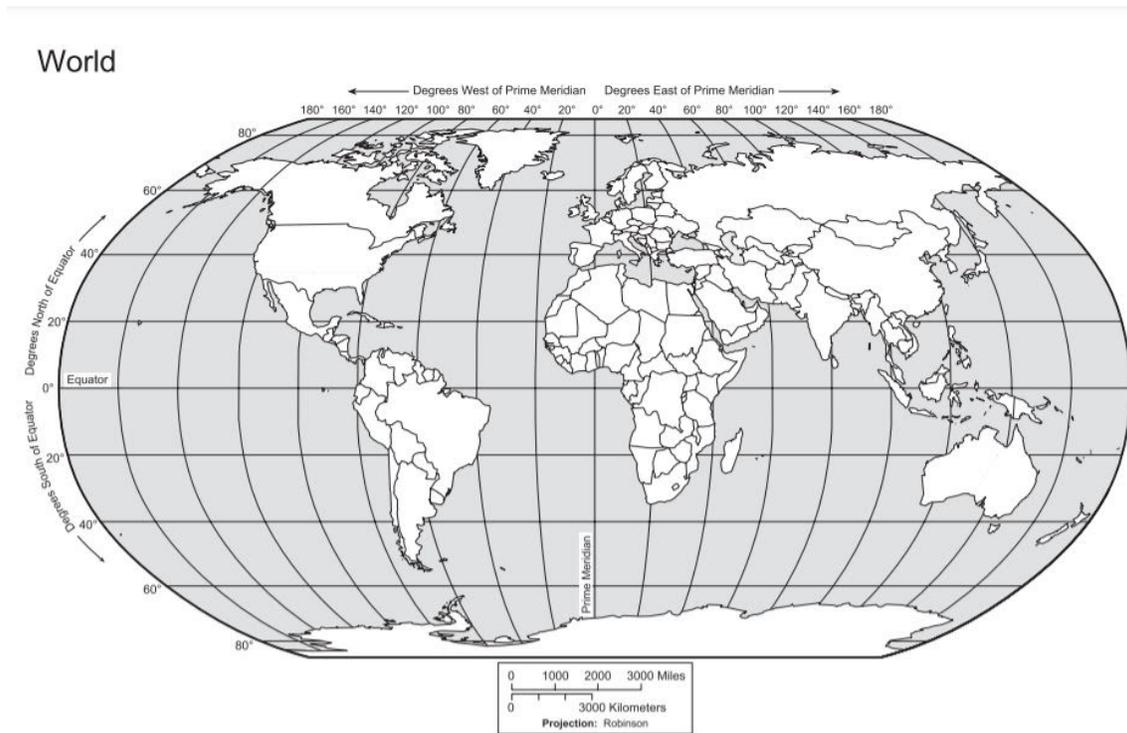


Name _____ **Humpback Whale Migration Patterns**

“Humpback whales live throughout the world's major oceans. They can travel great distances during their seasonal migration with some animals migrating 5,000 miles between high latitude feeding grounds and winter mating and calving areas in tropical waters. In the North Pacific, some humpback whales migrate from Alaska to Hawai'i—they can complete the 3,000-mile trip in as few as 28 days. While calving, they prefer shallow, warm waters commonly near offshore reef systems or shores. Humpback whale feeding grounds are generally in cold, productive waters.” Source: NOAA Fisheries

