Echolocation and SONAR
Speed of Sound

Name: _____

Echoes

Quick fact: *Dolphins can make out an echo only 3 meters or 15 feet from an object. The speed of sound in water is 4.5 times faster so the echo is 4.5 times sooner!!*

Speed of Sound

1. Why do you think you can see fireworks before you hear the boom?

Stand the farthest point from your instructor and listen while your instructor hits a metal post with a rock. We will be set up 200 meters (approximately 200 yards) apart – that's two football fields.

2. Do you hear the sound at the same time that you see the rock hit the post?

3. Why do you think this is?

4. How can you tell how far away lightning is?

5. The speed of sound in air is about 340 meters per second or 750 miles per hour. Calculate how many seconds it takes sound to travel 1 mile (time = distance / speed).

Identification from a distance
Move halfway towards your instructor (100 meters away). *At this distance – using echolocation - a dolphin can identify small fish (6 inches in length) and some bats can identify a certain type of moth (1.25-inch wingspan).*

6. Identify the objects being hold up and fill in your best guess, even if it's just the color. Circle the object when you "know" you have it figured out. For example, at 40 meters if you figured out that one object is a fish. In the 40-meter column circle the word fish.

   Once you've seen all 7 objects, move up to the next marker which will be 80 meters. Identify the 7 objects again. Etc…

Item	100 meters	80 meters	60 meters	40 meters	20 meters
1					
2					
3					
4					
5					
6					
7					

Quick Facts: *A bat can identify a mosquito within 3 meters (15 feet)!*

Fish finding
One person is the dolphin, the rest are objects or fish
- The dolphin ***must*** keep their eyes closed (no cheating!!).
- Objects are to lay, sit or stand in one place.
- Fish move around *slowly* winding in and out of objects.

The dolphin tries to locate a fish.
- The dolphin makes a sound, "beep" and any object or fish in front of the dolphin is required to respond.
- objects will say, "object", and
- Fish will say, "fish".

Once the dolphin touches a fish, that fish becomes the dolphin.

7. What can the dolphin do to make their job of fish finding easier?

8. Does it help if they beep more often?