. **Blackline Master #5:** Check for Understanding
6. **Blackline Master #6:** Answer Keys

Advance Preparation

1. Make copies of student activity sheet (**Blackline Master #3**), organism cutout worksheet (**Blackline Master #2**) and check for understanding (**Blackline Master #5**).
2. Make copies and laminate Disney character mixer cards (**Blackline Master #1**) for whole class mixer (character on front, the character's role in the relationship on the back).
3. Tape one character card to the back of students' chairs or on desk to assign characters to students ahead of time or skip this step if time does not allow (just mix and hand out after Engage activity).
4. Cut organism cutouts sheet and place cards into envelopes or skip this step if time does not allow (students can cut out on their own).

Lesson Information

Learning Objectives

1. Students will be able to compare and contrast relationships between organisms as mutualism, commensalism, predation, or parasitism.
2. Students will be able to define and describe examples of symbiotic relationships: mutualism, commensalism, predation, or parasitism.

Prior Knowledge Needed by the Students

- Plants and animals, including humans, interact and depend on each other (SC.4.L.17.2).
- Animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them (SC.4.L.17.2).

Background Information

Symbiosis is defined as the interaction (relationship) of two different species, who live together in a particular environment. Often symbiosis occurs over a longer period of time. Symbiosis can have a variety of different forms. In this lesson, we will deal with mutualism, commensalism and parasitism. Mutualism occurs when both species benefit from the partnership. Commensalism is where one species is benefits and the other species is neither harmed nor helped. Parasitism is when one species is helped and the other species is harmed in the process. We will also look at Predation, which is technically not symbiosis because it does not take place over a long period of time; but was added to this lesson because it is another relationship between two different organisms and is perhaps is the easiest to grasp.

Lesson Procedure

Engage

1. Introduce students to the lesson using the video about unlikely animal friends (time 01:02): *https://www.youtube.com/watch?v=vnVuqfXohxc*
    a. ***NOTE:*** *If there is an advertisement at the beginning of the video, please fast forward or "Skip" through the ad if available. Make sure to display the video full screen (arrows to the right of video time bar at the bottom of the screen) so that the web page advertisements and other suggested videos are not seen. Watch for and close any pop-up ads that may occur during the video.*
2. After the conclusion of the video, prompt students with the discussion questions as whole class or in pairs.
3. Some questions you might ask the students include:
    - **What were the interactions that you saw in the video?**
        - *Sample answers: I saw a dog help a bird. The dog was swimming with the dolphin. The cat opened the door for the dog.*
    - **What are some relationships that you can think of between organisms?**
        - *Same answers: A lion eating a zebra. A bee going to a flower.*
    - **Do plants have relationships with other organisms? Why/why not?**
        - *Sample answers: Yes, trees provide homes. Yes, plants provide food.*
    - **Do any of those relationships have benefits?**
        - *Sample answers: Some are positively benefited. The bee gets to make honey from the nectar and the flower gets pollinated.*
    - **Can you think of a relationship could hurt the second organism?**
        - *Sample answers: Mosquitoes drink blood. Predators eat their prey.*

Explore

Part 1: Blackline Master #1

1. Demonstrate how students will match up with another classmate using the Disney Cards.
    a. Show the students one of the Disney character mixer cards, both front and back. (Example: Timon and Pumbaa card front, dead emoticon back, this is how they feel about the relationship).
    b. Show other emoticon options, and ask students what they think the other images mean. How do you think the organism feels about the relationship? *Answers could include: sad, hurt, scared, happy, helped, doesn't care, really happy).*
2. Explain that the students need to find a partner who has a card that is related or interacts with their Disney character.
    a. Model this by having another student "planted in the audience/classroom" with the matching card.
    b. Walk around the room, pretending to look for the person with the match (Example: Scar card).
    c. Once you find your matching person, have students look at the back emoticons and try to figure out what type of relationship the two characters have. (Example: *Scar card back has emoticon with teeth; the zebra card back has a dead face. Their relationship has one*

organism benefits and gets the energy and the other is dead because of the relationship of predatory/prey).

d. Remind students that even if they haven't seen the movie, that they can use context clues of the picture or perhaps just explain how they think their characters is feeling about the relationship.