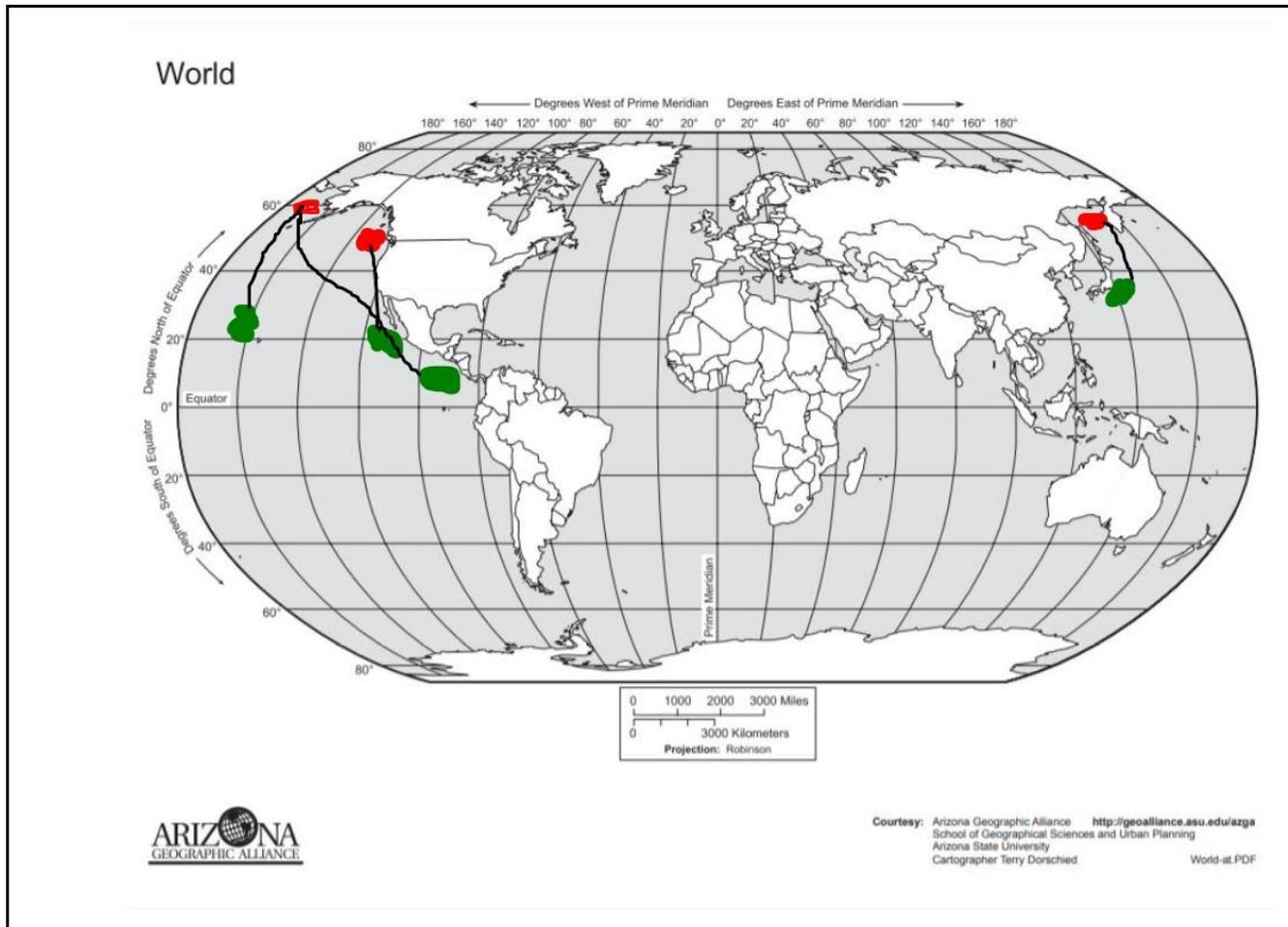
There are at least 13 distinct populations of humpback whales, each with specific breeding and feeding areas across the globe. For this activity, we will focus on the four populations in the North Pacific. From the list below, **choose 2 populations** and **map them**. Be sure to include the following: **color the breeding area green, color the feeding area in red, draw their migration path between the two.**

- The Mexico population, which breeds along the Pacific coast of **Mexico** and the Revillagigedo Islands, transits the Baja California Peninsula, and feeds across a broad range from California to the Aleutian Islands, **Alaska**.
- The Central America population, which breeds along the **Pacific coast of Central America**, including off Costa Rica, Panama, Guatemala, El Salvador, Honduras, and Nicaragua, and feeds off the **West Coast of the United States** and **southern British Columbia**.
- The Hawai'i population, which breeds in the **main Hawaiian Islands** and feeds in most of the known feeding grounds in the North Pacific, including the Aleutian Islands/ Bering Sea, Gulf of **Alaska**, Southeast Alaska, and northern **British Columbia**.
- The Western North Pacific population, which breeds in the areas of **Okinawa, Japan**, and the **Philippines**, and feeds in the northern Pacific, primarily in the West Bering Sea and off the **Russian coast** and the **Aleutian Islands**. Source: NOAA Fisheries



Courtesy: Arizona Geographic Alliance <http://geoalliance.asu.edu/azga>
School of Geographical Sciences and Urban Planning
Arizona State University
Cartographer Terry Dorschied
World-at.PDF

Humpback Whale Migration Patterns KEY



Suggested Scoring Guide

Requirements for the 2 populations selected	Points Possible	Points Earned
Breeding area colored green	5	
Feeding area colored red	5	
Migration path is drawn between the two areas	5	
Total	15	

Name _____

Humpback Whale Math

1. Female humpback whales are usually longer than males. The largest female on record was 89 feet, though this can't be reliably verified.

2. The lifespan of the humpback whale ranges from 45-100 years! How many weeks is this?

_____ weeks

3. Humpback whales eat around 1.5 TONS of food per day! How many pounds is this?
(1 ton=2000 pounds)

_____ pounds

4. Humpback whales spend 10% of their time on the surface, some of which is spent doing acrobatics. When all or most of the whale's body is out of the water, it is called **breaching**. They can jump as high as 50 feet out of the water and can dive as deep as 700 feet.

