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**PITTSBURGH ZOO  
& PPG AQUARIUM**

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**Favorite Zoo Activities**

Popcorn Food Chain

Fast Food Chain

African Adventures Word Search

Wetland Wonders Word Search

Jungle Word Search

Coral Critter Word Search

PA Word Search

Where in the World are Tropical Rainforests?

Penguin Snacks

Salt Dough Coral Polyps

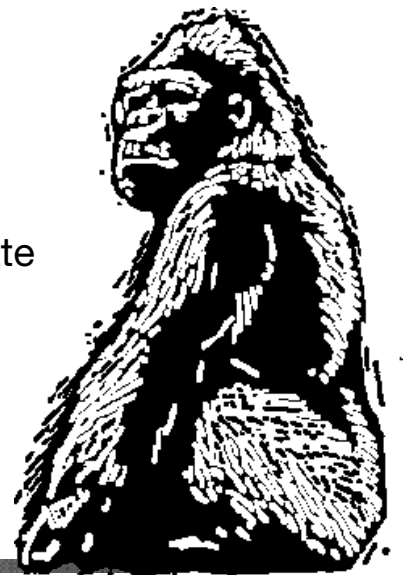
Where in the World are Coral Reefs?

Peculiar Partners

Coral Reef Chants

Where in PA is . . . . ?

1st Base, 2nd Base, 3rd Base . . . Homestate



## Popcorn Food Chain

Pre-Visit Activity  
Time: 30 minutes

### **OBJECTIVES:**

- TSW define food chain.
- TSW identify parts of the food chain.
- TSW act out the energy transfer within the food chain.

### **MATERIALS:**

Air-pop popcorn maker, popcorn, 1 large bowl, 4 medium bowls, 3 small bowls, 6 large cups, 4 small cups, 2 tablespoons, set of 28 plant and animal cards, yarn, clothespins (1 per student)

### **PROCEDURES:**

#### **ANTICIPATORY SET:**

Make the cards using the picture bank and index cards. You may wish to laminate them for durability. There should be: 12 plants (acacia), 6 herbivores (giraffe), 3 carnivores (lion), 3 omnivores (ostrich), 2 scavengers (hyena), and 2 decomposers (termite). Make tags for students by attaching the cards to a clothespin on a piece of yarn. Place the large bowl, popcorn maker, extra popcorn, and tablespoons on the teacher's desk. Select students to represent:

- Plants - 4 medium bowls, 3 students per bowl
- Herbivores - 3 small bowls, 2 students per bowl
- Carnivores - 3 large cups, 1 per student
- Omnivores - 3 large cups, 1 per student
- Scavengers - 2 small cups, 1 per student
- Decomposers - 2 small cups, 1 per student

For younger students, you may wish to simplify the food chain. Select 16 plants, 8 herbivores, and 4 carnivores. Distribute tags, bowls, and cups.

#### **DEVELOPMENT OF LESSON:**

1. Explain that every living thing needs energy. All our energy on Earth comes from the sun. Pop about 1/2 c. popcorn kernels into the large bowl.
2. Plants get energy directly from the sun. Allow the plant groups to fill their bowls from the large sun bowl. Don't eat yet!
3. Herbivores get energy from the plants they eat. Allow the herbivore groups to fill their bowls from the plant bowls.
4. Carnivores get energy from the animals they eat. Allow the carnivores to fill their cups from the herbivore bowls. (Younger students go to step 8.)
5. Omnivores get energy from both animal and plant sources. Allow the omnivores to fill their cups from the herbivore or plant bowls.
6. Scavengers eat leftover kills and dead animals. Allow the scavengers to fill their cups from any animal source.