3. Make sure that each student has a Disney mixer card with an organism pictured on it.
4. Allow students to walk around the classroom and find a partner who possesses a Disney card that matches their own (typically, all Disney cards will have a pair from the same movie).
5. In their newly created pairs, students will look at the back of their Disney card and see an emoticon. They will have to explain how their character/object interacts with their partner.
6. Students will sit with their new partner.
7. Call on some students to stand up and explain what type of relationship they think they have. Try to call on several groups so that the students get exposed to different emoticons.

Part 2: Blackline Master #2-#3

1. Students will be given envelopes containing cards of pre-cut organisms and definitions or hand out the sheet and have the students cut out on their own organism cards.
2. The student will arrange cards into groups of two based on the relationship they think they have with each other.
3. Peer partner or teacher will check the work and, if correct, give the go ahead to glue the organisms onto the student worksheet (there are multiple correct answers).
4. The students will have to read the definitions and also glue the definition with the emoticons that match the relationship described on card along with the new vocabulary term.

Explain (10-15 questions)

1. The student will then write a sentence explaining the relationship between the two organisms that they picked and how one affects the other. Possible answer choices are attached to the answer key, **Blackline Master # 3.**
2. Some additional conversation questions you might ask students include:
   - Explain the relationship of predation.
     - *Sample answer: One organism is benefited by eating the other organism.*
   - Explain the relationship of mutualism.
     - *Sample answer: Both organisms benefit positively from the relationship with each other.*
   - Explain the relationship of parasitism.
     - *Sample answer: One organism is benefits while the other organism is harmed.*
   - Explain the relationship of commensalism.
     - *Sample answer: One organism is benefited while the other organism is neither positively affected nor negatively harmed.*
   - Give an example of a parasitic interaction.
     - *Sample answer: Tick and dog.*
   - What two types of symbiosis are very similar to each other?
     - *Sample answer: Mutualism and commensalism. Parasitism and predation.*
   - How can you remember the differences between parasitism and predation?
     - *Sample answer: Parasites harm the second organism but do not kill the organism like a predator does.*
   - Why might symbiosis help an organism survive longer?
     - *Sample answer: The relationship helps the organism live longer by*
   - Are there examples in the human world, of a relationship that might be like one we talked about today?
     - *Sample answer: Humans are hunters which is like predation. Humans can help each other, and that would be mutualism.*
   - Some say that humans could be considered parasitic? Give an example of how this could be true or perhaps why this is false.

- *Sample answer: Humans can negatively interact with the planet. Some humans can harm other humans (but doesn't result in death).*

Elaborate

1. If computer access is available, use the BrainRush website where students can sort pictures into one of the 4 categories for additional practice: http://www.brainrush.com/lesson/symbiosis-1
    a. To play the BrainRush game, you do not need an account and the service is free.
    b. Students will be given different organism cards and definitions and they have to sort them into one of four buckets which are labeled with mutualism, parasitism, commensalism, or predation.
2. If computer access is not available, students will be handed organism mixer cards **(Blackline Master #4)** to apply their new knowledge of symbiotic relationships and explain how these relationships occur in nature.
    a. Students will complete the "mixer" activity like they completed for the Engage

Evaluate

FORMAL EVALUTION: Blackline Master #5

Ticket Out the Door: Multiple Choice Question

INFORMAL or OPTIONAL EVALUTIONS

The lab paper write up could be used as an informal evaluation.

WRAP UP.

Bring the lesson to a conclusion by discussing the answers to the formal evaluation.

Supplementary Resources

Teachers

National Geographic. Ecological Relationships. Retrieved from:
http://education.nationalgeographic.org/activity/ecological-relationships/
Activities, video clips, and activities for gifted and enrichment.

Students

Scholastic. Study Jams. Symbiosis. Retrieved from:
http://studyjams.scholastic.com/studyjams/services/search-results?query=symbiosis
Fun video clip reviewing and going through examples of different types of symbiosis.

CITATION OF SOURCES.

AliciaKeyStudio. (2015). Sea Anemone Picture. Retrieved from https://pixabay.com/en/photos/sea%20anemone/
Alpert, G. (N.D.) Tick Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Dog_tick_5148.jpg
Aviceda. (2003). Cuckoo Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Shining_Bronze-Cuckoo_Dayboro.JPG
Bardot, C. (2014). Lion Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Lion_d'Afrique.jpg
Br-recluse-guy. (N.D.). Spider Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Brown-recluse-2-edit.jpg
ClkerFreeVectorImages. (2012). Cartoon Bird. Retrieved from https://pixabay.com/en/mascot-blue-bird-twitter-tweet-48563/
ClkerFreeVectorImages. (2012) Picture of Happy Face Emoticon. Retrieved from https://pixabay.com/en/emoticon-smile-symbol-expression-25513/
ClkerFreeVectorImages. (2012) Picture of Sad Face Emoticon. Retrieved from https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

