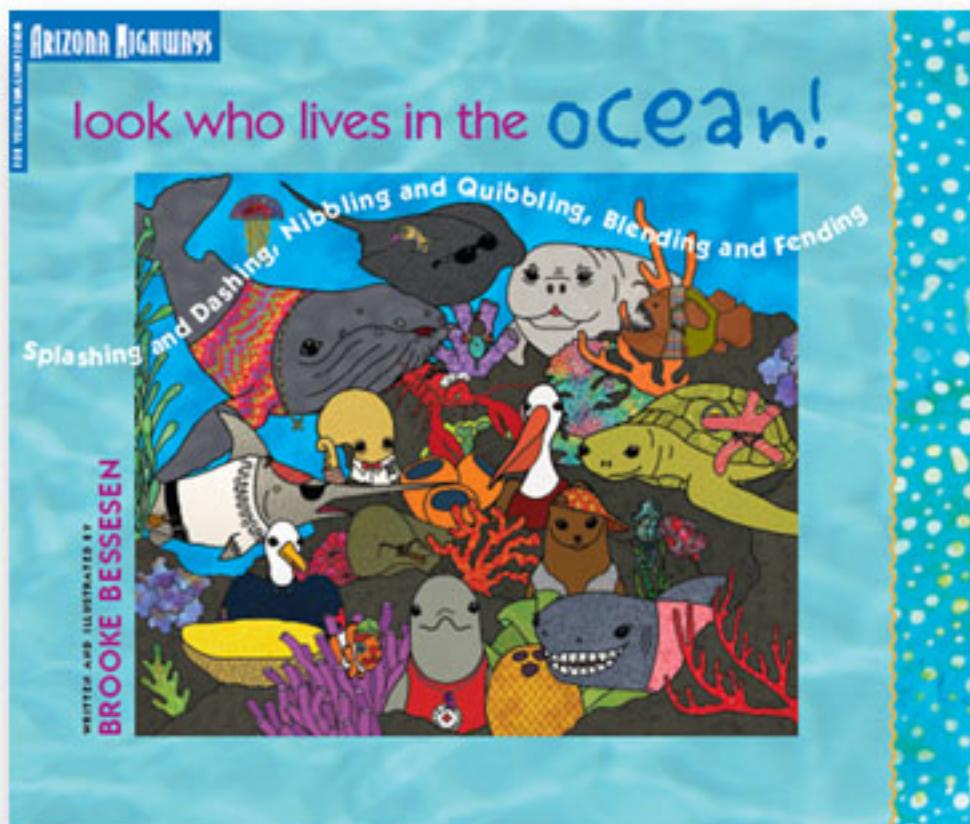


One book...  
a hundred standards...  
unlimited potential.

LANGUAGE ARTS AND SCIENCE  
K-8 CURRICULUM & ACTIVITIES



*look who lives in the ocean!*  
written and illustrated by Brooke Bessesen

[www.brookebessesen.com](http://www.brookebessesen.com)

Inside this packet, you will find the following curriculum to use in conjunction with the award-winning children's picture book *Look Who Lives in the Ocean!* written by Brooke Bessesen and published by *Arizona Highways Books*. The concepts are modifiable for grades k-8, and much of the material teaches across multiple subjects. If you have any questions, please contact the author at [brooke@brookebessesen.com](mailto:brooke@brookebessesen.com).

Rhyming Words (worksheet)

Vocabulary 1 (worksheet)

Vocabulary 1 KEY

Vocabulary 2 (worksheet)

Vocabulary 2 KEY

Four Square Grammar 1 (worksheet)

Four Square Grammar 2 (worksheet)

Informational Reading Comprehension 1 (worksheet)

Informational Reading Comprehension 1 (optional word list)

Informational Reading Comprehension 1 KEY

Informational Reading Comprehension 2 (worksheet)

Informational Reading Comprehension 2 KEY

Character Analysis (worksheet)

Marine Animal Charades for Learning (lesson plan)

Marine Animal Charades for Learning (charade slips)

Non-fiction Book Project (class project)

Non-fiction Book Project (template)

Kinder Writing Project (worksheet)

6+1 Traits of Writing in LWLO (information sheet)

Language Arts Standards met by LWLO (information sheet)

Animal Classification (worksheet)

Compare & Contrast (worksheet)

Compare & Contrast (Venn diagram)

Compare & Contrast (double-bubble)

Adaptations 1 (worksheet)

Adaptations 1 KEY

Adaptations 2 (worksheet)

Adaptations 2 KEY

Ocean Zones Science Mural (information sheet & class project)

Fish vs. Mammal Science Project (lesson plan/experiment)

Saltwater vs. Freshwater Science Projects, K-2 (lesson plan/experiments)

Writing a Scientific Paper (information sheet & group project)

Wildlife Journal (individual research project)

Endangered Marine Species Project (lesson plan)

Food Chain Pyramid (group activity)

Ocean Conservation (information sheet)

Science Standards met by LWLO (information sheet)

Word Search (worksheet)

Word Search KEY

Coloring page (activity)

LWLO bookmark (front & back)

## *Look Who Lives in the Ocean!* Rhyming Words

List the rhyming words found on the following pages of the book. On the single line under NEW WORD, write one more word that also rhymes with the others. Try finding a multi-syllable word in a rhyming dictionary.

PAGE	FIND THE WORDS THAT RHYME	NEW WORD
OCEAN PAGE:	view _____	_____
	more _____	_____
	history _____	_____
SCHOOLING FISH:	sea _____	_____
	supreme _____	_____
	dash _____	_____
HUMPBACK WHALE:	song _____	_____
	tune _____	_____
SEA JELLIES:	in _____	_____
	show _____	_____
SEA STAR:	ascend _____	_____
	terrain _____	_____
SWORDFISH:	snout _____	_____
	outright _____	_____
	skin _____	_____
DORIS (sea slug):	grace _____	_____
	appeal _____	_____
SEAHORSE:	tide _____	_____
	inside _____	_____
STINGRAY:	breeze _____	_____
	seen _____	_____
	slides _____	_____
CLOSING PAGE:	broad _____	_____
	old _____	_____
	faces _____	_____

## Look Who Lives in the Ocean! Rhyming Words KEY

List the rhyming words found on the following pages of the book. On the single line under NEW WORD, write one more word that also rhymes with the others. Try finding a multi-syllable word in a rhyming dictionary.

PAGE	FIND THE WORDS THAT RHYME	NEW WORD
OCEAN PAGE:	view <u>blue</u> more <u>shore</u> <u>galore</u> <u>history</u> <u>mystery</u>	_____
SCHOOLING FISH:	sea <u>be</u> <u>supreme</u> <u>extreme</u> <u>team</u> <u>dash</u> <u>flash</u>	_____
HUMPBACK WHALE:	song <u>long</u> tune <u>lagoon</u> <u>moon</u> <u>swoon</u>	_____
SEA JELLIES:	in <u>begin</u> show <u>glow</u> <u>below</u>	_____
SEA STAR:	ascend <u>bend</u> terrain <u>brain</u> <u>insane</u>	_____
SWORDFISH:	snout <u>about</u> outright <u>light</u> <u>sight</u> skin <u>tin</u>	_____
DORIS (sea slug):	grace <u>place</u> appeal <u>meal</u> <u>ordeal</u>	_____
SEAHORSE:	tide <u>inside</u> not <u>tot</u> <u>lot</u>	_____
STINGRAY:	breeze <u>ease</u> seen <u>ravine</u> <u>marine</u> slides <u>hides</u>	_____
CLOSING PAGE:	broad <u>facade</u> old <u>behold</u> <u>gold</u> faces <u>place</u>	_____

## *Look Who Lives in the Ocean!*

### Vocabulary 1

Using colored pencils, connect each word on the left with its meaning on the right.

amateur	to the highest degree
athlete	a small piece of food
behold	to jump or dive quickly and energetically
creepy	in abundance
decay	to shine with a soft wavering light
enchanting	a traditional story from the past
envision	to pick up in a quick smooth movement
extreme	to rot
fabulous	someone unpaid; unskilled at an activity
façade	mythical sea woman with a fish tail
galore	causing fear or unease
gist	to see; to observe
legend	delightfully charming or attractive
mermaid	a painful or troubling experience
morsel	extraordinary; excellent
ordeal	visualize; imagine
plunge	a person who competes at sports
puckered	a deceptive outward appearance
scoop	the essence of a speech or text
shimmer	wrinkled; gathered tightly into folds

## *Look Who Lives in the Ocean!*

### Vocabulary 1 KEY

Using colored pencils, connect each word on the left with its meaning on the right.

ANSWERS:

amateur	extreme	<b>to the highest degree</b>
athlete	morsel	<b>a small piece of food</b>
behold	plunge	<b>to jump or dive quickly and energetically</b>
creepy	galore	<b>in abundance</b>
decay	shimmer	<b>to shine with a soft wavering light</b>
enchanting	legend	<b>a traditional story from the past</b>
envision	scoop	<b>to pick up in a quick smooth movement</b>
extreme	decay	<b>to rot</b>
fabulous	amateur	<b>someone unpaid; unskilled at an activity</b>
façade	mermaid	<b>mythical sea woman with a fish tail</b>
galore	creepy	<b>causing fear or unease</b>
gist	behold	<b>to see; to observe</b>
legend	enchanting	<b>delightfully charming or attractive</b>
mermaid	ordeal	<b>a painful or troubling experience</b>
morsel	fabulous	<b>extraordinary; excellent</b>
ordeal	envision	<b>visualize; imagine</b>
plunge	athlete	<b>a person who competes at sports</b>
puckered	façade	<b>a deceptive outward appearance</b>
scoop	gist	<b>the essence of a speech or text</b>
shimmer	puckered	<b>wrinkled; gathered tightly into folds</b>

## *Look Who Lives in the Ocean!*

### Vocabulary 2

Using colored pencils, connect each word on the left with its meaning on the right.

antennae	to gather in a crowd or mass
appendages	tiny drifting sea creatures
aquatic	an animal having no backbone
camouflage	"see through"; clear
cartilage	completely below the surface of water
congregate	coloring that blends with surroundings
gelatinous	producing a toxic, dangerous substance
inhabit	an individual life form; a plant or animal
invertebrate	long, thin "feelers" on an animal's head
manipulate	a group of fish swimming together
organism	creatures living dependently together
photosynthesis	two parts being exactly similar or equal
poisonous	parts projecting from the main body
scavenger	a consistency resembling gelatin
shoal	relating to water; living in or near water
submerged	to handle or control skillfully
symbiotic	animal that eats dead remains
symmetry	to live in; occupy
transparent	a process of turning sunlight to energy
zooplankton	firm, flexible internal body tissue

## *Look Who Lives in the Ocean!*

### Vocabulary 2 KEY

Using colored pencils, connect each word on the left with its meaning on the right.