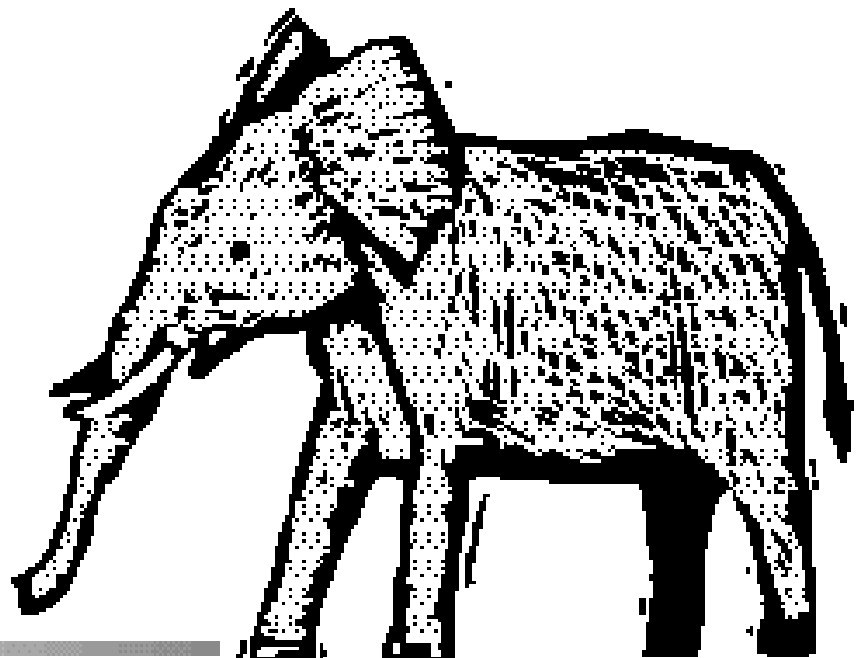
7. Decomposers deal with anything left, both animal and plant remains. Allow the decomposers fill their cups from any cup or bowl. After they eat, the nutrients are returned to the soil for plants to use. When the decomposers finish eating, they are to take 1 tablespoon of popcorn in the popper. When they do, the sun (teacher) adds 1 tablespoon of popcorn as well.
8. Allow the students to eat the popcorn in their bowl or cup. If they want more, they can refill their bowl or cup, but only from the appropriate energy source. For example, if a carnivore wants more, they must get it from an herbivore bowl. They may not take it directly from the sun.

**SUMMARY:**

When energy is transferred in this way, it is called a food chain. Each organism is linked to the others. Discuss how the animals in the food chain are linked. What would happen if a bad drought caused some of the plants to die? You may wish to act this out by removing one of the plant groups as a food source.

**EXTENSIONS:**

- Decomposers are often unattractive and considered to be pests. What would happen if they were wiped out? Act this out by removing the decomposers. Allow them to munch, but do not have them add popcorn to the popper. The sun only adds 1 tablespoon of popcorn every 5 - 10 minutes. If the bowl of any organism becomes empty and can not be refilled, they are out of the food chain. What happened?
- Expand your vocabulary by completing the African Adventures Word Search.



## Fast Food Chain

Post-Visit Activity  
Time: 30 minutes

### **OBJECTIVES:**

- TSW list parts of a food chain.
- TSW identify the part of the food chain represented by different African animals.
- TSW construct their own food chain.

### **MATERIALS:**

5 sets of food chain cards (sun, acacia, giraffe, lion, hyena, termite), stopwatch or watch with a second hand.

### **PROCEDURES:**

#### **ANTICIPATORY SET:**

Make the cards as in "Popcorn Food Chain." Ask the students to list the parts of a food chain and describe what they eat. Ask for examples of each and write them on the board.

#### **DEVELOPMENT OF LESSON:**

*WARNING: This game often becomes loud and rowdy while the Pit is open*

1. Divide the class into 4 groups and designate an area for each to work. Have a large, open, central area called the Pit. The object of the activity is for each group to build the longest possible food chain. All the teams are working to get all 6 cards that make a complete food chain.
2. Shuffle the 5 sets of cards well. Give each team 6 cards, face down. They are not allowed to look at them until a signal is given to do so. The remaining cards are placed face down in the Pit.
3. Announce "Check your cards!" The students then turn over their cards and put together as much of the food chain as possible. If anyone has a complete chain of 6, they call out "Food Chain!" The team reads off their chain, and the class confirms whether or not their chain is complete.
4. Most likely, the teams will have several duplicate cards. These cards may be traded while the Pit is open, one card per round. Each group selects a person to be their trader for the first round. This is the only person allowed in the Pit. Announce "The Pit is open!" At this time, the students send their trader into the Pit to trade one card. They may trade with each other or select a mystery card.
5. To trade with each other, they hold their card facing them and ask if the other students wish to trade. It is up to the students whether or not they reveal what card they have. They may trade more than once, and with more than one person. To take a mystery card, the trader puts the card face down on the floor of the Pit and selects another card. To encourage trading in your class, you can make the rule that they must trade with someone. If they don't like the trade, they may then take a mystery card.

