



BEING DOLPHIN 4D

DREAM DIVE DISCOVER



SimEx!werks
ENTERTAINMENT

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Learning Resource Guide

Grades 4-6

Name: _____

Date: _____

MY DAY AS A DOLPHIN



In “Being Dolphin” the narrator talks about what it would be like to be a dolphin. What if you could transform and actually spend a day as a dolphin? Tell a story about what you might experience. Be sure to describe how you would feel before, during and after your transformation. Include your 5 w’s (**W**hat happened?, **W**ho was there?, **W**hy did it happen?, **W**hen did it happen?, **W**here did it happen?). Be sure to describe what you see, hear and feel during your day as a dolphin. Illustrate your story in the space provided.



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ATLANTIC BOTTLENOSE DOLPHIN

These dolphins have robust bodies and are named “bottlenose” after their short, stubby rostrums, or beaks. Bottlenose dolphins have 86 to 100 sharp, cone-shaped teeth which help to catch slippery prey.

The diet of these dolphins includes fish, squid and crustaceans. Bottlenose dolphins exhibit a range of feeding strategies, including cooperative hunting (often herding fish into tight circles), feeding in association with fishing boats, digging in the sand to uncover food and chasing fish onto mud banks.

Adults reach six to 12 feet in length and weigh 400 to 800 pounds. Males are slightly larger than females. Bottlenose dolphins are found worldwide in tropical and temperate waters, often along coastlines or in bays, harbors or estuaries.

Bottlenose dolphins are top ocean predators with few predators of their own. Sharks and killer whales occasionally prey upon dolphins. Humans represent a major threat to bottlenose dolphins that are accidentally caught in fishing gear (gill nets, purse seines and shrimp trawls) or entangled in discarded gear and monofilament line. Dolphins are still hunted in some parts of the world.



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COMMON DOLPHIN

Common dolphin species are medium-sized. Adults range between 6.2 and 8.2 ft. in length, and can weigh between 176 and 518 lb. Males are generally longer and heavier. The color pattern on the body is unusual. The back is dark and the belly is white, while on each side is an hourglass pattern colored light grey, yellow, or gold in front and light grey in back.

Common dolphins live in both warm-temperate and tropical waters. Common dolphins can live in groups of hundreds or even thousands of dolphins.

Common dolphins have a varied diet consisting of many species of fish and squid.



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ATLANTIC SPOTTED DOLPHIN

The Atlantic spotted dolphin is a dolphin found in the Gulf Stream of the North Atlantic Ocean.

The coloring of the Atlantic spotted dolphin varies enormously as it grows, and is usually classified into age-dependent phases known as two-tone, speckled, mottled, and fused. As the animal matures, the spots become denser and spread until the body appears black with white spots as an adult.

In comparison to other dolphin species, the Atlantic spotted dolphin is medium-sized. Male adults can reach a length 7 feet. 5 inches and a weight of 310 pounds, and females can reach 7 feet 6 inches and 290 pounds.

The species exhibits a range of about ten different vocalizations, including whistles, buzzes, squawks and barks, each corresponding with different behaviors.

The diet of an Atlantic spotted dolphin consists of many species of small schooling fish and squid.

The Atlantic spotted dolphin is a social creature. It is a fast swimmer and prone to acrobatic aerial displays.

Name: _____

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MY DAY AS A DOLPHIN



Based on what you have learned about dolphins, decide whether each statement is a **Fact (+)** or **Fiction (-)**.

- _____ 1. Dolphins are mammals.
- _____ 2. Dolphins live in groups called pods.
- _____ 3. Dolphins are herbivores (plant eaters).
- _____ 4. Dolphins use echolocation for hunting.
- _____ 5. Dolphins are fish.
- _____ 6. Dolphins have gills and can breathe underwater.
- _____ 7. Dolphins are highly intelligent.
- _____ 8. Dolphins have been around for more than 10 million years longer than humans.
- _____ 9. Dolphins live in all the oceans of the world.
- _____ 10. Despite living in the ocean, dolphins are not strong swimmers.
- _____ 11. Dolphin pods are matriarchal (led by females).
- _____ 12. Dolphins are cold-blooded.
- _____ 13. Dolphins give birth to live young.
- _____ 14. Scientists think that the clicks and whistles produced by dolphins serve no purpose.
- _____ 15. Dolphins can show affection for one another.
- _____ 16. Dolphins never hunt with other dolphins. They always hunt alone.
- _____ 17. Dolphins eat mainly fish and squid.
- _____ 18. Dolphins are related to whales.

Name: _____

Date: _____

DOLPHIN OR SHARK?



Compare and Contrast:

Standing on the beach, you spot a dorsal fin cutting through the water—but is it a dolphin or a shark? Although shark and dolphin fins share some characteristics, a closer look reveals which type of animal actually is swimming nearby.