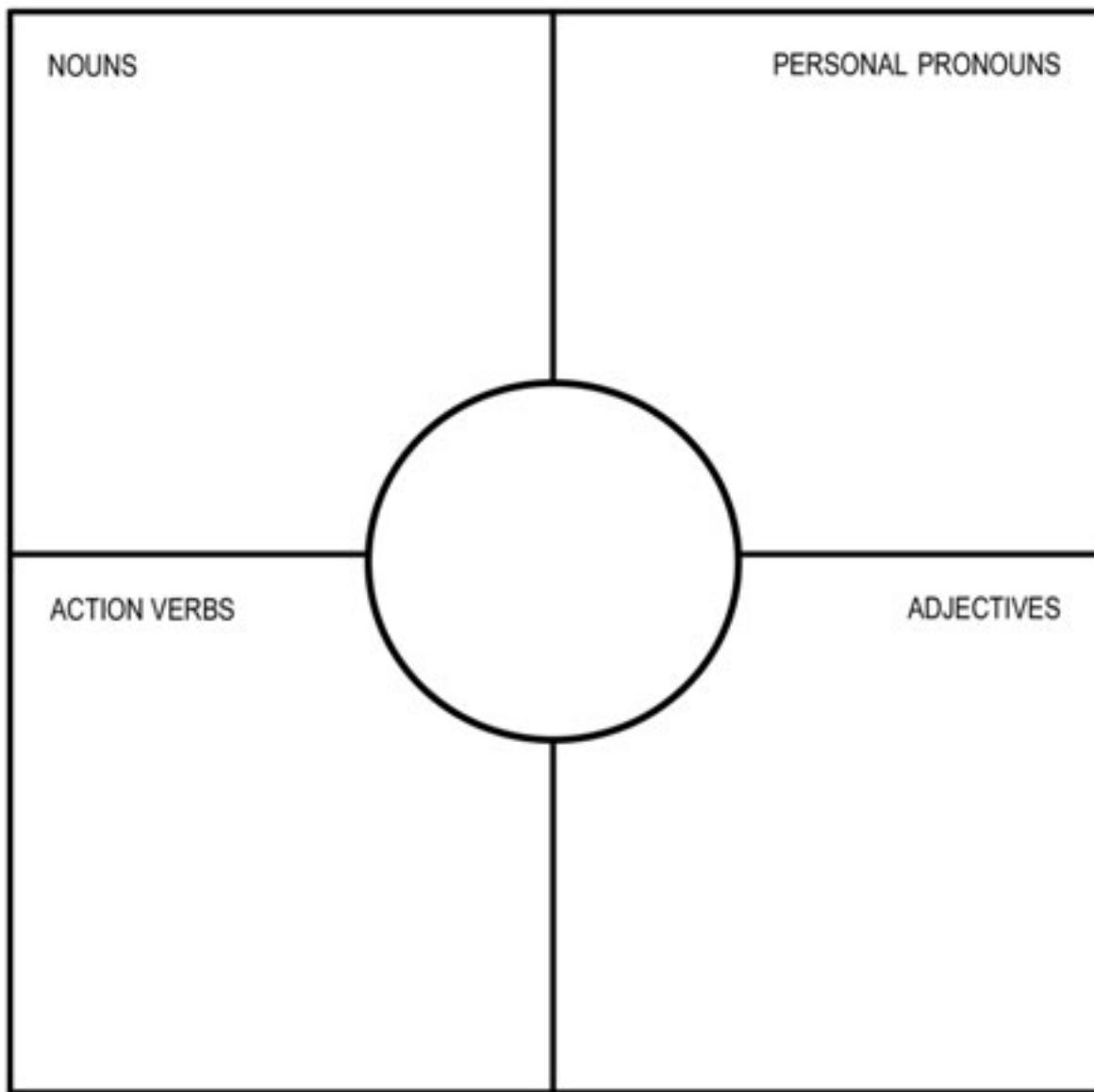
ANSWERS:

antennae	congregate	to gather in a crowd or mass
appendages	zooplankton	tiny drifting sea creatures
aquatic	invertebrate	an animal having no backbone
camouflage	transparent	"see through"; clear
cartilage	submerged	completely below the surface of water
congregate	camouflage	coloring that blends with surroundings
gelatinous	poisonous	producing a toxic, dangerous substance
inhabit	organism	an individual life form; a plant or animal
invertebrate	antennae	long, thin "feelers" on an animal's head
manipulate	shoal	a group of fish swimming together
organism	symbiotic	creatures living dependently together
photosynthesis	symmetry	two parts being exactly similar or equal
poisonous	appendages	parts projecting from the main body
scavenger	gelatinous	a consistency resembling gelatin
shoal	aquatic	relating to water; living in or near water
submerged	manipulate	to handle or control skillfully
symbiotic	scavenger	animal that eats dead remains
symmetry	inhabit	to live in; occupy
transparent	photosynthesis	a process of turning sunlight to energy
zooplankton	cartilage	firm, flexible internal body tissue

## *Look Who Lives in the Ocean!*

### Four Square Grammar 1

Select one animal from the book and inside the circle in the center of the rubric, write it down. Next, using the page for that animal, locate all of the nouns, pronouns, action verbs and adjectives in the rhyming prose. List them in their proper quadrants below.



#### DEFINITIONS:

Noun – a person, animal, place, thing or idea (EX: puppy, skirt, hotel, knick-knack, goal)

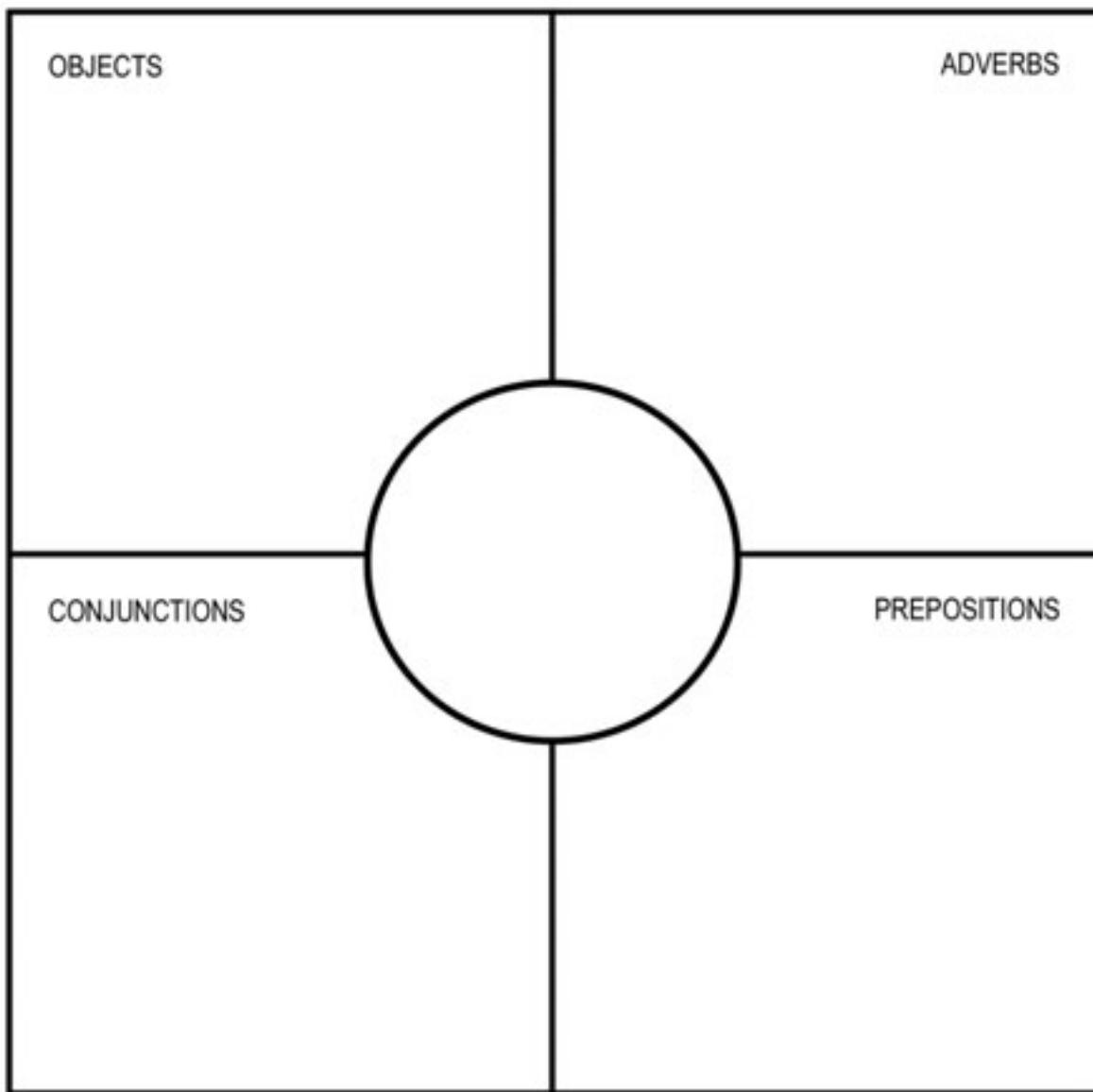
Personal pronoun – replaces or stands in for a noun (EX: he, she, it, you, they, his)

Action verb – an action word (EX: skate, run, sit, jump, laugh)

Adjective – describes, identifies or quantifies a noun (EX: large, pretty, green, many)

## *Look Who Lives In the Ocean!* Four Square Grammar 2

Select one animal from the book and inside the circle in the center of the rubric, write it down. Next, using the page for that animal, locate all of the objects, adverbs, conjunctions and prepositions in both the rhyming prose and the facts bar. List them in their proper quadrants below.



### DEFINITIONS:

Object – a noun that follows a verb and completes the meaning (EX: Sally ate a red **apple**.)

Adverb – describes or modifies a verb; often ends in "ly" (EX: very, thoughtfully, entirely)

Conjunction – links words together (EX: and, but, yet, nor)

Preposition – indicates the relationship of a noun to another word (EX: at, with, against, across, before)

*Look Who Lives in the Ocean!*  
Informational Reading Comprehension 1

Carefully read the rhyming prose in the book and then fill in the blanks below.

The \_\_\_\_\_ is nice to look at and has many fish living beneath its surface.

Sailors from the past may have mistaken manatees for \_\_\_\_\_.

A \_\_\_\_\_ uses echolocation to help navigate its way around.

Some fish swim in a tight, coordinated group called a \_\_\_\_\_.

Male \_\_\_\_\_ sing beautiful underwater songs.

A sea star may have \_\_\_\_\_ arms and hundreds of \_\_\_\_\_.

During the \_\_\_\_\_, a Moray eel mostly hides between rocks.

A \_\_\_\_\_ is a brown bird that dives into the ocean to catch fish.

Swordfish was named because its long \_\_\_\_\_ looks like a sword.

A clownfish is protected by another animal called an \_\_\_\_\_.

Sea jellies have long, stinging \_\_\_\_\_ that trail beneath them.

An \_\_\_\_\_ can squirt dark ink to help it escape.

Doris would win a make-believe \_\_\_\_\_ contest because she is so colorful.

Sea lions often \_\_\_\_\_ loudly when they are on land.

A shark has thousands of \_\_\_\_\_ that make it look like it is always smiling.

Gulls sometimes fly along sandy \_\_\_\_\_ looking for tidbits of food.

A \_\_\_\_\_ hides by covering itself with sand on the ocean floor.

Deep sea angler fish dangles a \_\_\_\_\_ of light from its head to catch dinner.

Lobsters are most active at \_\_\_\_\_.

\_\_\_\_\_ are animals that can grow into ocean "cities".

The sea turtle has long \_\_\_\_\_ to swim and a \_\_\_\_\_ for protection.

A \_\_\_\_\_ is a unique fish because the male gives birth to the babies.

*Look Who Lives in the Ocean!*  
Informational Reading Comprehension Optional Word List

anemone

bark

beaches

beauty

corals

day

dolphin

five

flippers

humpback whale

legs

lure

mermaids

night

ocean

octopus

pelican

school

seahorse

shell

snout

stingray

teeth

tentacles

*Look Who Lives in the Ocean!*  
Informational Reading Comprehension 1 KEY

Carefully read the rhyming prose in the book and then fill in the blanks below.

The *ocean* is nice to look at and has many fish living beneath its surface.

Sailors from the past may have mistaken manatees for *mermaids*.

A *dolphin* uses echolocation to help navigate its way around.

Some fish swim in a tight, coordinated group called a *school*.

Male *humpback whales* sing beautiful underwater songs.

A sea star may have *five* arms and hundreds of *legs*.

During the *day*, a Moray eel mostly hides between rocks.

A *pelican* is a brown bird that dives into the ocean to catch fish.

Swordfish was named because its long *snout* looks like a sword.

A clownfish is protected by another animal called an *anemone*.

Sea jellies have long, stinging *tentacles* that trail beneath them.

An *octopus* can squirt dark ink to help it escape.