5. Whales resurface every 7-20 minutes to breathe.

How many seconds is

What part of an hour is

7 minutes? _____

7 minutes? _____

20 minutes? _____

20 minutes? _____

6 Some humpbacks migrate the 3000 miles from Alaska to Hawaii in as little as 28 days or 4 weeks. This is approximately **110 miles per day**.

7. While some have made the trip in 28 days, humpbacks migrate on average for 6-8 weeks. How many days is

6 weeks? _____

8 weeks? _____

8. The longest humpback whale migration was from the American Samoa to the Antarctic peninsula--a distance of 11,706 miles. If a whale travels 100 miles per day (700 miles per week), how long would the trip take in _____? (round off your numbers if needed)

_____ days

_____ weeks

Name _____

Humpback Whale Math Key

1. Female humpback whales are usually longer than males. The largest female on record was 89 feet, though this can't be reliably verified.

2. The lifespan of the humpback whale ranges from 45-100 years! How many weeks is this?

_____ **2340-5200** _____ weeks

3. Humpback whales eat around 1.5 TONS of food per day! How many pounds is this? (1 ton=2000 pounds)

_____ **3000** _____ pounds

4. Humpback whales spend 10% of their time on the surface, some of which is spent doing acrobatics. When all or most of the whale's body is out of the water, it is called **breaching**. They can jump as high as 50 feet out of the water and can dive as deep as 700 feet.

5. Whales resurface every 7-20 minutes to breathe.

How many seconds is

What part of an hour is

7 minutes? _____ **420 seconds** _____

7 minutes? _____ **7/60** _____

20 minutes? _____ **1200 seconds** _____

20 minutes? _____ **20/60 or 2/6 or 1/3** _____

6 Some humpbacks migrate the 3000 miles from Alaska to Hawaii in as little as 28 days or 4 weeks. This is approximately **110 miles per day**.

7. While some have made the trip in 28 days, humpbacks migrate on average for 6-8 weeks. How many days is

6 weeks? _____ **42 days** _____

8 weeks? _____ **56 days** _____

8. The longest humpback whale migration was from the American Samoa to the Antarctic peninsula--a distance of 11,706 miles. If a whale travels 100 miles per day (700 miles per week), how long would the trip take in _____? (round off your numbers if needed)

_____ **117** _____ days _____ **17** _____ weeks

Name _____

Directions: Complete this worksheet while reading Ghost Fishing is Killing Coastal Wildlife <https://www.savecoastalwildlife.org/stop-ghost-fishing>

What Is Ghost Fishing and Why Should We Care?

Ghost fishing is fishing gear that has been _____
_____ but continues to trap and kill wildlife. It includes
fishing _____ or other
gear that have been abandoned or lost in the ocean by fishermen. Ghost fishing gear will (it's
only a matter of time) _____, entangle and potentially kill
_____, smother habitat, and act as a hazard to
_____. (10 points)

New Vocabulary: **navigation**—moving a boat, plane, or car

smother: to keep something from breathing

entangle: to get caught in strings or wires and cannot get free

hazard: a source of danger

What are 3 important facts you learned about ghost fishing? (15 points)

- 1.
- 2.
- 3.

What are 2 questions you have about ghost fishing? (10 points)

- 1.
- 2.

What is 1 solution to the problem of ghost fishing that is given in the reading? (5 points)

What Is Ghost Fishing and Why Should We Care? Answer Key

Ghost fishing is fishing gear that has been **lost, dumped, or abandoned** but continues to trap and kill wildlife. It includes fishing **nets, traps, long lines, rope**, or other gear that have been abandoned or lost in the ocean by fishermen. Ghost fishing gear will (it's only a matter of time) **trap animals**, entangle and potentially kill **marine life**, smother habitat, and act as a hazard to **navigation**. (10 points)

New Vocabulary: **navigation**—moving a boat, plane, or car

smother: to keep something from breathing

entangle: to get caught in strings or wires and cannot get free

hazard: a source of danger

What are 3 important facts you learned about ghost fishing? (15 points)

1. **answers will vary**

2.

3.