Straight trailing edge = shark fin

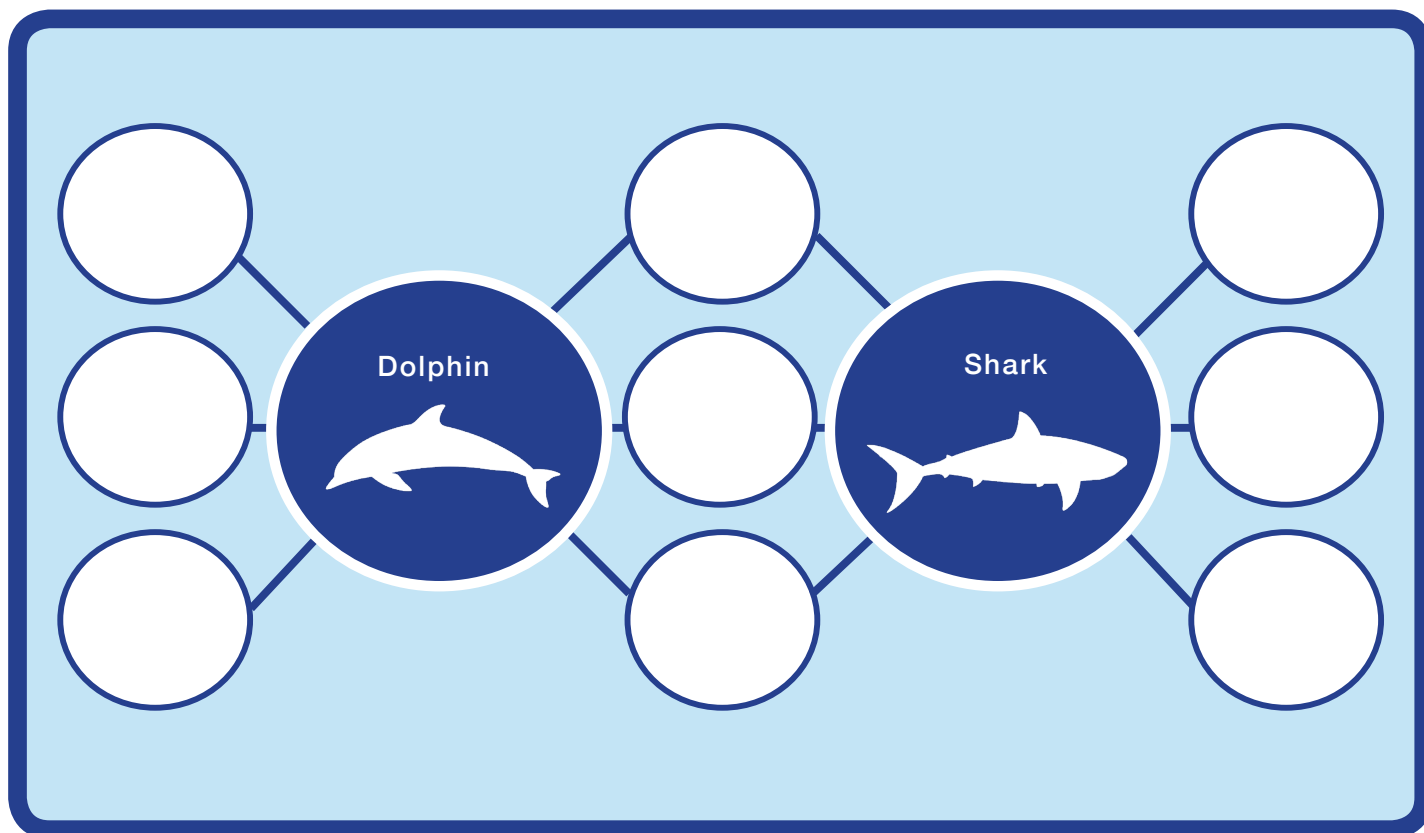


curved trailing edge = dolphin fin



What are some other similarities and differences between dolphins and sharks?

REMEMBER—circles in the middle are for what makes them similar, and circles on the outsides are for what makes them different.



