The Aquarium of Hawai'i
MAUI OCEAN CENTER

LEARNING WORKSHEETS
SIXTH GRADE

NAME:_____

Our Mission: To foster understanding, wonder, and respect for Hawaii's marine life.
E paipai i ka 'i'ini e ulu ai ka 'ike ku'una Hawai'i e ola mau ka nohona moana.

Create A Food Chain

Create two different marine food chains. Be sure to begin each food chain with a Producer (plant) and end each food chain with a Decomposer (such as shrimp, crabs, or marine bacteria). Each food chain should have at least four steps.

Label the Producers (P), Consumers (C) and Decomposers (D) in each of your food chains.

Why do all food chains or food webs begin with a plant?

_____

_____

Explain the role of Consumers in a food chain or food web?

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_____

Why are Decomposers are so important in a food chain or food web?

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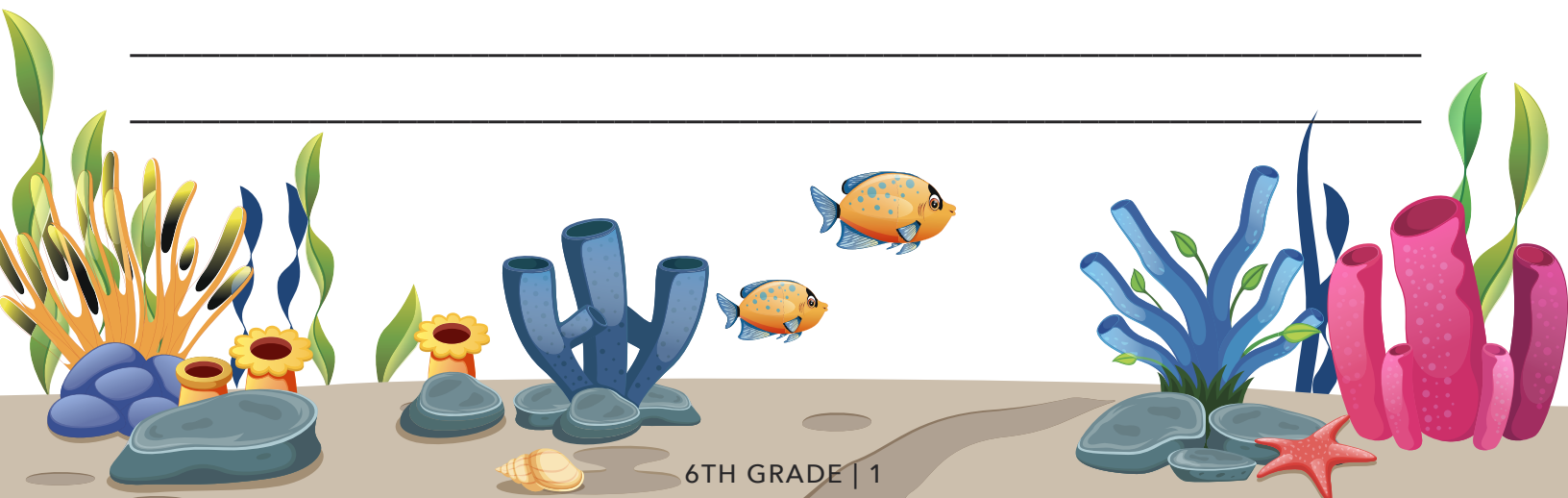


Symbiotic Relationships & Energy Transfer

Coral reefs play an important role in Hawaii's marine ecosystem. A diverse number of organisms rely on coral reefs for food as well as shelter. Symbiotic relationships are observed in many marine organisms. Figure 2. illustrates the relationship between coral organisms and zooxanthellae algae. Explore our Living Reef building and answer the following questions about energy transfer between these two organisms.