ClkerFreeVectorImages. (2014) Picture of Scary Face Emoticon. Retrieved from https://pixabay.com/en/angry-smiley-face-expression-312241/
Daniels, D. (2011). Owl: Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Great-horned_Owl_RWD_at_CRC2.jpg
Disneyclips.com (2013). All Disney Pictures. Retrieved from http://www.disneyclips.com/. *** **Notice**: The following images were **drawn (by tracing) and/or colored and clipped by Disneyclips.com**. They are meant for non-profit use only, and are not to be taken and displayed elsewhere online without a **visible source link**.
Garvie, S. (2010). Warbler Picture. Retrieved from https://en.wikipedia.org/wiki/Warbler
Giggy. (2007). Picture of Super Smiley Face Emoticon. Retrieved from http://commons.wikimedia.org/wiki/File:718smiley.png
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Poyt448. (2011). Snail Shell Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Snail_shell_Resolute_Track_Casuarina_forest,_around_25_mm_long2.JPGClo
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USDA. (1996). Spruce Tree Picture. Retrieved from https://commons.wikimedia.org/wiki/File:Picea_pungens_tree.jpg
Zoofari. (2009). Hermit Crab Picture. Retrieved from https://en.wikipedia.org/wiki/Caribbean_hermit_crab

✔ Yes, I cited all materials and resources used in this lesson.

Lindsey Evans and Judy McDonald

Blackline Master #1 **Disney Character Mixer Cards**

Photo Credit: http://www.disneyclips.com/imagesnewb2/images/tangled6.gif

Mother Gothel

Mother Gothel

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: ***http://www.disneyclips.com/imagesnewb2/images/novb23.gif***

Rapunzel

Rapunzel

Photo Credit: https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

Photo Credit: ***http://www.disneyclips.com/imagesnewb6/images/clipprsc.gif***

Scar

Scar the Lion

Photo Credit: **https://pixabay.com/en/angry-smiley-face-expression-312241/**

Photo Credit: http://www.disneyclips.com/imagesnewb/images/us23.gif

Timon & Pumbaa

Timon & Pumbaa

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

Photo Credit: http://www.disneyclips.com/imagesnewb4/images/clipchefl.gif

Chef Louis

Chef Louie

Photo Credit: https://pixabay.com/en/angry-smiley-face-expression-312241/

Photo Credit: *http://www.disneyclips.com/imagesnewb4/images/arielbegin19.gif*

Sebastian the Crab

Sebastian

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

Photo Credit: http://www.disneyclips.com/imagesnewb/images/clipjohncrown.gif

Prince John

Prince John

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: http://www.disneyclips.com/imagesnewb/images/cliprobin.gif

Robin Hood

Robin Hood

Photo Credit: https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

Photo Credit: http://www.disneyclips.com/imagesnewb5/images/kristoff.gif

Kristoff the Iceman

Kristoff the Iceman

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: http://www.disneyclips.com/imagesnewb5/images/sven.gif

Sven the Reindeer

Sven the Reindeer

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: http://www.disneyclips.com/imagesnewb/images/nemo8.gif

Nemo the Clownfish

Nemo the Clownfish

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: https://pixabay.com/en/photos/sea%20anemone/

Sea Anemone

Sea Anemone

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: https://www.flickr.com/photos/lorenjavier/4135577488

Grandma Willow (tree)

Grandma Willow (tree)

Photo Credit: https://pixabay.com/en/emoticon-smile-symbol-expression-25513/

Photo Credit: http://www.disneyclips.com/imagesnewb/images/meekohappy.gif

Meeko (raccoon)

Meeko (raccoon)

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: http://www.disneyclips.com/imagesnewb/images/mar111.gif

Aladdin

Aladdin

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: http://www.disneyclips.com/imagesnewb/images/clipgenie11.gif

Genie

Genie

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

Photo Credit: https://pixabay.com/en/mascot-blue-bird-twitter-tweet-48563/

Bird

Bird

Photo Credit: https://pixabay.com/en/angry-smiley-face-expression-312241/

Photo Credit: *http://www.disneyclips.com/imagesnewb5/images/clipwarriors.gif*

Bugs

Bugs

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

Blackline Master #2 **Organism Cutouts and Definition Sheet**

MOUSE

DOG

HUMAN

BEE

BUTTERFLY

FLOWER

OWL

SPIDER

SHARK

DESERT HAWK

TICK

CLOWNFISH

REMORA

CACTUS

MOSQUITO

ANEMONE

A relationship in which the two different species benefit and are dependent upon the relationship.