6. After 15 - 20 seconds, announce "The Pit is closed!" All traders must leave the Pit with whatever card is in their hands and return to their area.
7. Announce "Check your cards!" as in step 3. If there are no complete chains, open the Pit for a new round of trading. Teams should select a new trader and decide which card to trade.
8. Continue playing until one team has a complete food chain.

**SUMMARY:**

Review the food chains of the teams. Identify the parts of the food chain as you do. What did they have? What were they missing? What food chain part were ALL the teams missing? (omnivore). Discuss whether the chain would really be able to work without an omnivore. Why or why not?

**EXTENSIONS:**

- Use the picture bank to build other food chains. If the students want to include animals that are not pictured, have them draw them or use photos.
- Act out the drama of the food chain using sock puppets created by the students.





M E E R D C A M O U F L A G E R E C  
S S U T A O I D E C O M P O S E R A  
C E Y L R H S T M P T O C S N O A R  
A R G A B S M T I P E D E E I M S O  
V E N D H R T N C U B O P C R E M O  
E T P R E D A T O R N A R T R N S F  
N O T C H U S D N O C T U R N A L A  
G P E H E L A E S S N A M C E S C F  
E N B A R D V R E T E T R E N E A G  
R S L B B E A E R C A R N I V O R E  
E N C I I C N B V N I I D H D U E O  
D F S T V O N C A O M N I V O R E D  
I I A A O S A I T O W E W A S F C I  
P G A T R Y T N I E A T E A E G A U  
R I L C E S A F O O D C H A I N C R  
E T E I W T E S N A E E F U T L D N  
Y M M E E E I T N E R M H O N A I A  
E W Y E V M T F O E N E R O T S T L

CAMOUFLAGE  
CARNIVORE  
CONSERVATION  
DECOMPOSER  
DIURNAL

FOODCHAIN  
ECOSYSTEM  
HABITAT  
HERBIVORE  
NOCTURNAL

OMNIVORE  
PREDATOR  
PREY  
SAVANNA  
SCAVENGER



M E E R D C A M O U F L A G E R E C  
S S U T A O I D E C O M P O S E R A  
C E Y L R H S T M P T O C S N O A R  
A R G A B S M T I P E D E E I M S O  
V E N D H R T N C U B O P C R E M O  
E T P R E D A T O R N A R T R N S F  
N O T C H U S D N O C T U R N A L A  
G P E H E L A E S S N A M C E S C F  
E N B A R D V R E T E T R E N E A G  
R S L B B E A E R C A R N I V O R E  
E N C I I C N B V N I I D H D U E O  
D F S T V O N C A O M N I V O R E D  
L I A A O S A I T O W E W A S F C I  
P G A T R Y T N I E A T E A E G A U  
R I L C E S A F O O D C H A I N C R  
E T E I W T E S N A E E F U T L D N  
Y M M E E E I T N E R M H O N A I A  
E W Y E V M T F O E N E R O T S T L