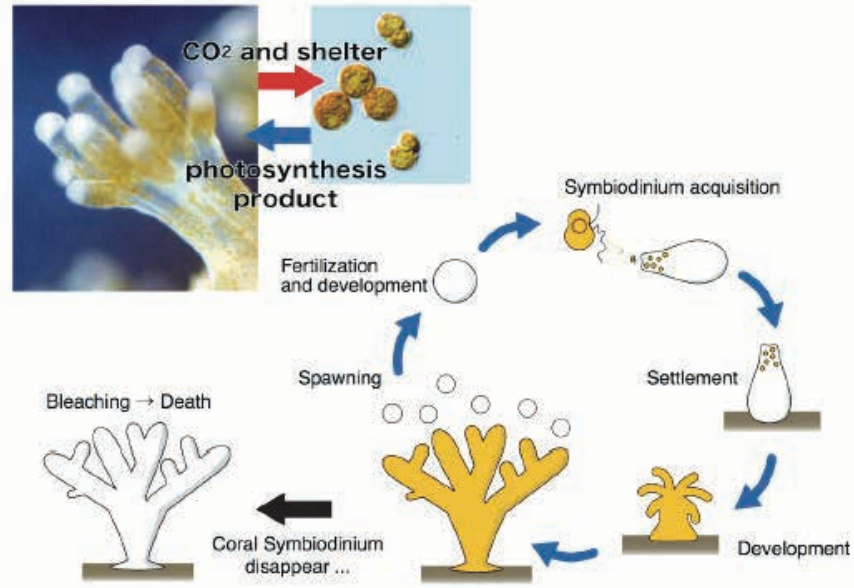


Figure 2. A symbiotic relationship between corals and Symbiodinium

1. Describe how each organism benefits from this symbiotic relationship between coral and the algae?

_____

_____

_____

2. What source of energy does the symbiotic algae use to produce the food and oxygen for the polyp?

_____

3. Roughly what % of food does the zooxanthellae provide to coral? _____

4. Coral secretes a hard skeleton made out of limestone or calcium carbonate. What contributes to the formation of this structure?

_____

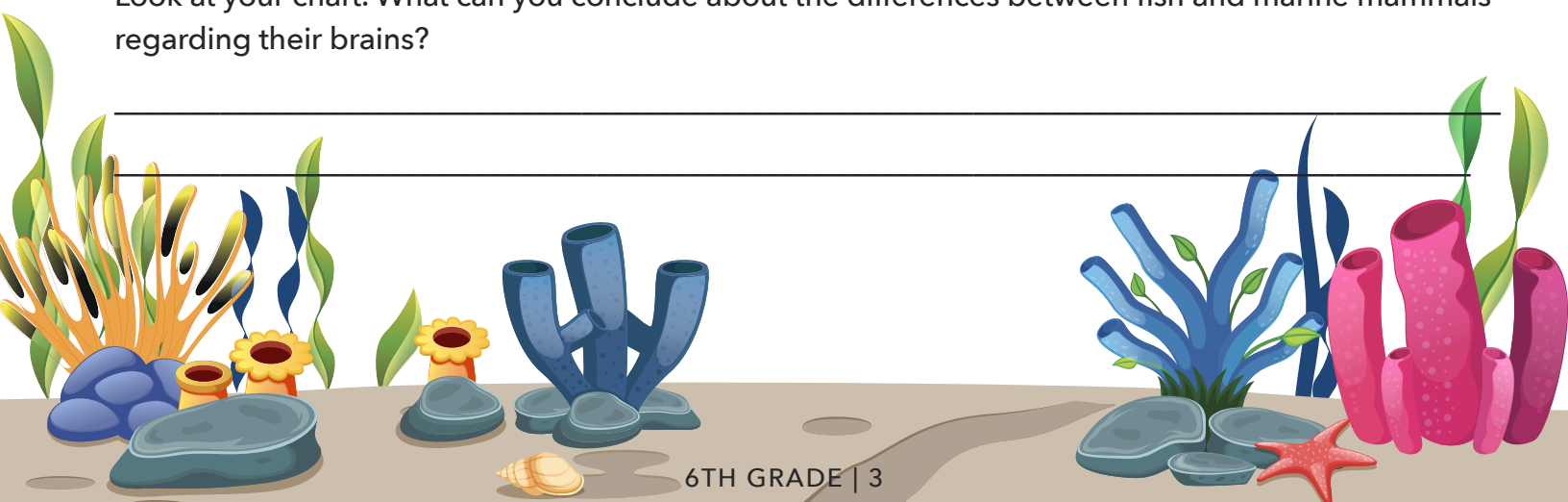
_____

Inherited traits vs. Learned Behavior

Some behaviors and physical traits of living organisms are determined by genetics and are inherited (e.g. eye color), while others are learned behaviors, (e.g. communication, riding a bike). Below is a list of traits or behaviors of some marine animals. Mark whether these traits are learned or inherited by checking the corresponding box. Keep in mind that for most fish, there is little to no interaction between the young and their parents; however, in marine mammals (such as dolphins and whales) the young stay with their mothers for years.