Doris would win a make-believe *beauty* contest because she is so colorful.

Sea lions often *bark* loudly when they are on land.

A shark has thousands of *teeth* that make it look like it is always smiling.

Gulls sometimes fly along sandy *beaches* looking for tidbits of food.

A *stingray* hides by covering itself with sand on the ocean floor.

Deep sea angler fish dangles a *lure* of light from its head to catch dinner.

Lobsters are most active at *night*.

*Corals* are animals that can grow into ocean "cities".

The sea turtle has long *flippers* to swim and a *shell* for protection.

A *seahorse* is a unique fish because the male gives birth to the babies.

*Look Who Lives in the Ocean!*  
Informational Reading Comprehension 2

Read the book carefully, including the facts bars and then answer the questions below.

What five oceans connect to make the largest body of water on the planet?

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What is "countershading" on a stingray? \_\_\_\_\_

How does a dorid get poison to use against predators? \_\_\_\_\_

What human activity keeps swordfish from living their full life span? \_\_\_\_\_

What is a small group of sea lions in the water called? \_\_\_\_\_

What internal organ keeps fish neutrally buoyant (not sinking or floating)? \_\_\_\_\_

How many species of fish exist in the world? \_\_\_\_\_

In what two oceans are deep sea angler fish most commonly found?

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What is the average number of babies carried in the pouch of a male seahorse? \_\_\_\_\_

What is a shark skeleton made of? \_\_\_\_\_

Why is the California gull Utah's state bird? \_\_\_\_\_

What is baleen and how does a whale use it? \_\_\_\_\_

What are "electric eels" and where are they found? \_\_\_\_\_

What is the proper term for a sea star's arms? \_\_\_\_\_

Why does the Red Sea have that name? \_\_\_\_\_

What chemical pesticide once caused the brown pelican to be endangered in the U.S.? \_\_\_\_\_

What layer of the ocean does coral live in? \_\_\_\_\_

What are five common body parts a sea jelly is lacking?

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Where are a mother manatee's milk glands for nursing her young? \_\_\_\_\_

What is the largest species of sea turtle and what item of litter is especially dangerous to its survival?

How many appendages does a lobster have? \_\_\_\_\_

What color is an octopus' blood? \_\_\_\_\_

What two natural behaviors may prompt dolphins to assist drowning humans? \_\_\_\_\_

## Look Who Lives in the Desert! Informational Reading Comprehension 2 KEY

Read the book carefully, including the facts bars and then answer the questions below.

What five oceans connect to make the largest body of water on the planet?

Pacific Ocean

Atlantic Ocean

Indian Ocean

Southern Ocean

Arctic Ocean

What is "countershading" on a stingray? *It's dark on top and light on the bottom for camouflage.*

How does a dorid get poison to use against predators? *It incorporates poisonous chemicals from the prey  
It eats into its own body for protection.*

What human activity keeps swordfish from living their full life span? *commercial fishing*

What is a small group of sea lions in the water called? *a raft*

What internal organ keeps fish neutrally buoyant (not sinking or floating)? *swim bladder*

How many species of fish exist in the world? *over 30,000; most are in the ocean*

In what two oceans are deep sea angler fish most commonly found?

Atlantic Ocean

Southern Ocean

What is the average number of babies carried in the pouch of a male seahorse? *150-200*

What is a shark skeleton made of? *cartilage*

Why is the California gull Utah's state bird? *It is a migratory bird and saved crops in Utah by gorging on  
crickets in the state's 1848 infestation.*

What is baleen and how does a whale use it? *horny plates of tissue in the mouth used to strain fish and krill*

What are "electric eels" and where are they found? *Only found in the Amazon Basin of South America (not  
the ocean) these eels have cells on their bodies that send out small shock waves.*

What is the proper term for a sea star's arms? *rays*

Why does the Red Sea have that name? *An algae blooms in it and causes a reddish hue.*

What chemical pesticide once caused the brown pelican to be endangered in the U.S.? *DDT*

What layer of the ocean does coral live in? *the topmost layer called the euphotic or sunlit zone*

What are five common body parts a sea jelly is lacking?

skeleton

gills

heart

blood

brain

Where are a mother manatee's milk glands for nursing her young? *in her armpits*

What is the largest species of sea turtle and what item of litter is especially dangerous to its survival?

*The leatherback sea turtle sometimes mistakes plastic bags for jellyfish (its main food) and eats them.*

How many appendages does a lobster have? *usually around 40*

What color is an octopus' blood? *blue*

What two natural behaviors may prompt dolphins to assist drowning humans? *Dolphins mothers push  
newborns to the surface to breathe. Also, dolphins sometimes hold other dolphins in need at the surface.*

## *Look Who Lives in the Ocean!* Character Analysis

We learn about a picture book's characters from both written and visual clues. We also use our knowledge of the world and the way the material is presented to decide which traits are based in fact and which are fiction. Below, share one **factual** trait obtained from each component of that animal's pages. Note: Carefully analyze the illustrations to distinguish fact from fiction.

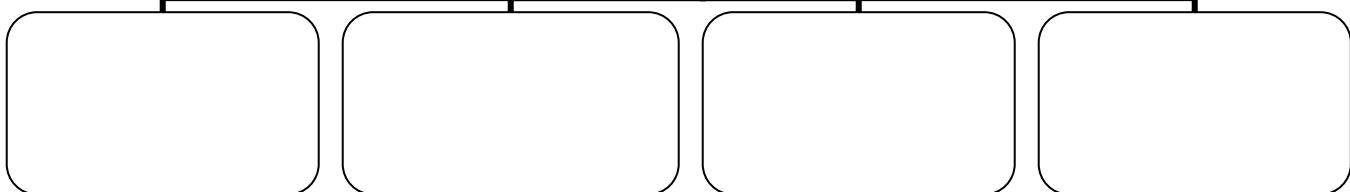
BOX 1: ILLUSTRATION

BOX 2: PROSE

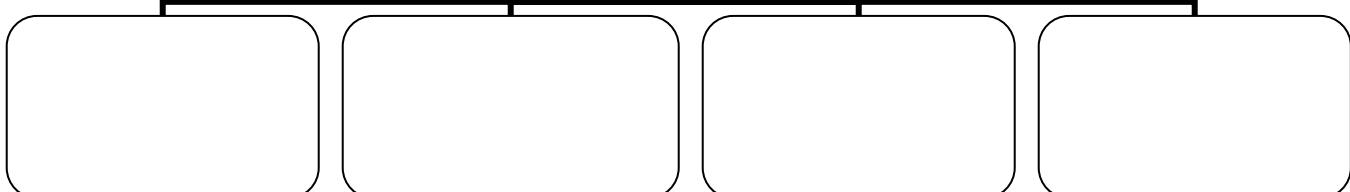
BOX 3: PHOTOGRAPH

BOX 4: FACTS BAR

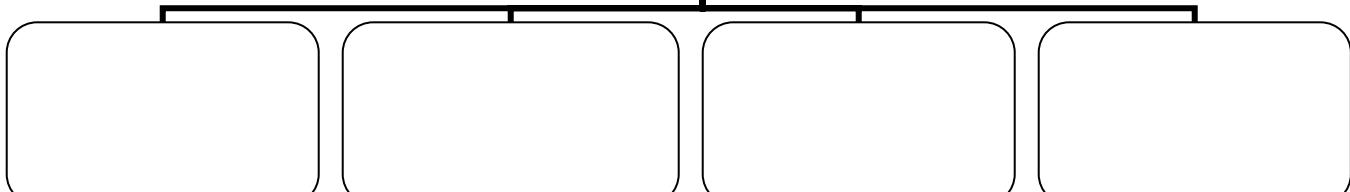
SEA TURTLE



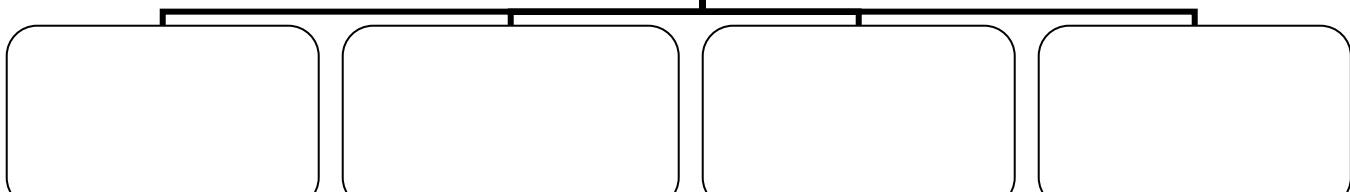
SHARK



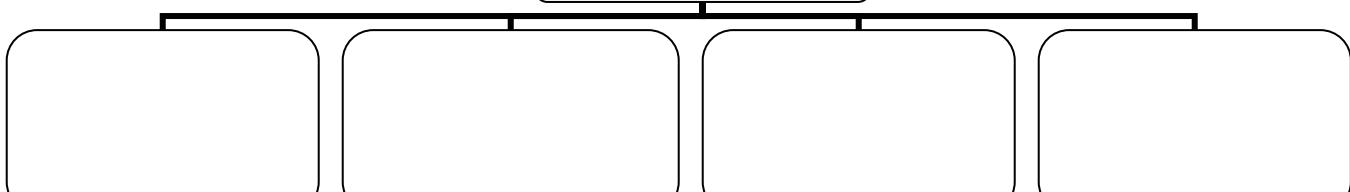
SEAHORSE



DOLPHIN



ANGLER FISH



## *Look Who Lives in the Ocean!*

### Marine Animal Charades

1. As a class, recall marine animals from the book and write them down on a page of paper. Pick as many animals as there are students in the class—think of additional ocean animals if more than 21 are needed.
2. Cut the paper into small slips with one animal on each slip. Fold the slips so the writing cannot be easily seen. Put all the slips into a box and stir them up.
3. Each student should select one slip from the box and “act out” the animal for the class while everyone tries to guess what it is. **Remember: NO SPEAKING!** If it is an easy one, try not to give the animal away too quickly. To keep the audience guessing, offer universal clues first (ex: big could describe a whale, manatee or swordfish) and then move toward more specific characteristics (singing would confirm it’s a whale).

#### For younger classes:

Choose several animals from the book that are especially interesting or new. As a group, write them down, say them aloud and then act them out. Discuss how different animals move.

#### For older classes:

Make the game more complex by adding a timer plus one factually descriptive word before each animal on its slip of paper. The performing student should act out details, including how many words, how many syllables, what it rhymes with, what it sounds like, etc., following the traditional gestures of charades.

Divide the class into two teams. A player from Team A draws a slip from the box. After he/she has had a short time to review the slip, the timekeeper starts the clock. Team A then has three minutes to guess the animal phrase. If they figure it out, the timekeeper records how long it took. If they do not figure it out in three minutes, the timekeeper stops them and records a time of three minutes. Repeat the process with a player from Team B. The game should continue until every player has had a chance to act out an animal phrase. Total up the time that each team needed for all of the rounds. The team with the shortest time score wins.

#### Gestures

- A performer usually starts by indicating how many words are in the phrase. From then on, the usual procedure is to act out the words one at a time (although not necessarily in the order that they appear in the phrase). In some cases, however, it may make more sense to try to act out the “entire concept” of the phrase at once.
- Number of words: Hold up the number of fingers.
- Which word you’re working on: Hold up the number of fingers again.
- Number of syllables in the word: Lay the number of fingers on your arm.
- Which syllable you’re working on: Lay the number of fingers on your arm again.
- Length of word: Make a “little” or “big” sign as if you were measuring a fish.
- “The entire concept:” sweep your arms through the air.
- “On the nose” (i.e., someone has made a correct guess): point at your nose with one hand, while pointing at the person with your other hand.
- “Sounds like”: Cup one hand behind an ear.
- “Longer version of :” Pretend to stretch a piece of elastic.
- “Shorter version of:” Do a *karate chop* with your hand
- “Plural”: link your little fingers.
- “Past tense”: wave your hand over your shoulder toward your back.
- A letter of the alphabet: move your hand in a chopping motion toward your arm (near the top of your forearm if the letter is near the beginning of the alphabet, and near the bottom of your arm if the letter is near the end of the alphabet).