What are 2 questions you have about ghost fishing? (10 points)

1. **answers will vary**

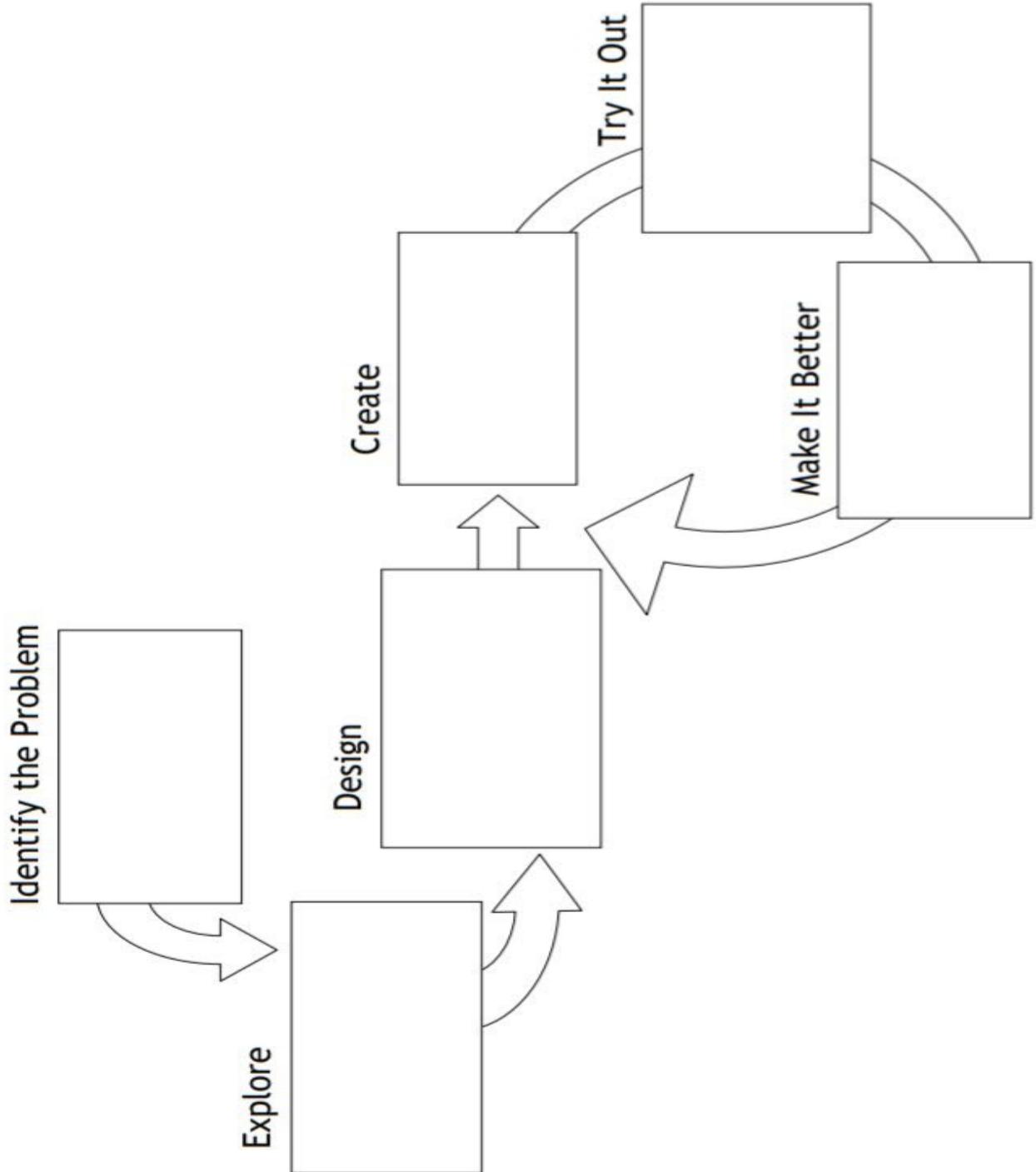
2.

What is 1 solution to the problem of ghost fishing that is given in the reading? (5 points)

Recycling, clean-ups, buy back program, biodegradable fishing gear (nets),

Engineering Design Process

Name _____



Big Book Page Scoring Guide

Name _____

Requirements	Points Possible	Points Earned
Title includes the name of the solution	5	
3 images are after the title and have appropriate captions	15	
A 2 to 3 sentence summary explains the solution	15	
A list of materials and resources needed is included	10	
Page is neatly done	15	
Good grammar and spelling are present	10	
Total Possible	70	

Big Book Page Scoring Guide

Name _____

Requirements	Points Possible	Points Earned
Title includes the name of the solution	5	
3 images are after the title and have appropriate captions	15	
A 2 to 3 sentence summary explains the solution	15	
A list of materials and resources needed is included	10	
Page is neatly done	15	
Good grammar and spelling are present	10	
Total Possible	70	

Name _____

Ghost Fishing Solution Discussion

Directions: Using your big book page, fill out the following sentence stems. During the discussion, you will fill out 1-3 (your solution). Then you will read your solution (1-3) to your partner. Your partner will fill out 4-5 and read it to you.

1. My solution to ghost fishing is

2. The materials/resources that I would need are

3. I believe this would work because

Response by Partner

4. Thank you for presenting your solution of (summarize the solution given)

5. **Pick One:** While your solution was well thought out. I believe your solution could work because

OR

I don't think it would work because