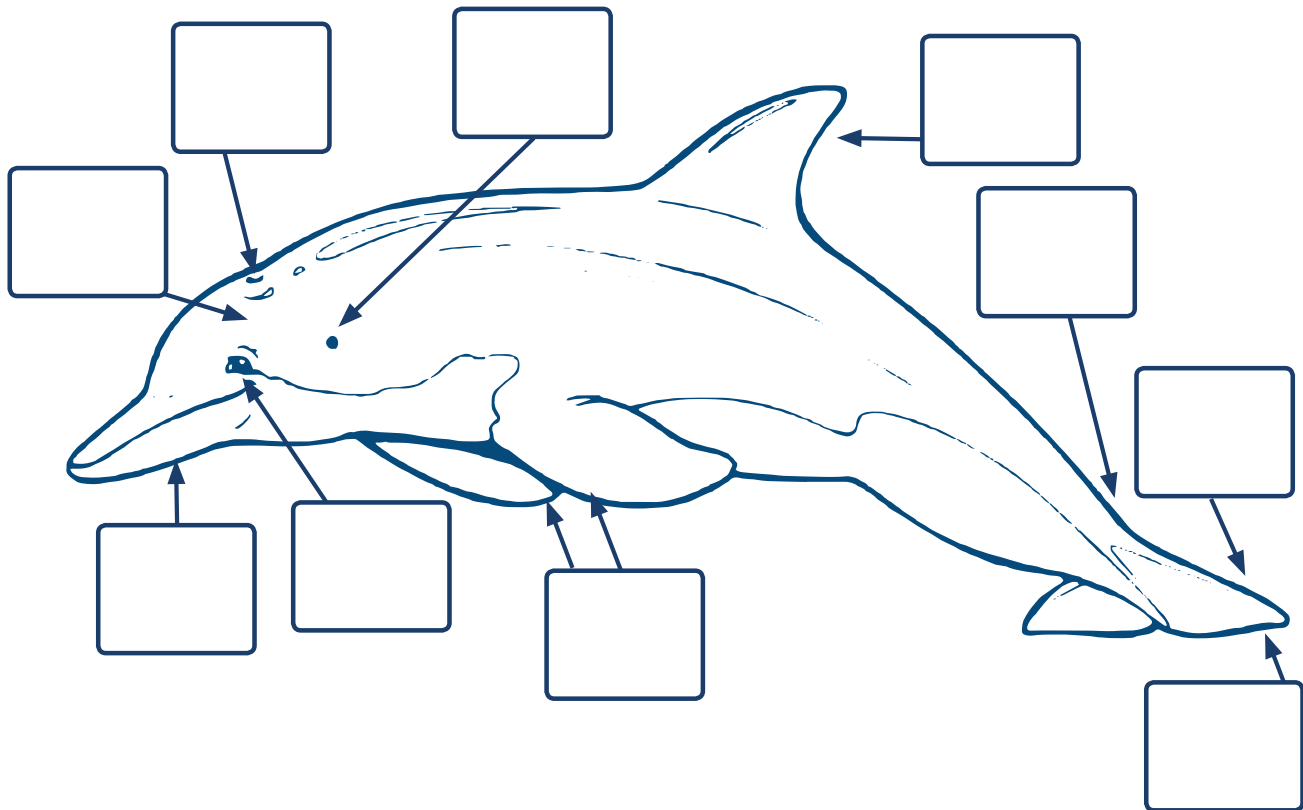
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Date: _____

BOTTLENOSE DOLPHIN ANATOMY



Read the information about the anatomy of a bottlenose dolphin. Use the wordbank to label the picture below.



WORD BANK:

ear

melon

dorsal fin

median notch

beak

blowhole

pectoral fin

peduncle fin

flukes

eye

BOTTLENOSE DOLPHIN ANATOMY:

1. **Beak** - a dolphin's mouth
2. **Blowhole** - the hole on top of the dolphin's head used for breathing
3. **Dorsal fin** - helps to provide steering and keeps the dolphin upright in the water
4. **Flukes** - the two lobes of a dolphin's tail
5. **Median notch** - the indentation between the two flukes
6. **Melon** - fatty tissue on the forehead of a dolphin involved in echolocation, acts to produce vocalizations & to focus beams of vibrations
7. **Pectoral fins** - the two paddle-shaped front limbs of dolphins, used for steering and stopping
8. **Peduncle muscle** - the powerful tail muscle the dolphin uses to swim through the water

DOLPHIN COMMUNICATION EXPLORATION



Introduction:


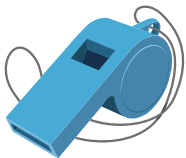
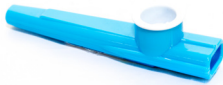

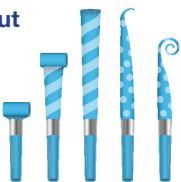

Dolphins live together in groups called pods. Pods vary in size from just a few dolphins to more than one thousand. Scientists think that these mammals have a complicated language system. They communicate with each other using whistles, clicks, and cries. This lets them recognize, locate, and help each other. They respond to each other's whistles and calls, and make noises when playing or hunting, or when predators are near. When dolphins recognize a distress call, they will follow it in search of a lost friend or relative. Every dolphin has its own unique whistle, which other dolphins recognize.

Materials: (for teacher use, teacher should demonstrate each of the sounds produced):

- Balloon*
- Whistle
- Kazoo
- Guiro (or similar instrument)
- Blow-out Noise Maker or Party Horn
- Noise Maker
- *(inflate, but don't tie – let air out slowly while pinching the neck to produce a squeak/whistle)
- Use these materials for the following activities.

Activity 1: The Name Game

Every dolphin has its own unique whistle, which other dolphins recognize. Have students give themselves dolphin names using a combination of the materials cards (they should choose no more than 3). Students then create a nameplate table tent for their "dolphin name". Try using the dolphin names for the day.

Balloon 	Whistle 	Kazoo 
Guiro 	Party Horns or Blow Out Noise Makers 	Noise Maker 



Name: _____

Date: _____

DOLPHIN COMMUNICATION EXPLORATION



Activity 2: Four Corners

Before the activity, you will want to create four large signs, each with a different action on it (**Hunt, Flee, Rescue, Play**). Post each sign in one of the four corners of your room.

As a class, assign a sound or combination of sounds for the following:

- Shark
- Food/Fish
- Help
- Let's Play
- I'm Lost
- Boat
- Family
- Friend
- Net

Make the assigned sound for one of the situations on the list. Tell students to go to the corner of the room labeled with the action that matches what their first response would be if they were a dolphin. Once all students are settled into a corner, invite them to share some of the reasons they went to that corner.

Situation	Sound
Shark	
Food/Fish	
Help	
Let's Play	
I'm Lost	
Boat	
Family	
Friend	
Net	



Name: _____

Date: _____

BEING DOLPHIN: DOLPHIN FEEDING RATIOS GAME



Materials Needed: Number Cube(s), Worksheet.