**SEA TURTLE SHELL**

**OPEN BLUE OCEAN**

**PLAYFUL SEA LIONS**

**BEAUTIFUL CORALS**

**HIDING STINGRAY**

**DOLPHIN ECHOLOCATION**

**MORAY EEL BREATHES**

**RED LOBSTER LEGS**

**SHINY SWORDFISH**

**STINGING SEA JELLIES**

**SINGING HUMPBACK WHALE**

**POISONOUS SEA SLUG**

**SEAHORSE FATHER**

**SILLY SEAGULL**

**EIGHT OCTOPUS ARMS**

**COLORFUL CLOWNFISH**

**MILD-MANNERED MANATEE**

**STRANGE DEEP SEA ANGLER FISH**

**CLIMBING SEA STAR**

**SHARP SHARK TEETH**

**SWIMMING SCHOOL OF FISH**

**DIVING PELICAN**

## *Look Who Lives in the Ocean!* Non-fiction Book Project

This project addresses Language Arts (informational text comprehension + literary and expository writing), Science (researching and collecting data), Art (illustrating to support language) and Presentation (design + appearance). The Book Layout page should be copied on legal paper (8.5 x 14).

1. As a class, choose a habitat that you want to focus on and decide which animals will be included in the book (brainstorm as many animals as there are students).
2. Each student should choose, draw from a box or be given one animal and then follow steps 3-8.
3. Research the animal using books, Internet, videos, etc. to gain as much knowledge as possible.
4. Write a short story or poem about the animal using the Six Traits of Writing. Make it creative but realistic!
5. Make a list of the four *most interesting* facts about that animal—edit until they are correct and concise.
6. Using a Book Layout page, carefully copy the final drafts of writing in the appropriate space given.
7. Cut out a photograph of the animal from a magazine or Internet picture and paste it in the lower left box.
8. Draw an illustration of the animal in the large box on the right and color it. Consider doing a few practice drafts on scrap paper before drawing the final art on the Book Layout page.
9. Fold each of the student pages in half along the dotted line.
10. Stack all the folded pages on their sides (not inside one another) with the folded edges together (be sure they are all "upright" in the book).
11. Wrap the stack with a colored construction paper cover that has the book title, class, year and a good visual (photo or drawing) that supports the title and shows the reader what the book is about. Inside the cover, list all of the authors/illustrators and which animal they each contributed.
12. Staple the cover and pages together along the folded edge.
13. Inside, use double-stick scotch tape to adhere the blank sides of the pages together.
14. Present the book at a parent's night and then consider donating the book to the library for other students to read and learn from.

NOTE: If each student is making their own book, follow the direction above EXCEPT: print the Book Layout pages double-sided and before the student begins, fold the pages, stack them one inside the other, add a blank cover and staple the entire book together along the folded edge. You will not have to tape blank edges together.

list four facts about your animal below

## FASCINATING FACTS

①

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②

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③

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④

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glue a photo of your animal here

write a poem or short story about your favorite desert animal

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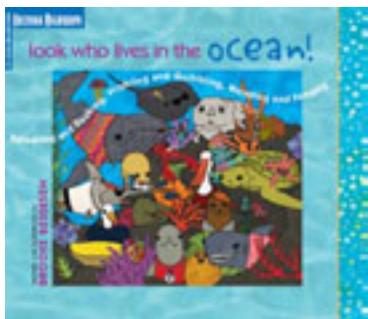
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draw a detailed illustration of your animal inside the box

fold and staple along the dotted line





look who lives in the **ocean!**

Draw and color a picture of your favorite ocean animal from the book. Choose one word to describe your animal (maybe its color or size) and write that word in the blank at the bottom of the page to complete the sentence.

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My animal is \_\_\_\_\_.

## *Look Who Lives in the Ocean!*

### 6+1 Traits of Writing

As an author, the 6+1 Traits of Writing play an important role in my work. Below, I have listed precisely how they applied to creating my book, *Look Who Lives in the Ocean!* Can you see them reflected in of the final product?

#### Ideas

- I decided to write a book about animals because this is a topic I know very well.
- I narrowed it to ocean animals because it made the information more manageable than doing all animals.
- My goal was to make it funny but educational.
- I wanted to add a variety of interesting details that most people don't know.

#### Organization

- I opened with a simple premise: despite its flat appearance, the ocean is home to many animals.
- Next, I covered 21 animals very systematically, but with little surprises in the prose and illustrations.
- I kept the facts for each animal together so they could be shown separately from the main text.
- I made a "book-end" conclusion—it confirms the original premise using similar language to the first page.

#### Voice

- I chose to write the main text in rhyme—in my own style, which I call "wordplay".
- I carefully worked with the text so the facts were presented in a unique and funny way.

#### Word Choice

- When writing in metered rhyme, word choice is very, very important! I chose each word with care.
- It took a lot of puzzling and editing to make the prose work. I didn't stop until it was right.
- By selecting vivid words, I was able to bring my ideas to life.
- I had limited space for my facts, so I had to keep the sentences tight and precise.

#### Sentence Fluency

- I knew the rhythm of my writing was just as important as the rhyme. In poetry, it's called "meter".
- I read each stanza aloud over and over (and over...) to "hear" any spots that weren't working.
- I added alliterations where I could to create little tongue-twisters for the reader.

#### Conventions

- I double and triple-checked my spelling, grammar, punctuation, etc. and edited any mistakes.
- Finally, I reread everything to be sure it made sense and was easy to comprehend.

+

#### Presentation

- A lot of effort went into the design and layout of *Look Who Lives in the Ocean!*
- The colorful and well-organized result showcased my writing very nicely!

# **Look Who Lives in the Ocean!**

## LANGUAGE ARTS STANDARDS

### **READING**

#### Reading Process

- Distinguish spoken rhyming words from non-rhyming words.
- Identify and manipulate the sounds of speech.
- Make predictions based on the title, cover, illustrations and text.
- Ask relevant questions in order to comprehend text.
- Determine the meaning of common synonyms, antonyms and homonyms.
- Read aloud from familiar prose and poetry with fluency and appropriate rhythm, pacing, intonation and vocal patterns.
- Use knowledge of root words and affixes to determine the meaning of unknown words.
- Determine the meanings, pronunciations, syllabication, synonyms, antonyms and parts of speech of words by using a variety of reference aids, including dictionaries, thesauri, glossaries and Internet.
- Predict text content using prior knowledge and text features (e.g. illustrations, titles, topic sentences, key words).
- Confirm predictions about text for accuracy.
- Determine the meaning of figurative language, including similes, personification and idioms.
- Determine the meaning of vocabulary using linguistic roots and affixes (e.g. Greek, Anglo-Saxon, Latin).
- Connect information and events in text to experience and to related text and sources.

#### Comprehending Literary Text

- Determine whether a literary selection, that is heard, is realistic or fantasy.
- Identify differences between fiction and non-fiction.
- Identify rhyme, rhythm, repetition and sensory images in poetry.
- Describe a character's traits using textual evidence (narrations, illustrations).

#### Comprehending Informational Text

- Restate facts from listening to expository text.
- Locate specific information from organizational features in expository text. (USE facts bar)
- Interpret information from graphic features in expository text. (USE illustrations)
- Determine the author's main purpose (to inform, to describe, to explain) for writing the expository text.
- Draw valid conclusions based on information gathered from expository text.
- Identify cause and effect relationships (stated and implied).
- Determine and author's position regarding a particular idea, subject, concept or object using supporting evidence from the text. (consider using introduction)
- Explain how authors use elements (e.g. language choice, organization) of expository text to achieve their purposes.
- Evaluate the effectiveness of the facts used to support an author's argument regarding a particular idea, subject, concept or object.

### **WRITING**

#### Writing Process

- Generate ideas through prewriting activities (brainstorming, webbing, drawing, writer's notebook , group discussion).
- Draw a picture about generated ideas
- Organize ideas using simple webs, maps or lists.
- Determine the purpose (e.g. to entertain, to inform, to communicate) of a writing piece.
- Determine the intended audience of a writing piece.

- Add additional relevant details for audience understanding.
- Organize writing into a logical sequence that is clear to the audience.
- Add details to the draft to more effectively accomplish the purpose.
- Apply proofreading marks to indicate errors in conventions.
- Rearrange words, sentences and paragraphs to clarify the meaning of the draft.
- Use resources and reference materials to select more precise vocabulary.
- Prepare writing in a format (e.g. oral presentation, manuscript, multimedia) appropriate to audience and purpose.
- Share the writing with the intended audience.
- Use organizational strategies (outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to plan writing.
- Use graphics (e.g. drawings, charts graphs) when applicable to enhance the final product.

### Writing Components

- Show a clear sense of coordination between text and pictures (e.g. a reader can readily see that they go together).
- Incorporate details in pictures and text.
- Write text that is expressive, individualistic, engaging and lively.
- Use the following parts of speech correctly in simple sentences: nouns, action verbs, personal pronouns, adjectives.
- Use subject/verb agreement in simple sentences.
- Convey a sense of originality, sincerity, liveliness or humor appropriate to the topic and type of writing.
- Use a variety of specific and accurate words that effectively convey the intended meaning.
- Use descriptive words and phrases that energize the writing.
- Apply vocabulary and/or terminology appropriate to the type of writing.
- Use a structure that fits the type of writing (e.g. letter format, narrative, lines of poetry).
- Create an ending that provides a sense of resolution or closure.
- Choose appropriate voice (e.g. formal, informal) for the audience and purpose.
- Use the following parts of speech correctly in simple sentences: adverbs, conjunctions, prepositions, interjections.
- Use vocabulary that is original, varied and natural.