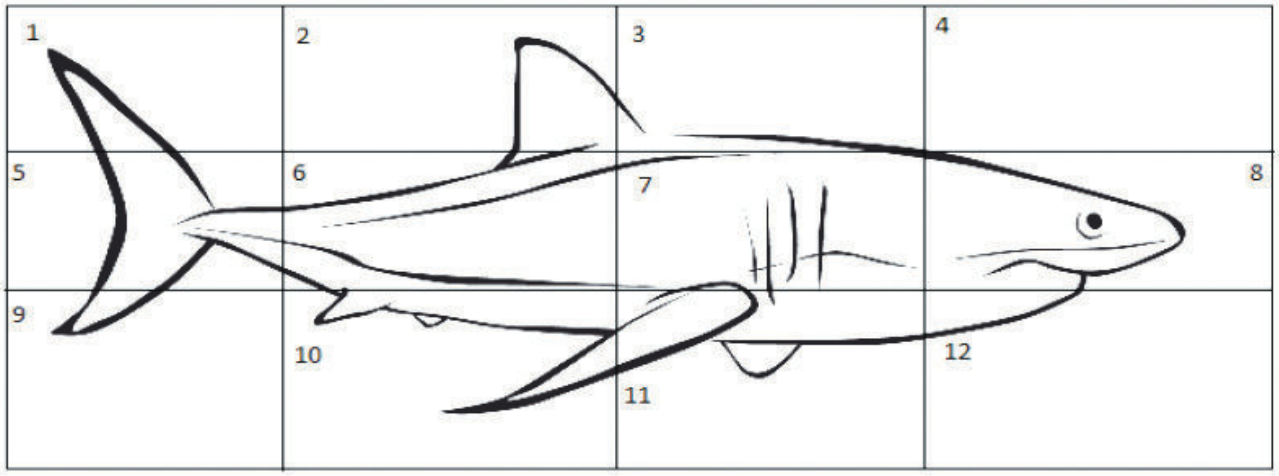
Traits	Inherited/ instinctual	Learned behavior
Migration habits for Sea Turtles		
Migration in Humpback Whales		
The color of a fish		
Shark hunting techniques		
Learning to swim in Monk Seal Pups		
Spawning in Coral		
Communication in Dolphins		
Knowing which foods to eat		
Dolphin hunting techniques		

Look at your chart. What can you conclude about the differences between fish and marine mammals regarding their brains?



Anatomy of A Shark

Visit our Open Ocean exhibit and observe some of the species of sharks swimming by. Now draw a shark! Each square is numbered. If you copy the section of shark in each square, your drawing should look like the picture.



On your new drawing label the sharks: pectoral fins, caudal fin, dorsal fin, gills, mouth, and eyes

1	2	3	4
5	6	7	8
9	10	11	12

Sharks are ancient animals that have been on Earth for a long time and still serve a very useful purpose. Describe the importance and role of sharks in our marine ecosystems?

_____

_____

_____

Fish and Their Shapes!

Fish come in many different shapes, sizes and colors. For part of this worksheet you will be asked to observe and make predictions about fish based on their shapes. Here is some helpful information about common fish shapes:

Body Shape –
Directly related to the lifestyle of the fish

Streamlined: Also called Fusiform, these fish are fast swimmers, gliding through water with less resistance. Usually fish that are this shape swim for long distances and are found in the open ocean.

Example: Jacks, Barracuda, Wrasse, Sharks

Laterally compressed: These fish are tall and their compressed, or flattened, body allows them to fit into narrow places and turn quickly. They are slower swimmers but can speed up for short bursts.

Example: Yellow Tang (surgeonfish), Butterflyfish, Damselfish, Unicornfish

Depressed (flat): These fish are well suited to living on or near the bottom or even in the sand.