MUTUALISM

A relationship between two species in which one species benefits while the other species is negatively affected.

PARASITISM

A biological interaction where a predator feeds on its prey, the act of predation often results in the death of its prey and the eventual absorption of the prey's tissue through consumption

PREDATION

A relationship in which one species benefits from another species without negatively effecting that organism or providing any benefits in return.

COMMENSALISM

Blackline Master #3

Student Name: _____ Period:_____

Frenemies, Bros and Killers: A Lesson in Relationships of Living Things
Student Activity Sheet

Instructions: Open up your envelope and choose the matching organisms that have a relationship with the organisms pictured, that are represented by the emoticons featured for each. Glue the organisms and the definitions into the corresponding boxes.

A reciprocal relationship in which the two different species benefit and are dependent upon the relationship.

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): _____

_____

A relationship between two species in which one species nourishes itself to the detriment of the other species.

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): _____

_____

A relationship in which one species derives food or shelter from another species without seriously harming that organism or providing any benefits in return.

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): _____

_____

A biological interaction where a predator feeds on its prey, the act of predation often results in the death of its prey and the eventual absorption of the prey's tissue through consumption

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): _____

_____

Blackline Master #3 **Organism Mixer Cards**

Photo Credit: https://pixabay.com/en/anemone-sea-life-scuba-diving-white-329559/

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

SEA ANEMONE

Photo Credit: https://commons.wikimedia.org/wiki/File:Key_Deer_on_Deer_Key.jpg

Photo Credit: https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

DEER

Photo Credit:
https://commons.wikimedia.org/wiki/File:Bison_bison_Wichita_Mountain_Oklahoma.jpg

Photo Credit: https://pixabay.com/en/emoticon-smile-symbol-expression-25513/

BISON

Photo Credit: https://commons.wikimedia.org/wiki/File:Shining_Bronze-Cuckoo_Dayboro.JPG

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

CUCKOO

Photo Credit: https://commons.wikimedia.org/wiki/File:Clownfish_in_blue_water.jpg

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

CLOWNFISH

Photo Credit: https://en.wikipedia.org/wiki/Caribbean_hermit_crab

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

HERMIT CRAB

Photo Credit: http://dora.missouri.edu/mouse/

Photo Credit: https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

MOUSE

Photo Credit: http://www.sharksider.com/category/blog/

Photo Credit: https://pixabay.com/en/emoticon-smile-symbol-expression-25513/

SHARK

Photo Credit: http://globe-views.com/dreams/ostrich.htm

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

OSTRICH

Photo Credit: https://commons.wikimedia.org/wiki/File:Great-horned_Owl_RWD_at_CRC2.jpg

Photo Credit: **https://pixabay.com/en/angry-smiley-face-expression-312241/**

OWL

Photo Credit: https://commons.wikimedia.org/wiki/File:Brown-recluse-2-edit.jpg

Photo Credit: **https://pixabay.com/en/angry-smiley-face-expression-312241/**

SPIDER

Photo Credit: https://commons.wikimedia.org/wiki/File:Lion_d'Afrique.jpg

Photo Credit: **https://pixabay.com/en/angry-smiley-face-expression-312241/**

LION

Photo Credit: https://commons.wikimedia.org/wiki/File:Dog_tick_5148.jpg

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

TICK

Photo Credit: https://commons.wikimedia.org/wiki/File:Grizzly_bear_brown_bear.jpg

Photo Credit: **https://pixabay.com/en/angry-smiley-face-expression-312241/**

BEAR

Photo Credit: http://www.orkin.com/other/fleas/what-do-fleas-look-like/

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

FLEA

Photo Credit: https://commons.wikimedia.org/wiki/File:Limenitis_archippus_Cramer.jpg

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

BUTTERFLY

Photo Credit: https://en.wikipedia.org/wiki/Screaming_cowbird

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

COWBIRD

Photo Credit: https://commons.wikimedia.org/wiki/File:Grant%27s_Gazelle_taxobox.jpg