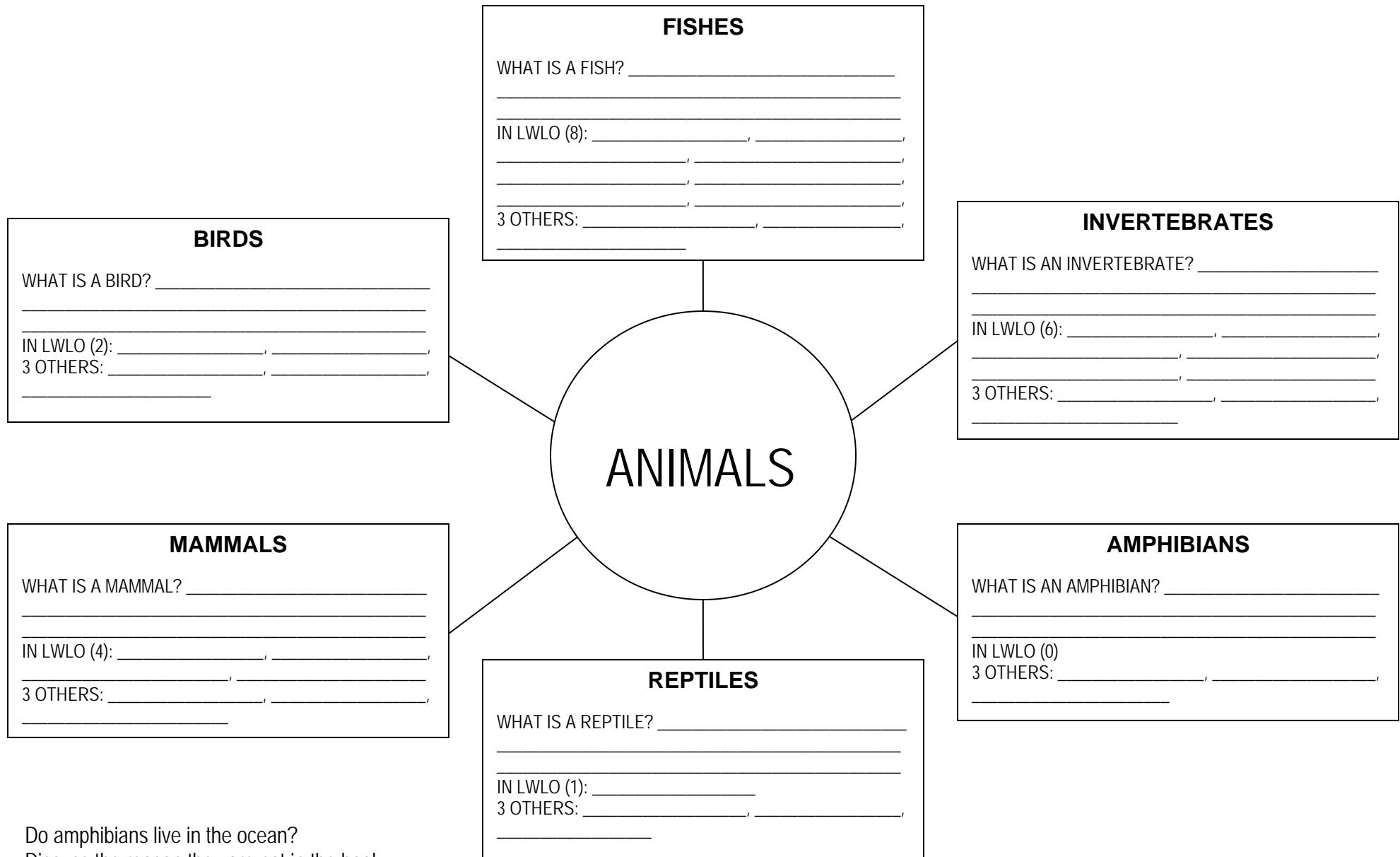
### Writing Applications

- Write expository texts (e.g. labels, lists, observations, journals).
- Paraphrase information from at least one source (e.g. Internet, reference materials).
- Write in a variety of expressive forms (e.g. poetry, skit) that may employ: figurative language, rhythm, dialogue, characterization, plot, appropriate format).
- Record information (e.g. observations, notes, lists, charts, map labels and legends) related to the topic.
- Write a variety of expository forms (e.g. assay, summary, newspaper article, log, journal).
- Organize notes in a meaningful sequence.
- Write an informational report that includes main idea(s) and relevant details.
- Write persuasive text (e.g. essay, paragraph, written communications) that: establishes and develops a controlling idea, supports arguments with detailed evidence, includes persuasive techniques, excludes irrelevant information.
- Write a response that demonstrates an understanding of a literary selection, and depending on the selection, include: evidence from the text, personal experience, comparison to other text/media.
- Write an explanatory essay that includes: a thesis statement, supporting details, introductory, body and concluding paragraphs.

## *Look Who Lives in the Ocean!*

### Animal Classification

Kingdom *Animalia* is divided into six Classes: mammals, birds, reptiles, invertebrates, amphibians and fishes. In each box below, list the traits that define that category. Based on those traits, categorize all of the animals from the book into their correct boxes. Lastly, offer three additional animals that fit in each category.



## *Look Who Lives in the Ocean!*

### COMPARE & CONTRAST

Consider how humans and animals are similar and how they are different. (Perhaps include humans from another culture or time.) Choose one animal from each habitat and write it in the appropriate box. Using checkmarks, identify the correct characteristics in the following columns:

#### HUMANS

#### OCEAN ANIMAL

#### DESERT ANIMAL

##### Life span

0-20 years			
21-50 years			
51+ years			

##### Diet

Plant matter (herbivore)			
Meat (carnivore)			
Both (omnivore)			

##### Shelter

Different each night			
Build a home			

##### Family Structure

Live with family members			
Live in groups of 50+			
Live alone			

##### Standard Movement

Walk or run			
Fly			
Swim			
Other _____			

##### Intelligence

Navigational			
Architectural			
Finding food			

##### Senses

Sight			
Smell			
Touch			
Taste			
Hearing			
Other _____			

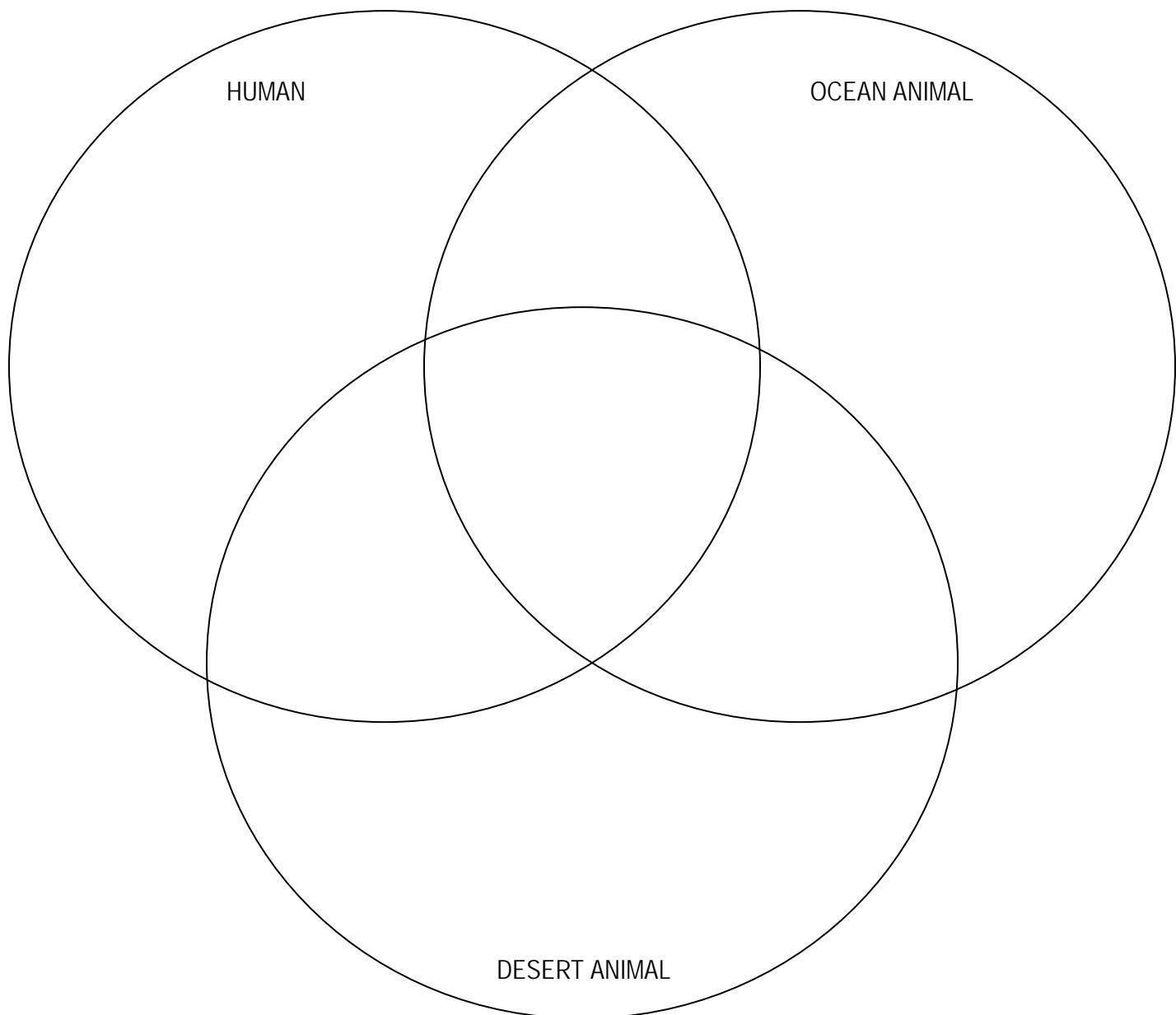
##### Daily Challenges

Working to get food			
Finding/building a home			
Tending their young			

## COMPARE & CONTRAST

page 2

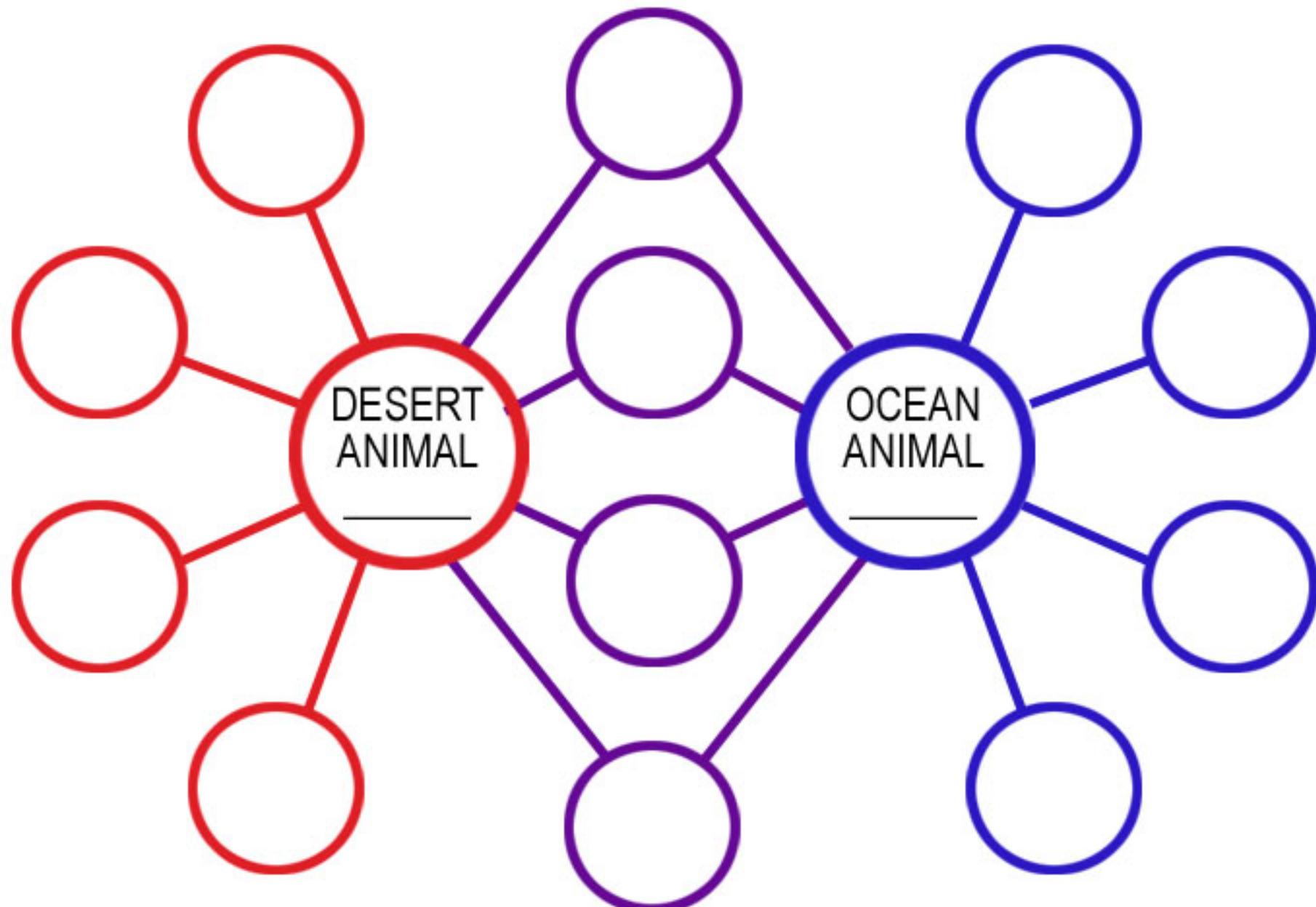
Create a Venn diagram: each column on the previous page is represented as a circle below. Using the information from each column, add the appropriate characteristics to the circles. Properly place them to demonstrate whether they exist in only one circle, are shared by two circles, or exist in all of the circles.