# Primary



# Wetlands

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

WATER  
AQUATIC  
CYCLE  
HABITAT  
LAKE

WETLAND  
CATTAILS  
POND  
BEACH  
POLLUTION

MARSH  
BOG  
SWAMP  
RIVER  
RAIN

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

WATER  
AQUATIC  
CYCLE  
HABITAT  
LAKE

WETLAND  
CATTAILS  
POND  
BEACH  
POLLUTION

MARSH  
BOG  
SWAMP  
RIVER  
RAIN



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

RAINFOREST  
PREHENSILE  
CANOPY  
FORESTFLOOR  
EMERGENT  
UNDERSTORY

NOCTURNAL  
DIURNAL  
PRIMATE  
HABITAT  
ECOSYSTEM

EQUATOR  
CONSERVATION  
CARNIVORE  
OMNIVORE  
HERBIVORE



HERBIVORE HEAD UHUEO  
EAOATERESMCEUNSBLR  
KEERACEHDEOQFDWGH  
FOEUICOALASPOEPBDL  
VMDFAODBNOYRRRREO  
HNIIFARSISHSISEAM  
EIUOAEFTINTMSTHEN  
TVRITATAASIEATONR  
EONETEDTASMTFRNFCT  
JRADLRMIFHUELYS  
HELEESAOGHSOTIRNU  
CARNIVOREVEOUBLETR  
OSENTCEWLCFRIFSN  
DOTCONSERVATIONTGA  
TOIOSEOSDMGOEESL  
RAAARHHGISSTLYBOAA  
CANOPYMKRAANEDLISE  
LSIROATSP EQUATORHH



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

ALGAE  
ANEMONE  
CAMOUFLAGE  
COLONY  
CONSERVATION  
CORAL

REEF  
ECOSYSTEM  
EQUATOR  
FOODCHAIN  
HABITAT  
HERBIVORE  
INVERTEBRATE

OMNIVORE  
POLYP  
PREDATOR  
PREY  
SKELETON  
TENTACLES



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



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

PREDATOR  
PREY  
CARNIVORE  
HERBIVORE  
OMNIVORE  
NOCTURNAL

DIURNAL  
ECOSYSTEM  
NICHE  
TORPOR  
HIBERNATION  
FOREST

WETLAND  
HABITAT  
CONSERVATION  
PREHENSILE  
CAMOUFLAGE



CARNIVORE EGTAEFFTNT  
WSTTTTHAGAOCCONHTOF  
PISNWETLANDOAOUXMO  
DUTSAERELEPNICDTNR  
SHTYMDCDPERSRITBIE  
HABITATIRFEEUUUNVS  
AAPROANLELHRLRRAOT  
HSRYTNHEYUEVENNW RM  
ESENI TIRE TNAYAA TED  
RTDERSB OAFSTILLLOWE  
BEATNTTEPIXIINLLROE  
INTAIERETFLOLIEPAT  
VMOECRNLDMENAESONF  
OUREHLA HREONRERR OP  
RMTOEATVFDEEOEIFOU  
EODAE EITCAMOUFLAGE  
EUSRODOF ECOSYSTEMC  
NBINHNDNELA OOURBORP

## Where In the World Are Tropical Rainforests?

Time: 45 minutes

### **OBJECTIVES:**

TSW identify the equator and the Tropics of Cancer and Capricorn.

TSW identify at least 3 of the Earth's continents.

TSW identify, on a map, where at least 3 tropical rainforests are located.

TSW identify at least 3 food products whose ingredient(s) come from the tropical rainforest and the continent/country of its origin.

### **MATERIALS:**

"It's a Jungle Out There!" map, "Origins of Common Rainforest Food Products" sheet, crayons or markers or pencils, beach-ball globe, completed "Riches from the Rainforest" sheets from "Jungle In the Pantry" activity.

### **PROCEDURES:**

#### **ANTICIPATORY SET:**

Have students toss the globe around the room, allowing each student a turn to locate a country and/or continent where a tropical rainforest is located.

#### **DEVELOPMENT OF LESSON:**

1. Have students label the equator, the tropics, and the continents on the map.
2. Pass out the student surveys taken from home, asking them to label 3 to 10 food products on the map. Use the "Origins of Common Rainforest Food Products" sheet to find each product's continent of origin. Write the products on the appropriate continent.

#### **SUMMARY:**

Once they have completed the activity, ask students to name 3 products they found at home and the continent/country of its origin.

**\*NOTE:** This map activity is to be completed after students have finished surveying their homes for rainforest products. A sheet is attached that contains a sample list of food items found on different continents that can be used. Depending on the level of your class, take a trip to your library and have students do further research for other products' country/continent of origin.