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

GAZELLE

Photo Credit: https://pixabay.com/en/photos/mistletoe/

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

MISTLETOE

Photo Credit: https://en.wikipedia.org/wiki/Ornate_shrew

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

SHREW

Photo Credit: https://commons.wikimedia.org/wiki/File:Snail_shell_Resolute_Track_Casuarina_forest,_around_25_mm_long2.JPGClo

Photo Credit: https://pixabay.com/en/emoticon-smile-symbol-expression-25513/

SNAIL SHELL

Photo Credit: https://en.wikipedia.org/wiki/Juvenile_fish

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

SALMON

Photo Credit: https://en.wikipedia.org/wiki/Remora

Photo Credit: http://commons.wikimedia.org/wiki/File:718smiley.png

REMORA

Photo Credit: https://commons.wikimedia.org/wiki/File:Picea_pungens_tree.jpg

Photo Credit: https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

SPRUCE TREE

Photo Credit: https://en.wikipedia.org/wiki/Warbler

Photo Credit: https://pixabay.com/en/emoticon-cry-sad-tear-expression-25519/

WARBLER

Photo Credit: https://commons.wikimedia.org/wiki/File:Common_zebra.jpg

Photo Credit: http://commons.wikimedia.org/wiki/File:Sert_-_dead_smile.svg

ZEBRA

Blackline Master #5

Name:_____ Date:_____ Period:_____

Check for Understanding: A Lesson in Relationships of Living Things (Symbiosis)

1. Ladybugs crawl up to aphids and eat them. Which interaction is being displayed between the population of ladybugs and the population of aphids? **SC.7.L.17.2**

A. predation
B. parasitism
C. mutualism
D. commensalism

ladybug eating aphid

2. Jane went for a walk on the farm. First, she saw a mosquito land on her arm and bite her. Second, she saw a hawk capture a mouse. Last, she noticed a bird riding on the back of a cow and eating the bugs off it. What is the order of the relationships Jane saw at the farm? **SC.7.L.17.2**

A. competition, predation, parasitism
B. parasitism, competition, mutualism
C. parasitism, predation, mutualism
D. predation, competition, parasitism

3. Cleaner fish feed on parasites in a shark's mouth and gills. This benefits the cleaner fish because they get a meal. This benefits the shark because it gets rid of parasites. Which of the following best describes the relationship between the cleaner fish and the shark? **SC.7.L.17.2**

A. Competition
B. Mutualism
C. Commensalism
D. Parasitism

4. A (+) means benefit, a (-) means harmed, (0) means unaffected, (X) means dead, draw the correct symbol that represents the relationship and give an example of organisms that interact. **SC.7.L.17.2**

A. Mutualism + and ☐ Example:_____

B. Commensalism + and ☐ Example:_____

C. Parasitism + and ☐ Example:_____

D. Predation + and ☐ Example:_____

Blackline Master #6: Answer Keys

Possible Student Responses to Relationships for Disney Mixer Activity

Rapunzel is harmed because Mother Gothel kidnapped her and uses her magical hair to make her younger.	**Mother Gothel is happy because Rapunzel's hair makes her young and beautiful.**
The zebra was eaten by the lion in the circle of life and is dead.	**Scar the lion is a predator that gets energy by eating the zebra.**
Sebastian could be eaten by the chef.	**Chef Louie is a hunter that eats crabs like Sebastian.**

The poor person has to give all his money to Prince John and is negatively affected.	**Prince John is benefited by the poor person and gets richer.**
Sven has a positive relationship because Kristoff gives him carrots and is a friend.	**Kristoff has a positive relationship because Sven helps him carry and sell ice.**
The sea anemone has a positive relationship with Nemo because the fish will clean and give nutrients/	**Nemo, the clownfish, is protected by sea anemone because it stings any other fish that comes near it.**

Meeko the raccoon can live and hide in the branches of the Grandma Willow tree and is positively benefited.	**Grandma Willow is neither helped nor harmed by Meeko.**
Genie has magical powers and gives Aladdin 3 wishes.	**Aladdin uses his last wish to free the Genie.**
An ant has many enemies which include: beetles, birds and anteaters.	**A bird eats many different insects including: butterflies, ants and seeds.**

Frenemies, Bros and Killers: A Lesson in Relationships of Living Things
Student Activity Sheet – ANSWER KEY

Instructions: Open up your envelope and choose the matching organisms that have a relationship with the organisms pictured, that are represented by the emoticons featured for each. Glue the organisms and the definitions into the corresponding boxes.

A reciprocal relationship in which the two different species benefit and are dependent upon the relationship.