## COMPARE & CONTRAST

page 3

**Do a double-bubble:** Using information from the first page, add characteristics from your ocean animal and your desert animal to fill in the circles below. Demonstrate whether the traits are found in just one animal (red or blue) or shared by both (purple).



## *Look Who Lives in the Ocean!*

### Adaptations 1

An adaptation is a special design in an animal's body that has developed over time to help it survive. Adaptations can serve many purposes—they may provide protection, enhance movement or help the animal get food. Animals require special adaptations to live in the ocean. Read the book and using the words below, fill in each blank with the animal that properly completes the sentence.

sea turtle

whale

sea jelly

dolphin

clownfish

shark

stingray

pelican

angler fish

seahorse

octopus

swordfish

A \_\_\_\_\_ has a stinger on its tail to defend itself.

A \_\_\_\_\_ has a long, sharp bill to slash in schools of fish for food.

A \_\_\_\_\_ has a lighted "fishing pole" to lure dinner.

A \_\_\_\_\_ has thousands of teeth to grab and shred meat.

A \_\_\_\_\_ has long, thin stinging tentacles to paralyze its prey.

A \_\_\_\_\_ has a thick shell to protect its body from predators.

A \_\_\_\_\_ has air sacs in its chest to soft the impact when it dives into water.

A \_\_\_\_\_ has a prehensile tail to hold tight to sea grasses.

A \_\_\_\_\_ has sonar ability called echolocation to help it "see" its surroundings.

A \_\_\_\_\_ has mucus on its skin to protect it from the anemone it lives in.

A \_\_\_\_\_ has thick blubber to keep it warm in extremely cold temperatures.

A \_\_\_\_\_ has eight arms with suction cups to grasp things.

## *Look Who Lives in the Ocean!* Adaptations 1 KEY

An adaptation is a special design in an animal's body that has developed over time to help it survive. Adaptations can serve many purposes—they may provide protection, enhance movement or help get food. Animals require special adaptations to live in the ocean. Read the book and using the words below, fill in each blank with the animal that properly completes the sentence.

sea turtle

whale

sea jelly

dolphin

clownfish

shark

stingray

pelican

angler fish

seahorse

octopus

swordfish

A \_\_\_\_\_ stingray \_\_\_\_\_ has a stinger on its tail to defend itself.

A \_\_\_\_\_ swordfish \_\_\_\_\_ has a long, sharp bill to slash in schools of fish for food.

An \_\_\_\_\_ angler fish \_\_\_\_\_ has a lighted "fishing pole" to lure dinner.

A \_\_\_\_\_ shark \_\_\_\_\_ has thousands of teeth to grab and shred meat.

A \_\_\_\_\_ sea jelly \_\_\_\_\_ has long, thin stinging tentacles to paralyze its prey.

A \_\_\_\_\_ sea turtle \_\_\_\_\_ has a thick shell to protect its body from predators.

A \_\_\_\_\_ pelican \_\_\_\_\_ has air sacs in its chest to soften the impact when it dives into water.

A \_\_\_\_\_ seahorse \_\_\_\_\_ has a prehensile tail to hold tight to sea grasses.

A \_\_\_\_\_ dolphin \_\_\_\_\_ has sonar ability called echolocation to help it "see" its surroundings.

A \_\_\_\_\_ clownfish \_\_\_\_\_ has mucus on its skin to protect it from the anemone it lives in.

A \_\_\_\_\_ whale \_\_\_\_\_ has thick blubber to keep it warm in extremely cold temperatures.

An \_\_\_\_\_ octopus \_\_\_\_\_ has eight arms with suction cups to grasp things.

## *Look Who Lives in the Ocean!* Adaptations 2

An adaptation is a design, function or behavior that has developed over time to help a species better survive. Adaptations may benefit the animal in getting food, hiding, moving, protection, etc. Animals require special adaptations to live in the ocean because it is such a unique and varied environment. Using the book, answer the following questions with complete sentences.

What two organs protrude from the topside of a doris and what purpose do they serve? \_\_\_\_\_

Why is a deep sea angler fish's skin gelatinous? \_\_\_\_\_

Why can a stingray breathe without moving while its shark cousins cannot? \_\_\_\_\_

How does a sea star move? \_\_\_\_\_

Why don't dolphins have sense of smell? \_\_\_\_\_

What are "marching molars" in a manatee? \_\_\_\_\_

How do coral use algae to get food? \_\_\_\_\_

What adaptation helps diving pelicans survive impact with the water? \_\_\_\_\_

How do schooling fish swim in perfect unison? \_\_\_\_\_

How are clownfish able to live in venomous anemones? \_\_\_\_\_

Why do swordfish appear shiny? \_\_\_\_\_

Why does a moray eel open and close its mouth so much? \_\_\_\_\_

What are three adaptations a sea lion has that a seal does not? \_\_\_\_\_

Why are the markings on a whale's tail valuable to humans? \_\_\_\_\_

Why does an octopus have an ink gland? \_\_\_\_\_

What is bioluminescence and how do sea jellies produce it? \_\_\_\_\_

## *Look Who Lives in the Ocean!* Adaptations 2 KEY

An adaptation is a design, function or behavior that has developed over time to help a species better survive. Adaptations may benefit the animal in getting food, hiding, moving, protection, etc. Animals require special adaptations to live in the ocean because it is such a unique and varied environment. Using the book, answer the following questions with complete sentences.

**What two organs protrude from the topside of a doris and what purpose do they serve?** *At the front of its body a doris has sensory cells called rhinophores for smelling chemicals, and at the back it has gills for breathing.*

**Why is a deep sea angler fish's skin gelatinous?** *The gelatinous skin (and soft bones) of a deep sea angler fish helps it endure the incredible pressure of depth in the aphotic or midnight zone of the ocean.*

**Why can a stingray breathe without moving while its shark cousins cannot?** *Stingrays have holes behind their eyes called spiracles, which run water into the stingray's gills, providing oxygen even if they are not swimming.*

**How does a sea star move?** *A sea star has hundreds of tiny tube feet on its underside that it uses to walk.*

**Why don't dolphins have sense of smell?** *Dolphins do not have olfactory lobes in their brains.*

**What are "marching molars" in a manatee?** *Marching molars are teeth in a manatee's mouth that move forward over time and replace previous teeth that have worn down.*

**How do coral use algae to get food?** *The algae live in the cells of the coral and produce food through photosynthesis, a process that converts sunlight to energy.*

**What adaptation helps diving pelicans survive impact with the water?** *Pelicans have air sacs in their chest that can be inflated to absorb the impact of diving into the ocean.*

**How do schooling fish swim in perfect unison?** *Each fish has "lateral lines" of sensory cells (neuromasts) along the sides of its body, which detect minute changes in water pressure, so the fish can respond to movement almost instantly.*

**How are clownfish able to live in venomous anemones?** *Young clownfish rub against anemones until the anemones' toxins mix with the thick mucus on the fishes' skin. Eventually, the anemone can no longer sense the fish.*

**Why do swordfish appear shiny?** *Adult swordfish do not have scales.*

**Why does a moray eel open and close its mouth so much?** *A moray eel's gills are too small to absorb enough oxygen to support the eel, so it must pump water over the gills by opening and closing its mouth.*

**What are three adaptations a sea lion has that a seal does not?** 1. Sea lions have ear flaps. 2. Sea lions have long front flippers that can hold them upright. 3. Sea lions have rotating hip joints so they can make wacking movements.

**Why are the markings on a whale's tail valuable to humans?** *Human researchers can use tail markings to identify individual whales.*

**Why does an octopus have an ink gland?** *The dark liquid in an octopus' ink gland can be squirted out to confuse predators and allow the octopus to make an escape.*

**What is bioluminescence and how do sea jellies produce it?** *Bioluminescence is a light or glow produced through a biochemical reaction inside the sea jellies.*

## *Look Who Lives in the Ocean!*

### Ocean Zones Science Mural

The word pelagic is derived from Greek *pélagos* meaning "open ocean". Scientists recognize five layers of the ocean, called pelagic zones. The layers/zones are described below—notice that each has more than one correct name. Why do you think animals live at various depths? What adaptations might be required for survival in each layer? Using large-format paper, create a tall mural that shows the pelagic zones and some of the animals they each support.



#### **SUNLIGHT ZONE or SUNLIT ZONE** also called **Euphotic Zone or Epipelagic Zone** surface-200 meters (660 feet)

The top layer of the ocean receives the most sunlight and has the warmest water, so it is teeming with life and color! Most ocean dwellers are found in this layer, from photosynthesizing plankton to bony fish, reptiles to air-breathing mammals. Coral reefs are in this layer, too.

Animals common to this layer include stingrays, schooling fish, sharks, krill and whales.



#### **TWILIGHT ZONE or MIDWATER** also called **Disphotic Zone or Mesopelagic Zone** 200-600 meters (660-3,300 feet)

This layer receives only a faint amount of sunlight (the water appears dark to the human eye). Here, fishes' eyes are larger and some creatures use bioluminescence. Temperatures drop significantly through the ocean's thermocline and water pressure increases.

Animals you might find in this layer are sea jellies and swordfish.



#### **MIDNIGHT ZONE or DARK ZONE** also called **Aphotic Zone or Bathypelagic Zone** 1000-4000 meters (3,300-13,100 feet)

No light reaches this layer of the ocean, so it remains in virtual blackness. The water pressure is severe (up to 5,850 pounds per square inch) and temperature remains a near-constant 39°F (4°C). Here, creatures' eyes may be small or nonexistent.

Animals you might find in this layer are giant squid, deep sea angler fish or diving sperm whales.

#### **THE ABYSS** also called **Abyssopelagic Zone** 4000-6000 meters (13,100-19,700 feet)

This is the pitch-black bottom of the ocean. The floor is covered with a muddy substance made from skeletons and organic decay. Most creatures in this layer either feed on the muck or prey on the animals that do.

Animals you might find in this layer are dumbo octopus, deep sea bamboo coral or tubeworms.



#### **THE TRENCHES** also called **Hadalpelagic Zone** 6000-11,000 meters (19,770-36,000 feet)

This is the deepest layer of the ocean, found only in deep sea trenches and canyons. At more than three times deeper than the average sea floor, the pressure in this layer is unimaginable—8 tons per square inch! Life was recently discovered in this layer.

One animal you might find in this layer is a single-celled plankton called foraminifera.

## *Look Who Lives in the Ocean!* Fish vs. Mammal Science Project

This project is about how animals regulate body temperature. Marine mammals (whales, seals, dolphins, otters) naturally keep a consistent body temperature. Humans are mammals too. Our body temperature remains around 98.6 degrees Fahrenheit. If we are cold, we shiver to warm up and if we are hot, we sweat to cool off.

Fish are ectotherms, meaning they cannot regulate their own body temperature. Their bodies are generally the same temperature as the water around them. So to warm up or cool off they must rely on external sources, like sunshine and shallow water.

This project can be done as a whole class or by smaller groups.

### **WHAT YOU WILL NEED:**

Sponges  
Water  
Scissors  
Thermometers  
Timer  
Heating pad in a plastic bag  
Refrigerator

### **HUMAN BODY TEMPERATURE**

In the classroom, have one or more volunteers take their body temperature. Use another thermometer to note the ambient temperature of the room.

Have the same volunteers go outside for 10 minutes and take a second reading. Note the outside temperature.

Have the volunteers hold the heating pad for 10 minutes (and/or do several pushups, jumping jacks or other calisthenics until they feel physically heated) and take a third and final temperature. Place the thermometer on the heating pad and note the temperature.

Record the findings.

### **ECTOTHERMIC BODY TEMPERATURE**

Dampen the sponges with water (remember, living organisms are made up largely of water). The teacher should cut a small but deep slit in the thin edge of each sponge; be sure it is deep enough to fully insert a thermometer.

Place one damp sponge in the classroom, one outside, one on the plastic wrapped heating pad and one in a refrigerator and leave them for 10 minutes.