Atlantic bottlenose dolphins work together to separate a group of bait fish away from the shoal. The group is made up of _____ bait fish. The dolphins' mission is to eat as many fish as possible before the group disperses.

You will roll the number cube(s) to determine how many bait fish the dolphins eat on each turn, then write a part to whole ratio representing the number of bait fish eaten and another part to whole ratio representing the number of bait fish remaining in the group. An example is shown below. The ratio representing the number of bait fish remaining in the group becomes your starting ratio for the next roll of the number cube(s).

Starting Ratio	Number Rolled	Ratio of Bait Fish Eaten	Ratio of Bait Fish Remaining
Ex. 50/50	3.	3/50	47/50



BEING DOLPHIN: BLUBBER LAB



One question that frequently gets asked about dolphins, especially those that live in cold water environments, is how do dolphins stay warm?

Though they are mammals, dolphins have very little hair—they lose most of it before they reach maturity. This means that to stay warm in the ocean, they rely heavily on their blubber for insulation. Depending on the species of dolphin, the thickness of a dolphin's blubber can vary considerably.

What You Need:

- 1-2 gallon bucket
- Ice
- Water
- Vegetable shortening
- Zip lock bags (quart size works best)
- Timer
- Thermometers
- Duct Tape

What You Do:

1. Fill a one or two gallon bucket half full with cold water. Add 1-2 cups of ice. This ice bath will be a great representation of the dolphin's cold water environment.
2. Since you aren't a dolphin, you don't have blubber. You need to find a suitable blubber substitute. Fill a zip lock bag (make sure the bag is big enough to fit your whole hand inside) with shortening, enough to form a thick layer in the bag. The fat molecules in shortening make them act a little like blubber.



3. Put your hand inside a second zipper lock bag of the same size and push it into the shortening-filled zipper lock bag. Spread the shortening around the zipper lock bags until the inner bag is covered.
4. Fold the top of the inner zipper lock bag over the top of the outer zipper lock bag, keeping the shortening between the two. Duct tape the fold in place so that the shortening doesn't come out.
5. Make a "control" glove by putting the other two zip lock bags inside each other. This will give you the same amount of plastic, but with no insulating "blubber" layer.
6. Put your hand in the control glove and stick it in the ice water. Time how long you can keep it there before it gets too cold for you.
 - Control Glove Time: _____
7. Now put your hand in the glove with the blubber in between the bags and submerge it in the water. Time how long you can keep it there. Can you hold your hand in the water longer?
 - Blubber Glove Time: _____
 - Was this longer? Yes No
8. Put a thermometer in the control glove and put the end in the water. Wait 1 minute. Record the temperature.
 - Control Glove Temperature After 1 Minute: _____
9. Do the same thing with the blubber glove.
 - Blubber Glove Temperature After 1 Minute: _____
 - What is the difference between the two temperatures? _____

Blubber helps keep animals warm because it acts as an insulator. An insulator slows down the transfer of heat, keeping the animal's body heat from escaping and protecting it from the cold.

* **Extension Activity:** Try using other materials in the same fashion to find out which insulator works best. Ex. Cotton balls, packing peanuts, dirt or sand ...pretty much anything that you can fit between two zip lock bags.



THE OCEAN AND YOU



Introduction:

People use the ocean for transportation, as a source of food and minerals, and for recreation. All water eventually reaches the ocean, so the things we do on land also affect the oceans. Coastal animals, such as bottlenose dolphins, and ocean habitats are likely to be affected by pollution, habitat destruction, heavy boat traffic, and global climate change. Conservation means taking care of our environment by wisely managing its resources. We do this by interacting with the ecosystem in responsible ways. You are conserving when you turn off lights in an empty room, when you recycle, and when you turn off water while you are brushing your teeth.

Action:

1. As a class, discuss how humans interact with the ocean ecosystem both negatively and positively. Introduce the terms pollution and conservation.
2. Distribute copies of The Ocean & You worksheet to each student.
3. Divide students into small groups (up to four students) to complete their worksheet. Students will fill in their group members' names at the top of the chart. They will mark an X in the boxes underneath the students' names if they have ever done any of those activities.
4. Students will total the amount of X's they have for each activity and write the results in the "Totals" column. As an extension, older students may calculate percentages or create bar graphs of their results.
5. When the groups are finished, compare the results as a class.
6. Discuss how much you use the ocean and its resources. Discuss ways to help conserve ocean resources and resources worldwide. Students write down one way they will help to conserve resources and protect the environment. Examples include: "I will remember to shut off lights when I leave a room."
"I will bring a reusable lunch bag to school instead of a paper or plastic bag."
"I will recycle aluminum cans and plastic bottles at home."



Name: _____

Date: _____

THE OCEAN AND YOU



Introduction:

Write your name and your group members' names in the top line. Ask each group member if they have ever used the ocean for the activities listed below. If they have, put an X in the box below their name, next to that activity. Do the same for the conservation questions. Then, write the total number of X's you have for each question in the "Totals" column. Compare your results with other groups.