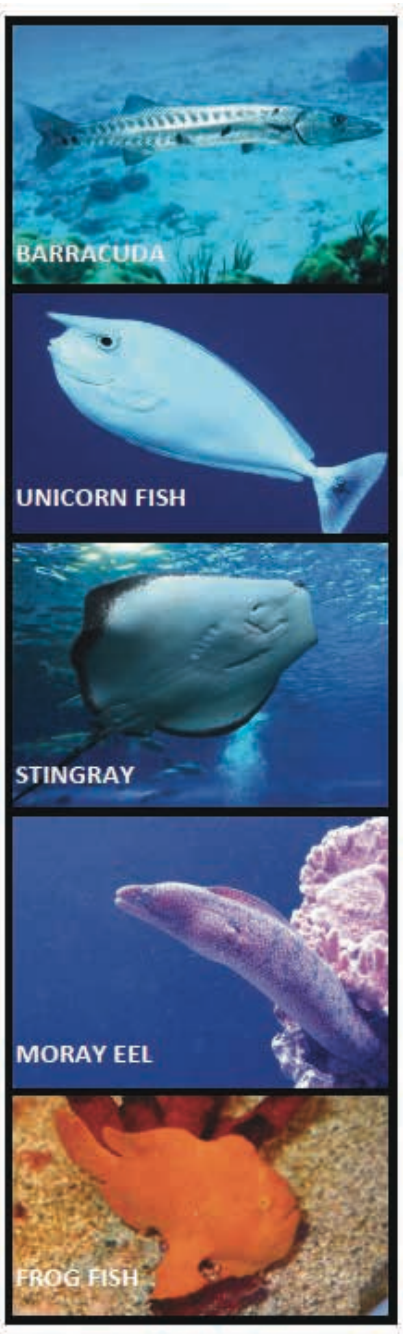
Example: Stingrays, Flounders

Elongated: These fish have long bodies and are slow swimmers that stay close to the reef.

Example: Eels, Sea Horses, Trumpetfish

Sphere: These fish have stocky bodies and are slow swimmers. Some even use lures and light to attract prey to them rather than swimming after the food.

Example: Frogfish, Pufferfish, Porcupinefish



Coral Reef Dwellers

Find two animals who live in different sections of the reef. Draw these animals, write where on the coral reef you found them (shallow, mid, deep) and explain why you are likely to see them in these different parts of the coral. Apply what you have learned about fish shapes and how each animal adapts to different environments.

Animal #1: _____

_____

_____

_____

_____

_____

_____

Animal #2: _____

_____

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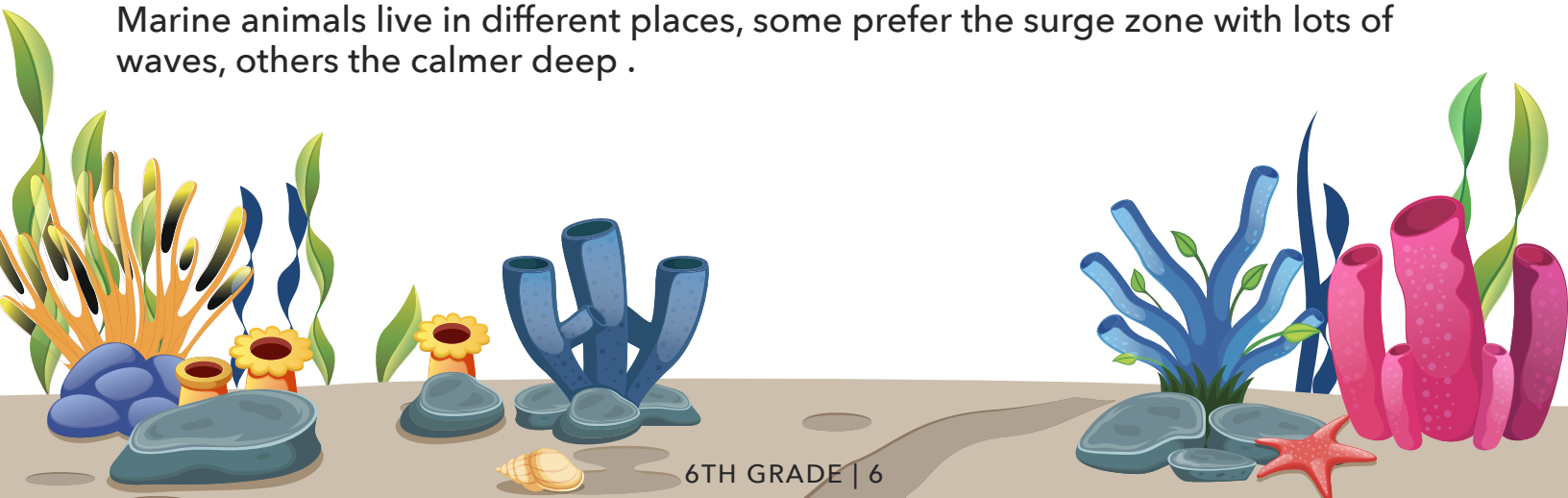
_____