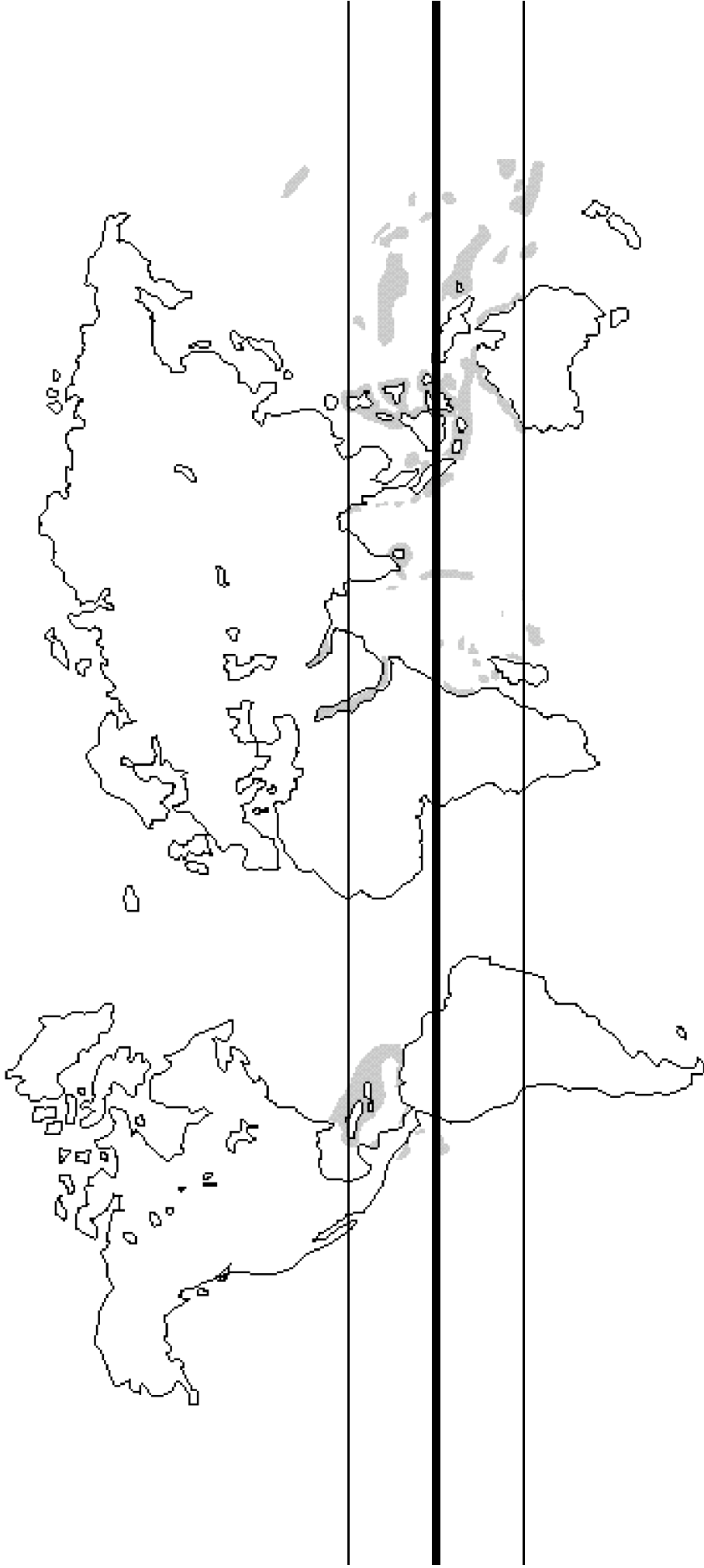
**LABEL THESE LOCATIONS:**

1. Equator
2. Asia
3. Australia
4. North America
5. Africa

-Tropical Forest



6. Tropic of Cancer
7. Tropic of Capricorn
8. South America
9. Central America
10. Europe



## Penguin Snacks

Make and enjoy these snacks with your class as a math lesson or in preparation for a Penguin Party.