Names:					Totals:
How do we use the ocean?					
Boating					
Fishing					
Visiting the Beach					
Surfing					
Swimming					
Eating Seafood					
Snorkeling					
Tubing					
Other					
How do we conserve?					
Recycling					
Turning Off Lights					
Cleaning Up Litter					
Conserving Water					
Other					

To help conserve resources and protect our oceans and the environment, I pledge to:



Name: _____

Date: _____

HOW DO WE CONSERVE? CLASS GRAPH



Recycling

Turning off lights

Cleaning up litter

Conserving water

Other

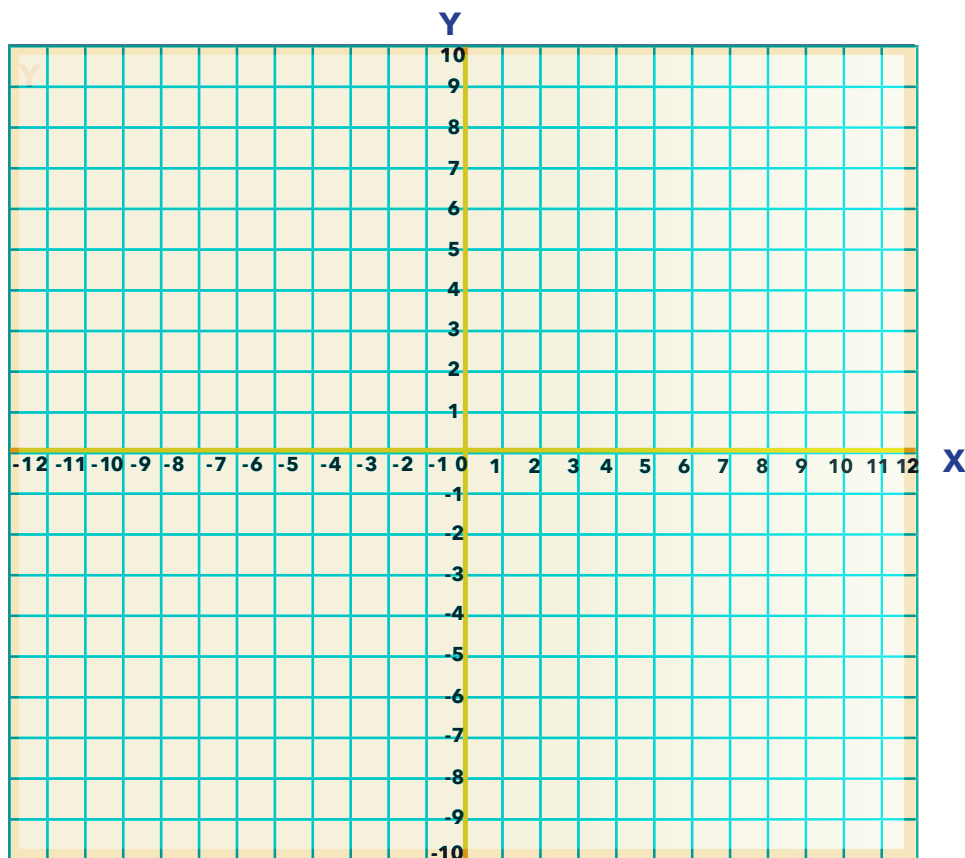
Name: _____

Date: _____

BEING DOLPHIN: DOLPHIN GRAPHING



Atlantic bottlenose dolphins are inquisitive, intelligent and energetic. Graph the location of each dolphin by plotting a point at the given coordinates. Label your points with capital letters, then give the location of each point (Quadrant (Q) I, II, III, IV, x-axis, y-axis) on the line provided. **REMEMBER:** Quadrants are numbered counterclockwise starting in the top right.

Dolphin A is jumping at $(-7, 4)$ _____Dolphin B is diving at $(5, 0)$ _____Dolphin C is jumping at $(9, 5)$ _____Dolphin D is diving at $(3, -7)$ _____Dolphin E is jumping at $(-1, 9)$ _____Dolphin F is diving at $(-2, -10)$ _____Dolphin G is jumping at $(4, 1)$ _____Dolphin H is diving at $(0, -2)$ _____Dolphin I is jumping at $(-6, 8)$ _____Dolphin J is diving at $(-8, -3)$ _____

Name: _____

Date: _____

DOLPHIN LENGTH GRAPHING ACTIVITY



Using the following data (information), graph the lengths of the dolphins on the graphing worksheet. Determine an appropriate scale for your graph. Label each column with the name of one of the dolphins from the table. For each dolphin, color the correct number of boxes to show how long it is. Give your graph an appropriate title.