Marine animals live in different places, some prefer the surge zone with lots of waves, others the calmer deep .



Ocean Drifters

Plankton are animals that drift with the ocean currents. Marine plankton includes both plants (phytoplankton) and animals (zooplankton). Visit the Sea Jelly exhibit in the Open Ocean building and answer the following questions:

1. Draw a sea jelly and label the tentacles.

2. Are sea jellies a type of plankton? Why?

_____

_____

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3. A mutualistic relationship is when two animals are beneficial to one another. The upside down sea jelly displays a unique relationship with a type of plant. Describe this symbiotic relationship and the type of plant it benefits from. How did this sea jelly get it's name?

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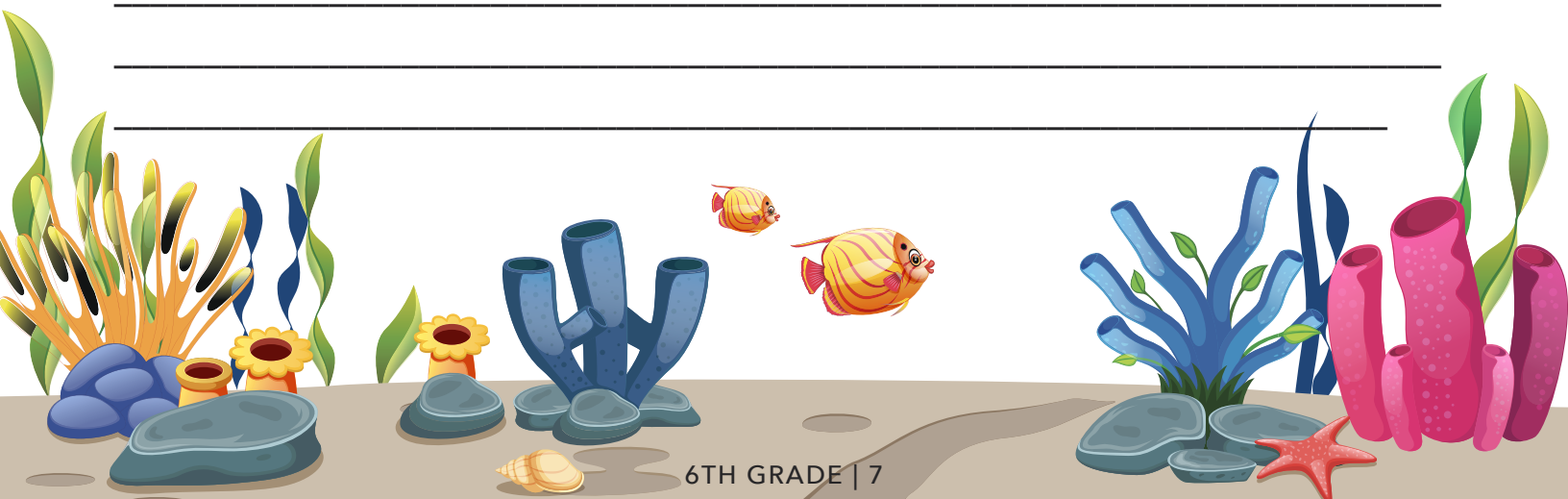

Technology and Science

The Makali'i i in the Open Ocean exhibit was Hawaii's first research submersible used to explore the deep sea around the Hawaiian Islands. New technology today has drastically influenced ocean exploration. Give three examples of newer technology (within the last 50 years) and describe how it has helped us in science and impacted or assisted our society. Provide examples that are relevant to the ocean.

Example 1:

_____

_____

_____

_____

Example 2:

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_____

_____

_____

Example 3:

_____

_____

_____

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