### Popcorn Ball Penguins - makes 6 servings (1 penguin each)

- 1/2 c. honey
- 1/4 c. sugar
- 5 c. warm popped popcorn
- 12 chocolate chips
- 6 candycorns
- butter

Combine the honey, sugar and 1 T. butter in a 2-quart microwave-safe container. Microwave, covered with plastic wrap, on HIGH (100%) for 5 1/2 to 7 minutes, or until it reaches 275°F. Pour over warm popcorn; stir with a wooden spoon until popcorn is thoroughly coated. Cool until mixture may be safely handled (it should still be warm). Butter hands and form pear-shaped balls. Press 2 chocolate chips for eyes and a candy corn for a beak into the smaller end. Place on waxed paper and allow to set.

### Penguin Pops - makes 16 servings

- 16 - 4 oz. cups
- 1 envelope blue drink mix
- 16 clean craft sticks
- 16 candy fish

Prepare the drink mix according to package directions. Place cups on a tray for easy freezing. Fill the cups 3/4 full with the drink mix. Drop in one candy fish. Cover the cups with a piece of plastic wrap. Poke the craft sticks through the plastic wrap into the cups. Freeze overnight. Remove from the cups by tearing paper off or by dipping into warm water. Serve immediately.

### Fish Cookies - makes 3 - 4 dozen

- 1 1/2 c. confectioners' sugar
- 1 c. butter-flavored shortening
- 1 egg
- 1 t. vanilla
- 1/2 t. almond extract
- 1 t. baking soda
- 1 t. cream of tartar
- 2 1/2 c. all-purpose flour
- sprinkles, candies, raisins and/or nuts for decoration

Preheat oven to 350°F. Lightly grease cookie sheets. Mix the sugar, shortening, egg, vanilla and almond extract until creamy. Add the flour, baking soda and cream of tartar until well combined. Roll out dough to about 1/4 inch thick. Cut out with well-floured fish-shaped cookie cutters. Press sprinkles, candies, raisins, and/or nuts into dough to decorate (or add afterwards with icing). Bake for 8 to 10 minutes, and allow to cool.

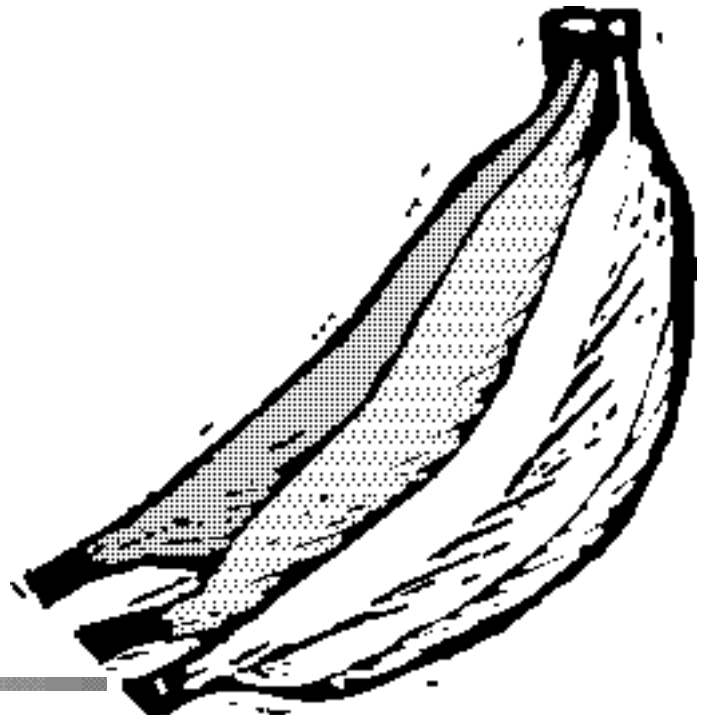
## Carrot "Krill" Curls - makes 3 - 4 cups curls

3 or 4 large carrots

Peel carrots and cut in half lengthwise. Applying extra pressure, use a vegetable peeler to peel off curls (they will curve like the body of the krill). Put into a bowl of ice water and refrigerate until they are ready to serve (overnight is best - they curl more). Serve with your favorite dip.