Average Length of Adult Dolphins by Species	
Common Dolphin	9 feet
Atlantic Spotted Dolphin	7.5 feet
Atlantic Bottlenose Dolphin	12 feet
White-Beaked Dolphin	10 feet
Dusky Dolphin	7 feet
Fraser's Dolphin	9 feet
Heaviside's Dolphin	5.5 feet
Spinner Dolphin	8 feet
Hourglass Dolphin	6 feet
Risso's Dolphin	13 feet

- 1) Which dolphin is the longest? _____
- 2) Which dolphin is the shortest? _____
- 3) Which dolphin has the same length as a Fraser's Dolphin? _____
- 4) Which dolphin is shorter a Heaviside's Dolphin or a Dusky Dolphin? _____
- 5) Which dolphin is longer, a White-Beaked Dolphin or a Spinner Dolphin? _____
- 6) Which dolphin is shorter, an Hourglass Dolphin or a Dusky Dolphin? _____
- 7) How much longer is a Risso's Dolphin than a Common Dolphin? _____
- 8) How much shorter is a Heaviside's Dolphin than an Atlantic Spotted Dolphin? _____



Name: _____

Date: _____



BEING DOLPHIN: ECHOLOCATION LAB: TEACHER OVERVIEW



(Adapted from: https://www.teachengineering.org/activities/view/cub_soundandlight_lesson4_activity1)

Materials List

Each group needs:

- 1 blindfold
- Clipboard or hardcover book
- 2 pencils
- Crayons or colored pencils
- 2 copies of the Echolocation Worksheet
- 2 copies of the Echolocation Bar Graph Worksheet
-

Introduction/Motivation:

Animals and engineers use sound waves to "see" underwater or in the dark. Does anyone know what it is called when animals do this? (Answer: echolocation) Engineers developed a technology based on the natural echolocation that animals use. It works pretty much the same way, but we call it something different. Does anyone know what it is called? (Answer: Sonar). *Sonar* is a great example of how engineers can learn from the world around us and use ideas from nature to create new ways to help people. Today you are going to have a chance to try out echolocation for yourselves. We are going to break up into teams of two. Then, one person wears a blindfold and guesses where the sound is coming from as the other person makes snapping or clapping noises in front of them, behind them or to their side. It is a fun challenge to learn about echolocation. Are you ready to try it out? Let's get started!

Procedure

Background:

Sound travels in waves through the air to the ears. Depending on the location and intensity of the sound, the ear can usually locate the direction of the sound.

Animals—such as bats, whales and dolphins—use sound to see by emitting sounds that echo off other objects and then return to their ears. Depending on how long it takes the sound to reach their ears and the direction it comes from, these animals can determine the location of the object.

Engineers have mimicked this natural echolocation in Sonar and Radar, which work basically the same way as echolocation in animals.

In this activity, students will try to determine the location of nine sounds made from various locations in front of, behind or to the side of them. Try to spread students out as much as possible so that each team can focus on their own clapping or snapping noises without being distracted by other teams. Conducting this activity outside or in the school gym is an excellent idea.

Before the Activity

- Copy the attached worksheets (each student needs one Echolocation Bar Graph Worksheet and one Echolocation Worksheet).
- Make enough blindfolds (large bandanas or strips of fabric) so that each group of two students has one blindfold.

With the Students:

1. Go over the Activity Introduction.
2. Break the students into groups of two.
3. For each team, have one student sit in a chair and the other stand nearby with the Echolocation Worksheet.
4. Have students gently blindfold their partner so that they are unable to see. Remind them not to peek!
5. Have the non-blindfolded student snap or clap their fingers while the other student guesses the location from where the snap came.
6. Students should record their partner's response on the Echolocation Worksheet after each snap/clap.
7. Have students follow the Echolocation Worksheet for all nine snaps or claps, and record all responses on the sheet. Students should put a check mark if their partner guessed correctly and an X if they guessed incorrectly.
8. Ask students to write down the number of times they guessed correctly for each location (side, behind or in front).
9. Have students switch places and repeat the procedures. Once both students have guessed, have them give each other their worksheets, so they can use them to create their own bar graphs.
10. Help students color in their Echolocation Bar Graph Worksheet with the number of times that they guessed correctly for each location.
11. Talk as a class about the results! Discuss why some locations may be harder to guess than others. (Be aware that noise from other teams will likely be a contributing factor to erroneous guesses.)

Safety Issues

- To ensure groups do not trip over and bump into one another, conduct this activity in an area with plenty of space.
- Remind students to stay seated while blindfolded.

Troubleshooting Tips

- Some students may not feel comfortable being blindfolded; if this is the case, allow them to complete the experiment with their eyes closed.



Name: _____

Date: _____

ECHOLOCATION LAB ECHOLOCATION WORKSHEET



Recorder (team partner): _____

Location	Actual Guess	Correct?	Incorrect?
Front			
Behind			
Right Side			
Left Side			
Behind			
Front			
Left Side			
Front			
Right Side			
Behind			
Left Side			
Right Side			

Number of times the “front” guess was correct: _____

Number of times the “right side” guess was correct: _____

Number of times the “left side” guess was correct: _____

Number of times the “behind” guess was correct: _____



Name: _____

Date: _____

ECHOLOCATION LAB – ECHOLOCATION BAR GRAPH WORKSHEET



Number of times the “front” guess was correct: _____

Number of times the “right side” guess was correct: _____

Number of times the “left side” guess was correct: _____

Number of times the “behind” guess was correct: _____

3				
2				
1				
	Front	Right Side	Left Side	Behind

Which location had the most correct guesses? (If it was a tie, you can write both locations).

Which location had the least correct guesses?

What are your ideas about why some locations were easier or harder to guess?



ANSWER KEY

Fintastic Fact or Fiction?