Take the temperature of each sponge and record the findings. Discuss the differences between the human temperatures and the sponge temperatures.

## Body Temperature in Relation to Ambient Temperature

Record all temperature readings in the corresponding boxes below.

	Classroom	Outside	Heating Pad	Refrigerator
AMBIENT TEMP.				
HUMAN BODY TEMP. (endothermic mammal)				Never shut a living thing in a refrigerator! Using the other data obtained, <i>speculate</i> what a human's body temperature would be after 10 minutes in a refrigerator:
If more than one...	Average: _____	Average: _____	Average: _____	_____
SPONGE TEMP. (ectothermic fish)				
If more than one...	Average: _____	Average: _____	Average: _____	Average: _____

Based on the findings, how much/little does the temperature of a human body vary as the ambient temperature changes?

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Based on the findings, how much/little does sponge temperature vary as the ambient temperature changes?

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# *Look Who Lives in the Ocean!*

## Saltwater vs. Freshwater Science Projects

(for young students)

**You will need:** two clear 16-ounce glasses, granulated salt, two racket balls and food coloring.

Have you ever been swimming at the beach and had ocean water accidentally get into your mouth? Why does seawater taste salty? When we drink a glass of bottled or tap water, it's freshwater—but the ocean is a giant body of saltwater. In fact, some people estimate that if you could remove all the salt from the ocean and spread it across Earth's land surfaces, the salt would be over 500 feet tall! That's a lot of salt! But saltwater is different than freshwater in more than taste, as the following experiments will show.

### **The Ol' Disappearing Salt Trick**

Saltwater is made by dissolving salt into freshwater.

*Place two glasses side by side. Label them #1 and #2. Pour 8 ounces of tap water into each glass. In glass #1, add 1 tablespoon of salt and stir. What happens to the salt? Discuss the results.*

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### **Compare & Contrast**

Observe saltwater and freshwater side by side to consider their appearances.

*Be sure the salt is completely dissolved into the water. Look at the salt water in glass #1 next to the freshwater in glass #2. Is there a difference? Discuss the results.*

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### **Whatever Floats Your Boat**

Saltwater is denser than freshwater because it has all that salt in it. And the denser a liquid, the better objects tend to float on top of it. So, a boat will float higher in the ocean (saltwater) than it will in a lake (freshwater).

*Place one racket ball into each of the glasses. Does the ball float higher in glass #1 (saltwater) or glass #2 (freshwater)? Add more salt to glass #1 and try again. Any change? Discuss the results.*

---

### **Layering Water**

Since freshwater is less dense, it will actually float on top of saltwater.

*Leave the racket ball in glass #1 but remove it from glass #2. Add a few drops of food coloring to glass #2 and stir. Slowly pour some of the colored freshwater onto the racket ball in glass #1 (the ball keeps the waters from mixing too much). Let settle. What happens? Discuss the results.*

**NOTE:** Humans must drink freshwater to stay healthy. Accidentally drinking small amounts of clean seawater is not unsafe, but drinking too much saltwater can make humans very sick! Never purposefully drink large amounts of saltwater.

# *Look Who Lives in the Ocean!*

## Writing a Scientific Paper

The world's most prominent scientists are also writers. In fact, one of the key goals of any scientist is to publish the findings of their research in special scientific journals. Like other kinds of writing, scientific writing must share ideas and knowledge in a clear fashion and be grammatically correct.

A scientific paper may be written by one individual or by several authors who work together. When writing this kind of paper, it is important that you provide accurate details regarding both the process and the results of your scientific experiment. It is also helpful to research books, magazines and online reference materials relating to your subject, so you can offer additional information in the paper.

Scientific papers follow a standard format. They are typically structured as follows:

## Title

The paper's title should reflect the nature of your scientific experiment.

Example: *Testing the Freezing Temperature of Saltwater vs. Freshwater*

## Author(s)

This is simply the name(s) of whoever is writing the paper.

Example: by I. Wrightwell, Seymour Ayes, and Suzy S. Smart

## **Abstract (may be optional for this project)**

An abstract is a synopsis of the full paper, written to give readers a quick overview. It should briefly explain the project's objectives and how the experiment was done, plus the basic results and their significance. This is an important component in a professional scientific paper, which may be many pages in length.

## Introduction

In 1-3 paragraphs, explain why you are doing the experiment and what you already know regarding the subject matter. Also, write your objectives and a hypothesis (what you think will happen).

**Example:** An article in *Student Science Magazine* suggests saltwater freezes at lower temperatures than freshwater, so we decided to conduct a class experiment to explore the freezing temperatures of freshwater and saltwater in a controlled setting. We expect the saltwater to...

## Materials and Methods

Write out exactly how the experiment was conducted. Detail what instruments or objects were used and how. Be sure to give accurate weights and measurements.

**Example:** We labeled three matching 12-ounce glasses with tape and marker as #1, #2 and #3. Exactly one cup of room temperature tap water (72°F) was poured into each of the glasses. Next, we added three level teaspoons of table salt to glass #2 and five level teaspoons of salt to glass #3...

## Results

**RESULTS**  
Carefully describe the results of your experiment in this section.

Example: The water in glass #1 (freshwater) froze at a temperature of 32 F. The water in glass #2 (with three teaspoons salt) froze at...

## Discussion

Here, you should take time to reflect on the experiment and its results. What do you think of your results? What do they mean? Was the experiment successful? Do you have new questions that emerged from the experiment?

Example: While we expected the freshwater in glass #1 to freeze before the saltwater in glasses #2 and #3, we were surprised to discover...

## Acknowledgements

This is a paragraph to name and thank any people (other than the paper's authors) who assisted in the research or helped you obtain your results.

**Example:** Our thanks to Mrs. Green, the school librarian, for helping us find books and articles related to frozen oceans. We would also like to thank our teacher, Mr. Johnson for supporting our experimental research in his classroom.

## References

This is a basic bibliography of any books, papers or websites you used to write your paper.

Example:	Gershun, James McVellon, Gary	"An Ocean of Ice", <u>Student Science Magazine</u> , March 2008, pages 17-24 <u>101 Fun Experiments</u> . Pow Publishing 1998
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Have fun with this! Perhaps some day you will have a research paper published in a real scientific journal!

## Wildlife Journal



Here's a great way to get outdoors where you can connect with the natural world!

Create a journal with several pages of folded paper. Then spend at least one week watching some of the animals that live in your neighborhood *without touching or disturbing them*. What species of wildlife do you see between home and school, out for a walk or riding a bike? Be sure to look up in the sky, in trees and buildings, on the ground and in the water. Write down your observations and thoughts in the journal.

**Watch a minimum of four animals for ten minutes each. For each animal, follow these steps:**

1. Name the animal and carefully describe it.
2. List all the behaviors you observe.
3. Ask yourself some of the following questions and write your answers in your journal:
  - What is the animal doing? What is its goal?
  - What time of day is it (morning, midday, evening, night)? Why is that animal active during this time of day?
  - How is the animal interacting with its environment?
  - Does the animal notice me? If yes, what is its response? Why?
  - Did I observe anything unexpected? If yes, what?
  - How does that animal make me feel (happy, excited, nervous, peaceful)? Why?  
Is my response based in fact or fiction? Perhaps a past experience?
  - What is beautiful or interesting about the animal?
  - Why is that animal important to the environment? What role does it play?
4. Name at least two unique physical qualities that you notice about that animal. Try to pick things that might go unnoticed with a casual glance.
5. If possible, take a photo or draw a sketch of the animal. Your images can be either artistic or used as diagrams to show specific details. By adding visuals to your journal, you will better recall the animal and the experience later.
6. Research the four animals you watched in books and other resources to discover two interesting facts about each animal that you didn't already know. Include them in your journal.
7. Share observations/information from your journal with your classmates.

# ENDANGERED MARINE SPECIES

## Research Project

Pick an endangered or threatened marine animal and research the history of that species to answer the questions below. Write a report, give an oral presentation or follow the directions below to share the data obtained.

Here are some endangered/threatened marine animals to choose from:

### MAMMALS

Whales (many species)  
Dolphins (many species)  
Seals (many species)  
Manatees

### BIRDS

Penguins (many species)  
Greater flamingo  
Brown pelican

### REPTILES

Sea turtles (many species)  
Marine iguana  
Saltwater crocodile

### FISHES

Sharks (many species)  
Atlantic Bluefin Tuna  
Clownfish  
Great barracuda  
Leafy sea dragon

### INVERTEBRATES

Octopus (many species)  
Giant Squid  
Emperor nautilus  
Staghorn coral

- What is the scientific name of the species?
- How many were originally living in the ocean and what was their range?
- How many are currently living in the ocean and what is their range?
- When did their numbers begin to dramatically decline?
- Why? What factors caused them to become endangered or threatened?
- What has been done to recover this species in the wild?
- What groups and organizations are involved in their protection and recovery?
- What are the challenges facing the recovery effort?
- Might the species ever return to its original numbers? If yes, how? If no, why not?

Here's a great way to offer this lesson:

1. Break into groups of four. Each group picks one endangered/threatened animal then each student within the group researches and answers two of the eight questions above on their own using all available resources (books, newspapers, Internet, calling authorities).
2. The groups come back together to share the data they have obtained about their animal. All four students should complete the answers to their remaining questions so they are fully informed about their animal.
3. Each group creates one visual aid that represents the information they have learned about their animal (dioramas, stuffed animals, posters, clay sculptures, etc + use written elements to better explain details).
4. Students rotate counter-clockwise from project to project to teach and learn about all the animals:
  - a. Place all the groups with their projects in a large circle around the room.
  - b. Each group should count off 1-4.
  - c. The number 1 person will stay with their project while 2, 3, and 4 rotate to the right. Number 1 person then teaches the arriving students about their animal for 5 minutes using their project to demonstrate.
  - d. Next, every number 2 person stays with the animal they just learned about, while 1, 3 and 4 rotate again to the right. The number 2 person then teaches the arriving students about that animal.
  - e. Then person 3 stays. Then person 4 stays. Then back to 1.
  - f. Continue until every student has gone fully around the room and is back at their original project.

Through the process, each student plays the roles of both teacher and pupil, so they must listen carefully to the information at each project because they may have to teach it to the next group.

## *Look Who Lives in the Ocean!*

### Food Chain Pyramid

The ocean is a unique ecosystem. An ecosystem is a biological community of interacting organisms and their environment. Sun, rain and sand help create a habitat but every plant and animal plays a specific and valuable role in keeping the ecosystem working. One of the most important elements of any ecosystem is the food chain.

This project can be done as a class or by smaller groups.

#### **WHAT YOU WILL NEED:**

Legal size piece of paper

10 paper cups

Masking tape

Pen

#### **BUILDING A FOOD CHAIN PYRAMID**

Across the sheet of paper, write the words: **HEALTHY OCEAN WITH UNPOLLUTED WATER.**

Turn the cups upside down and using strips of masking tape (so the cups can be re-used), label each of them with one of the following 10 ocean plants or animals: PLANKTON, SEAWEED, ALGAE, SEAGRASS, SEA TURTLE, OCTOPUS, PARROT FISH, SHARK, DOLPHIN and HUMAN.

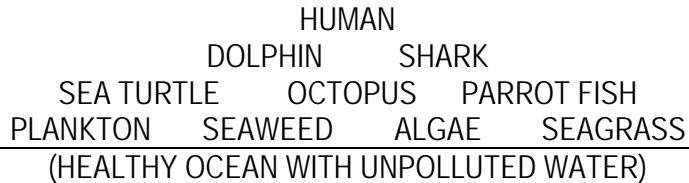
Lay the paper flat and balance the cups in a pyramid formation on top of it. The bottom row of cups should be the plants and plankton, because they use the space and nutrients the sea provides and are the foundation of any ecosystem.

The second row should be the three small animals who eat, live in or directly depend on plants and plankton.

The third row up should be the two large animals who eat or benefit from the small animals who eat or live in the plants and plankton that live in the ocean. The carnivores need everything below them for survival.