### **MATH EXTENSIONS:**

- Weigh the individual ingredients. Make a bar graph of the individual ingredients. Older students can find the total weight and the percentage weight for each ingredient. They can create a pie chart.
- Practice converting and adding fractions! Add the amounts of each ingredient to find the total number of cups. Convert teaspoons (t.) and tablespoons (T.) into fractions of a cup (t = 1/48 c.; T = 1/16 c.)
- Use a kitchen or postal scale to weigh 1 c. krill curls. An Adélie penguin needs to eat about 3 1/2 pounds of krill a day to stay alive. How many cups of krill curls would that be? An Adélie penguin weighs about 12 1/2 pounds. What percentage of its body weight must it eat?



## Salt Dough Coral Polyps

Time: two 30 minute sessions

### OBJECTIVES:

3. 1. 4 A Know the similarities and differences of living things (life processes, external characteristics, basic needs).

TSW identify that corals are several shapes and colors.

TSW create a coral polyp.

### MATERIALS:

Pictures of corals, large mixing bowl, paper bowls or egg carton cups, several colors of tempera paint, paint brushes, small tree branch or twig, flour, salt, water, measuring cups,

### PROCEDURES:

#### **ANTICIPATORY SET:**

Use pictures, books or posters to review what students have learned about corals and coral reefs. Discuss that corals can be different colors, sizes and shapes.

#### **DEVELOPMENT OF LESSON:**

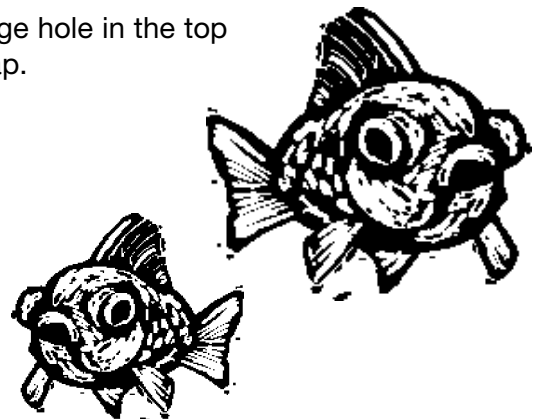
1. Have the students collect a small branch or twig for their polyp.
2. Mix a large batch of salt dough:  
Mix 1 cup salt with 4 cups flour.  
Add 1 1/2 cups warm water.  
Knead until mixture resembles a pastry like dough.
3. Create the polyp with an upside-down bowl or egg cup. Poke the branch or twig through the bottom.
4. Cover the twig with salt dough and let it dry for approximately four days.
5. Paint the polyp with tempera paint.

#### **SUMMARY:**

Create a class coral reef display in a large box for a diorama. Add pictures of other ocean animals.

-Or-

Make individual reef dioramas with shoeboxes. Cut a large hole in the top of the box for a window and cover it with blue saran wrap.



## Where in the World Are Coral Reefs?

Time: 45 minutes

### **OBJECTIVES:**

- 4. 6. 4 A Understand that living things are dependent on nonliving things in the environment for survival.
- TSW identify the equator and the Tropics of Cancer and Capricorn.
- TSW identify at least 3 of the Earth's continents.
- TSW recognize the Earth's oceans and where coral reefs are located.

### **MATERIALS:**

"Where in the World Are Coral Reefs?" map, crayons or markers or pencils, beach-ball globe.

### **PROCEDURES:**

#### **ANTICIPATORY SET:**

Have students toss the globe around the room. When a student catches it, ask him or her to locate one of the 3 imaginary lines that run horizontally around our planet (equator and tropics), one of the planet's oceans, and/or name an ocean animal. Continue until each student has had a turn.