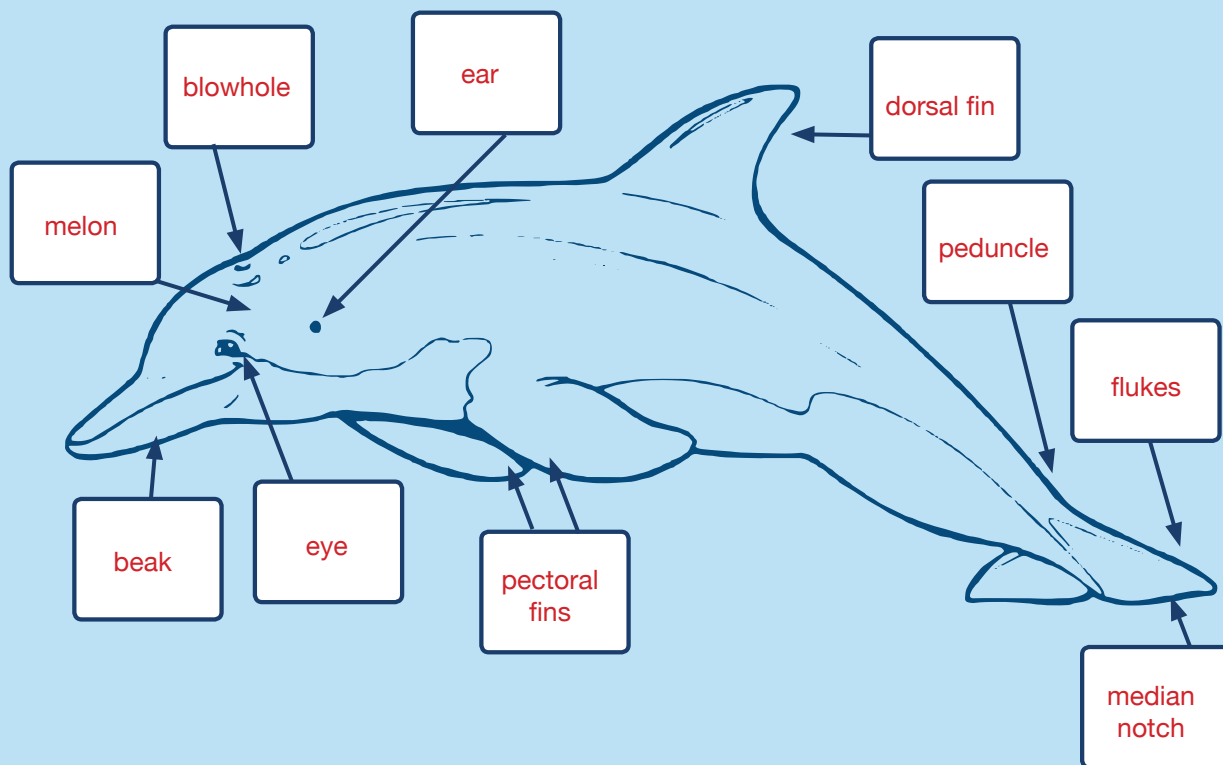
- | | |
|------|-------|
| 1. + | 10. - |
| 2. + | 11. + |
| 3. - | 12. - |
| 4. + | 13. + |
| 5. - | 14. - |
| 6. - | 15. + |
| 7. + | 16. - |
| 8. + | 17. + |
| 9. + | 18. + |

Dolphin or Shark? - Compare and Contrast (Answers may vary. Sample below.)

Dolphin: Breathe air through a blowhole, mammal, warm-blooded

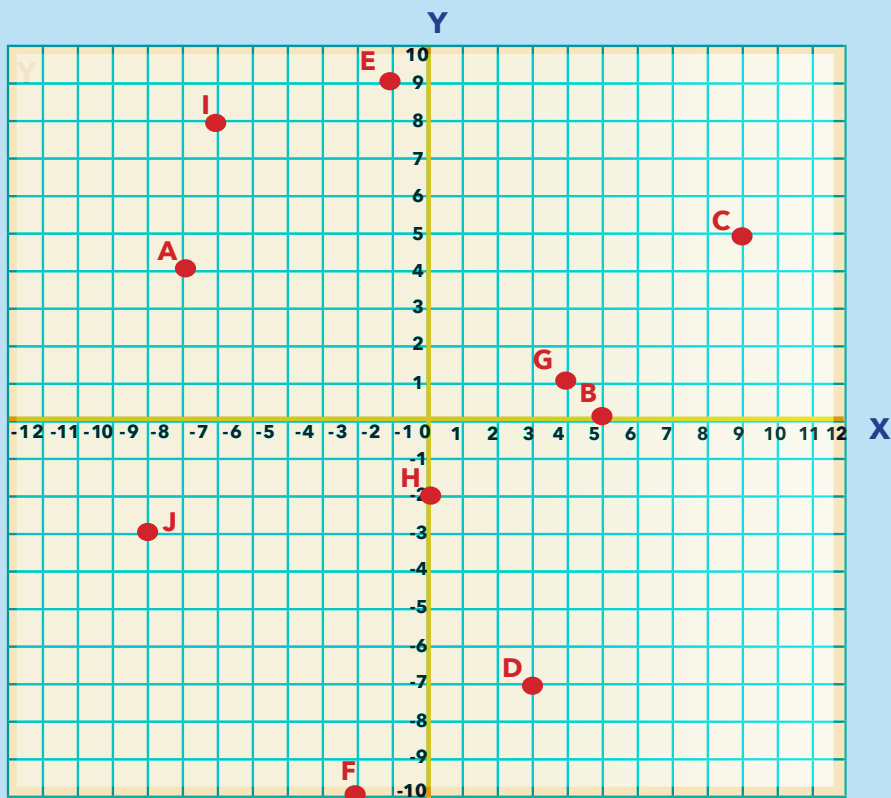
Shark: Breathe underwater through gills, fish, cold-blooded