The top cup of the pyramid should be the human. Human life is dependent on stable ecosystems for food, oxygen, drinking water, waste management, a sense of beauty and so much more! We need carnivores, herbivores, plants and oceans for our survival.

The pyramid should look like this:



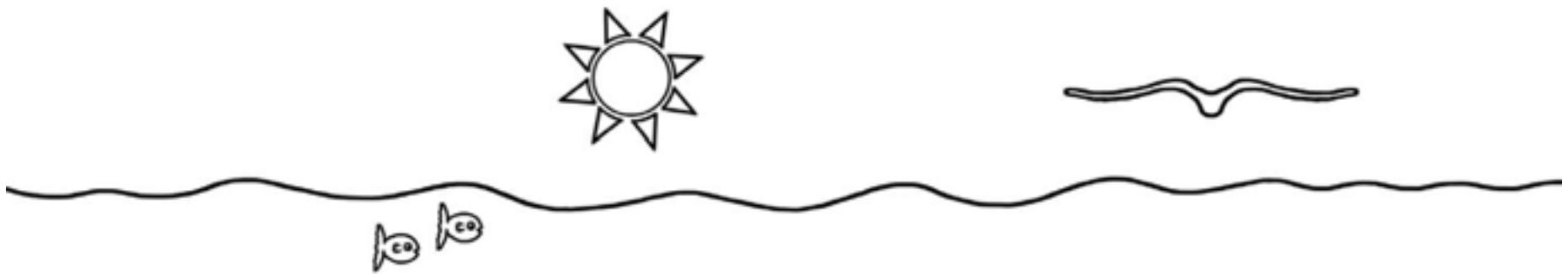
#### **KEEPING THE BALANCE**

Like the cups, everything in the natural world is dependent on all the other things. There must be balance. If one animal disappears, others are affected, perhaps even destroyed.

Try to pull a single cup out of the pyramid. Try to slip the paper out from under the stack. Does the pyramid stay standing? Notice what happens to the HUMAN cup when any other creatures, plants or healthy ocean are removed from the stack.

Discuss the results.

# How can we help protect the ocean?



## Be ocean conscious!

- Visit the beach, explore the ocean and discover all the amazing animals that depend on clean water and air to survive.
- Buy and eat only sustainable fish and sea food. Ask about it at restaurants.
- 'Reduce, reuse, recycle' to cut down on wasted plastic and garbage.
- Pick up litter (especially plastic bags)—beach trash can injure or kill marine animals.
- Purchase natural, organic & biodegradable products that don't harm the environment.
- Never pour oils or pollutants in storm drains.
- Cut carbon! Walk or ride a bike instead of using a car—it's good for both you and the ocean.

## Get involved!

- Learn more about the ocean and its beautiful, interesting and vital inhabitants.
- Educate others—all humans rely on the ocean for survival!
- Be aware of changes in the community that could cause damage to the ocean and speak out.
- Write your senator and state representatives to encourage them to protect the ocean, even if you don't live near the coast.
- Visit: <http://www.theoceantproject.org/resources/conservation.php?category=For%20Kids> for great links for kids and teens.

Remember, we have always needed the ocean... now the ocean needs us!

# **Look Who Lives in the Ocean!**

## SCIENCE STANDARDS

***“When one tugs at a single thing in nature, he finds it attached to the rest of the world”*** —John Muir

### **Inquiry Process**

- Formulate relevant questions about the properties of objects, organisms and events of the environment using observations and prior knowledge.
- Locate information (e.g. book, article, website) related to an investigation.
- Select appropriate resources for background information related to a question for use in the design of a controlled investigation.
- Organize data using the following methods with appropriate labels: bar graphs, pictographs, tally charts.
- Develop new questions and prediction based upon the data collected in the investigation.
- Choose an appropriate graphic representation for collected data: bar graph, line graph, Venn Diagram, model.
- Write clear, step-by-step instructions for following procedures (without the use of personal pronouns).

### **History and Nature of Science**

- Identify how diverse people and/or cultures, past and present have made important contributions to scientific innovations (e.g. John Muir, naturalist).
- Describe how, in a system (e.g. terrarium, house) with many components, the components usually influence one another.
- Explain why a system may not work if a component is defective or missing.
- Explain the cycle by which new scientific knowledge generates new scientific inquiry.

### **Science in Personal and Social Perspectives**

- Describe the beneficial and harmful impacts of natural events and human activities in the environment (e.g. forest fires, flooding, pesticides).
- Evaluate the consequences of environmental occurrences that happen either rapidly (e.g. fire, flood, tornado) or over a long period of time (e.g. drought, melting ice caps, the greenhouse effect, erosion)
- Propose a solution, resource or product that addresses a specific human, animal or habitat need.
- Evaluate the possible strengths and weaknesses of that proposed solution, resource or product.
- Analyze the risk factors associated with natural, human-induced and/or biological including: waste disposal of industrial chemicals, greenhouse gases.

### **Life Science**

- Distinguish living things from non-living things.
- Identify structures that serve different functions (e.g. sensory, defense, locomotion).
- Classify animals by identifiable group characteristics: vertebrates (mammals, birds, fish, reptile, amphibians), invertebrates (insects, arachnids).
- Relate the following structure of living organisms to their functions: respiration (gills, lungs, spiracles), digestion (stomach, intestines), circulation (heart, veins, arteries, capillaries), locomotion (muscles, skeleton, exoskeleton).
- Describe the life cycles of various insects (and arachnids).
- Describe the life cycles of various mammals.
- Identify that plants and animals need the following to grow and survive: food, water, air and space.
- Compare the habitats (e.g. desert, forest, prairie, water, underground) in which plants and animals live.
- Describe how plants and animals within a habitat are dependent on each other.
- Describe how environmental factors (e.g. soil composition, range of temperature, quantity and quality of light or water) in the ecosystem may affect a member organism's ability to grow, reproduce and thrive.

- Describe how the following environmental conditions affect the quality of life: water, climate, population density, smog.
- Compare food chains in a specific ecosystem with their corresponding food web.
- Explain how organisms obtain and use resources to develop and thrive in: niches, predatory/prey relationships.
- Create a model of the interactions of living organisms within an ecosystem.
- Recognize that successful characteristics of populations are inherited traits that are favorable in a particular environment.
- Analyze the following behavioral cycles of organisms: hibernation, migration, dormancy (plants).

### Earth and Space Science

- Identify ways to conserve natural resources (e.g. reduce, reuse, recycle, find alternatives).
- Describe ways humans use Earth materials (e.g. fuels building materials, growing food).
- Differentiate between weather and climate as they relate to the southwestern United States.

***“The love for all living creatures is the most noble attribute of man” —Charles Darwin***

look who lives in the ocean!

H	G	C	S	W	O	R	D	F	I	S	H	X	C	Z
O	U	P	E	L	I	C	A	N	E	T	S	B	O	A
R	L	M	O	R	A	Y	E	E	L	O	E	W	R	N
S	L	A	P	R	S	T	I	N	G	R	A	Y	A	G
G	I	N	D	B	E	K	Q	M	O	W	H	K	L	L
S	E	A	S	T	A	R	S	J	P	S	O	F	R	E
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I	U	F	I	N	L	O	B	S	T	E	R	E	J	F
S	C	H	O	O	L	O	F	F	I	S	H	N	X	R
H	O	C	T	O	P	U	S	E	A	J	E	L	L	Y

## WORD SEARCH

Find the following words from the book:

Angler fish	Octopus
Clownfish	Pelican
Coral	School of fish
Dolphin	Seahorse
Doris	Sea jelly
Gull	Sealion
Humpback whale	Sea star
Lobster	Sea turtle
Manatee	Shark
Moray eel	Stingray
Ocean	Swordfish

look who lives in the ocean!



## WORD SEARCH

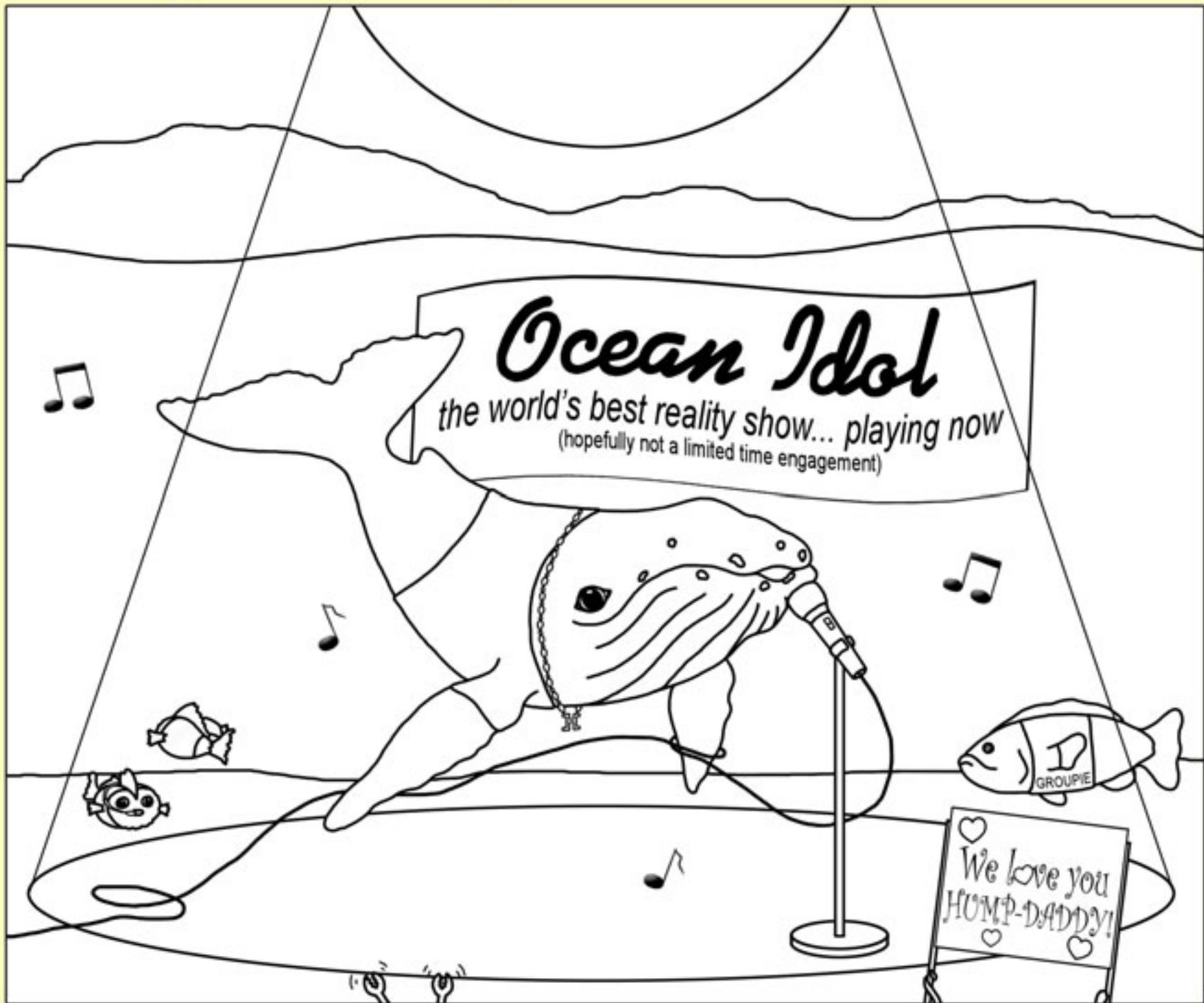
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Lobster	Sea turtle
Manatee	Shark
Moray eel	Stingray
Ocean	Swordfish

# look who lives in the ocean!

an Arizona Highways book written and illustrated by Brooke Bessessen

Enjoy coloring this humpback whale illustration from the book...





look who lives  
in the ocean!

ARIZONA HIGHWAYS

BOOKS