****Butterfly could also be the bee****

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): *student responses will vary but their definition should be in their own words and be related to the definition of MUTUALISM.*

A relationship between two species in which one species nourishes itself to the detriment of the other species.

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): *student responses will vary but their definition should be in their own words and be related to the definition of PARASITISM.*

A relationship in which one species derives food or shelter from another species without seriously harming that organism or providing any benefits in return.

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): *student responses will vary but their definition should be in their own words and be related to the definition of COMMENSALISM.*

A biological interaction where a predator feeds on its prey, the act of predation often results in the death of its prey and the eventual absorption of the prey's tissue through consumption

****Bee could also be the butterfly****

Sentences explaining the organism's relationship in your own words (hint: use the definition as help): *student responses will vary but their definition should be in their own words and be related to the definition of PREDATION.*

Possible Student Responses to Organism Mixer Activity

CLOWNFISH

Photo Credit: https://commons.wikimedia.org/wiki/File:Clownfish_in_blue_water.jpg

SEA ANEMONE

Photo Credit: https://pixabay.com/en/anemone-sea-life-scuba-diving-white-329559/

Mutualism

TICK

Photo Credit: https://commons.wikimedia.org/wiki/File:Dog_tick_5148.jpg

DEER

Photo Credit: https://commons.wikimedia.org/wiki/File:Key_Deer_on_Deer_Key.jpg

Parasitism

COWBIRD

Photo Credit: https://en.wikipedia.org/wiki/Screaming_cowbird

BISON

Photo Credit: https://commons.wikimedia.org/wiki/File:Bison_bison_Wichita_Mountain_Oklahoma.jpg

Commensalism

WARBLER

Photo Credit: https://en.wikipedia.org/wiki/Warbler

CUCKOO

Photo Credit: https://commons.wikimedia.org/wiki/File:Shining_Bronze-Cuckoo_Dayboro.JPG

Parasitism

SNAIL SHELL

Photo Credit: https://commons.wikimedia.org/wiki/File:Snail_shell_Resolute_Track_Casuarina_forest,_around_25_mm_long2.JPGClo

HERMIT CRAB

Photo Credit: https://en.wikipedia.org/wiki/Caribbean_hermit_crab

Commensalism

OWL

Photo Credit: https://commons.wikimedia.org/wiki/File:Great-horned_Owl_RWD_at_CRC2.jpg

SHREW

Photo Credit: https://en.wikipedia.org/wiki/Ornate_shrew

Predation

REMORA

Photo Credit: https://en.wikipedia.org/wiki/Remora

SHARK

Photo Credit: http://www.sharksider.com/category/blog/

Commensalism

GAZELLE

Photo Credit: https://commons.wikimedia.org/wiki/File:Grant%27s_Gazelle_taxobox.jpg

OSTRICH

Photo Credit: http://globe-views.com/dreams/ostrich.htm

Mutualism

BUTTERFLY

Photo Credit: https://commons.wikimedia.org/wiki/File:Limenitis_archippus_Cramer.jpg

SPIDER

Photo Credit: https://commons.wikimedia.org/wiki/File:Brown-recluse-2-edit.jpg

Predation

ZEBRA

Photo Credit: https://commons.wikimedia.org/wiki/File:Common_zebra.jpg

LION

Photo Credit: https://commons.wikimedia.org/wiki/File:Lion_d'Afrique.jpg

Predation

SALMON

Photo Credit: https://en.wikipedia.org/wiki/Juvenile_fish

BEAR

Photo Credit: https://commons.wikimedia.org/wiki/File:Grizzly_bear_brown_bear.jpg

Predation

MOUSE

Photo Credit: http://dora.missouri.edu/mouse/

FLEA

Photo Credit: http://www.orkin.com/other/fleas/what-do-fleas-look-like/

Parasitism

MISTLETOE

Photo Credit: https://pixabay.com/en/photos/mistletoe/

SPRUCE TREE

Photo Credit: https://commons.wikimedia.org/wiki/File:Picea_pungens_tree.jpg

Parasitism

Check for Understanding: A Lesson in Relationships of Living Things (Symbiosis) – ANSWER KEY

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ladybug eating aphid

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A. Mutualism + and + Example: bee/butterfly and flower, clownfish and sea anemone

B. Commensalism + and 0 Example: shark and remora, desert hawk and cactus

C. Parasitism + and - Example: mosquito and human, mistletoe and spruce tree

D. Predation + and X Example: lion and zebra, spider and butterfly/bee