Both: Torpedo shaped body, found in all oceans of the world, carnivores



ANSWER KEY

Being Dolphin: Graphing Dolphin

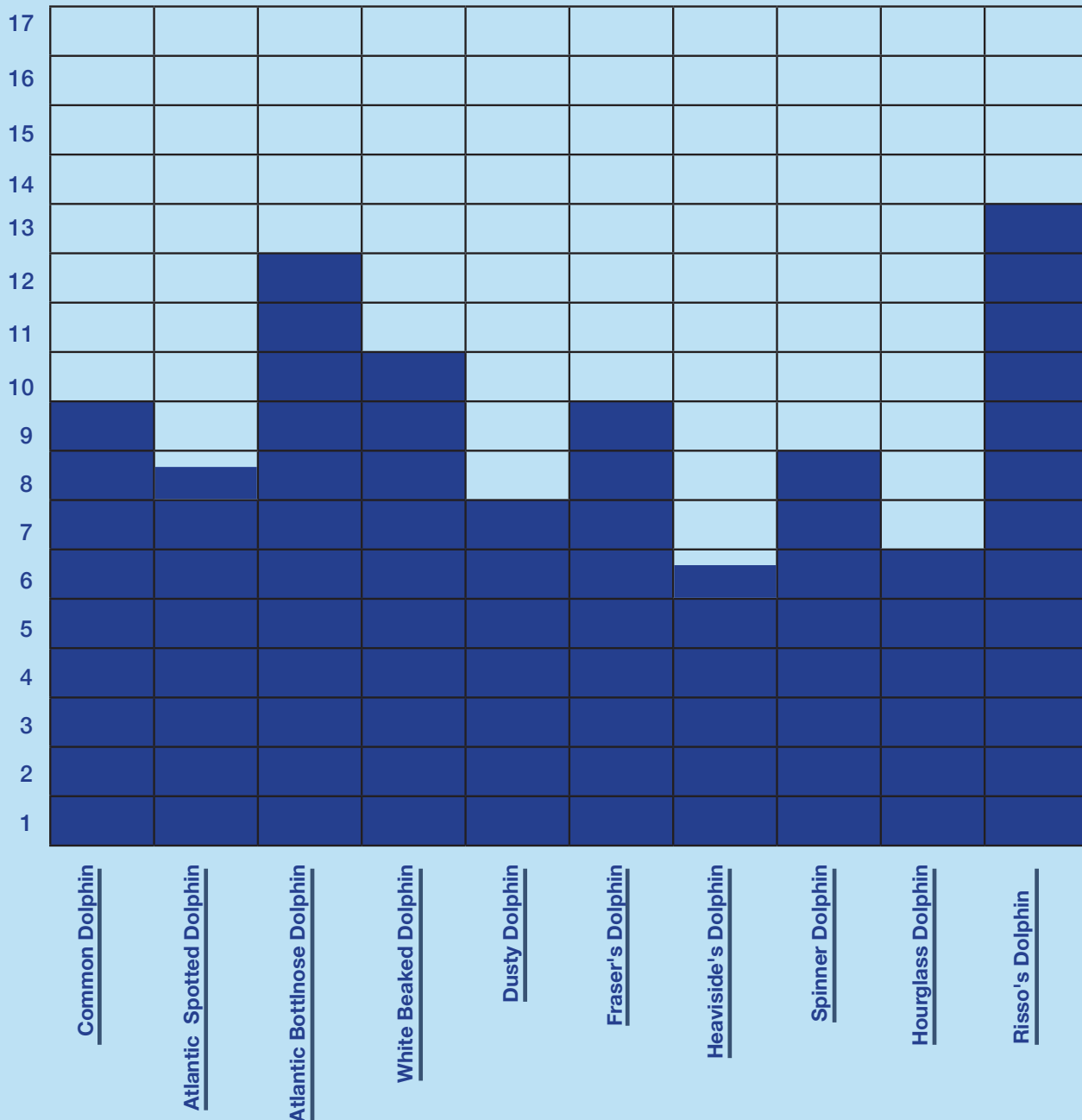


1. Dolphin A = Quadrant II
2. Dolphin B = on the x-axis
3. Dolphin C = Quadrant I
4. Dolphin D = Quadrant IV
5. Dolphin E = Quadrant II
6. Dolphin F = Quadrant III
7. Dolphin G = Quadrant I
8. Dolphin H = on the y-axis
9. Dolphin I = Quadrant II
10. Dolphin J = Quadrant III

ANSWER KEY

Dolphin Length Graphing

1. Risso's Dolphin
2. Heaviside's Dolphin
3. Common Dolphin
4. Heaviside's Dolphin
5. White-Beaked Dolphin
6. Hourglass Dolphin
7. 4 feet longer
8. 2 feet longer





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