#### **DEVELOPMENT OF LESSON:**

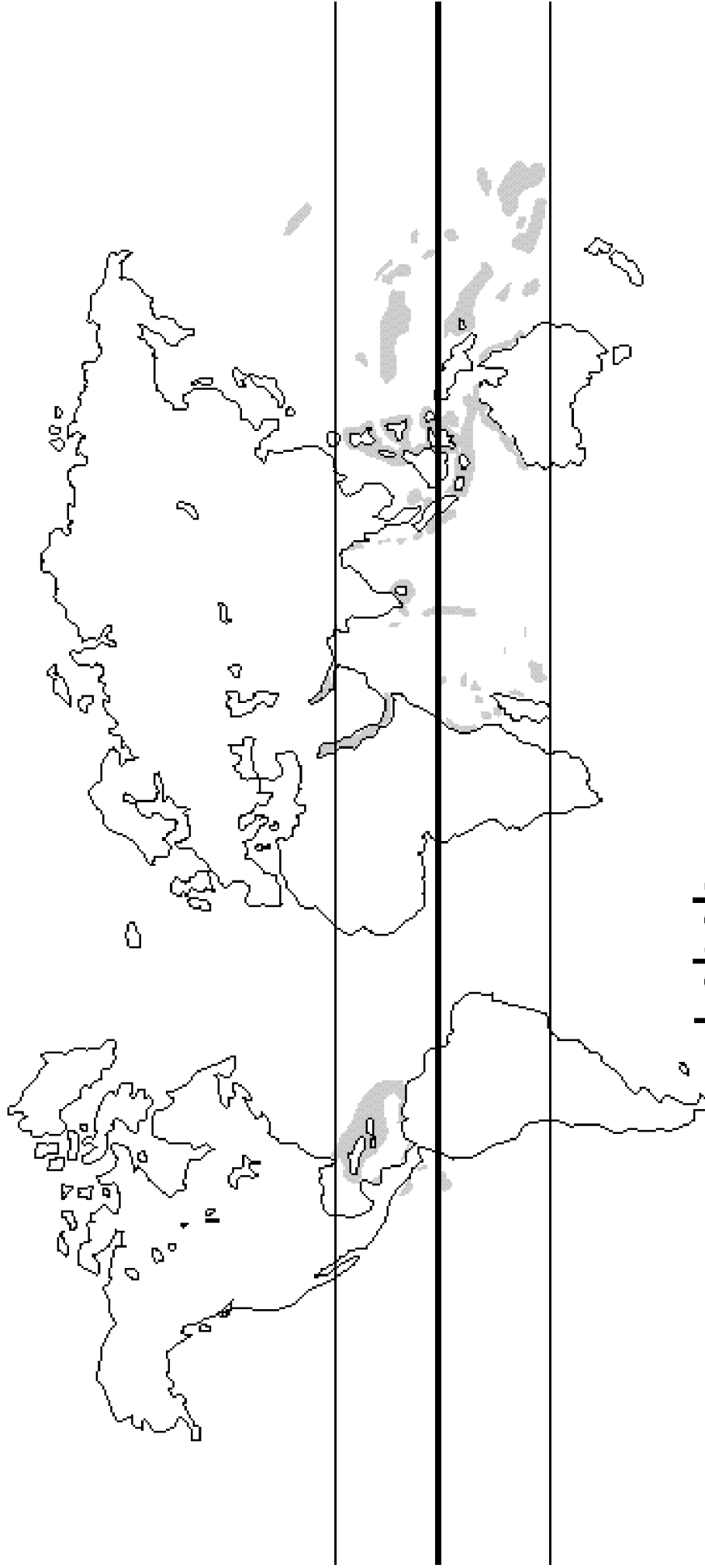
1. Have students label the oceans and the continents on the map.
2. Have students label the equator and the tropics on the map.
3. Have the students color the coral reefs all one color so that they may be easily distinguished from the oceans.

#### **SUMMARY:**

Discuss with the students which oceans have coral reefs and the continents/countries they are near.



# Where in the World are those Coral Reefs?



Label:



**CORAL REEF**

1. Equator
2. Tropic of Cancer
3. Tropic of Capricorn

**CONTINENTS**

4. North America
5. South America
6. Australia
7. Africa
8. Europe
9. Asia

**OCEANS**

10. Pacific Ocean
11. Atlantic Ocean
12. Indian Ocean

## Peculiar Partners

Time: 45 minutes

### **OBJECTIVES:**

- 4. 3. 4 C Understand that the elements of natural systems are interdependent.
- TSW define symbiosis.
- TSW identify symbiotic relationships.
- TSW create a story about a symbiotic partnership.

### **MATERIALS:**

“Partners” student page, “A Fish Tale” student page, “Peculiar Partners” information page, writing paper, stapler, crayons, markers, sequins, glitter, glue

### **PROCEDURE:**

#### **ANTICIPATORY SET:**

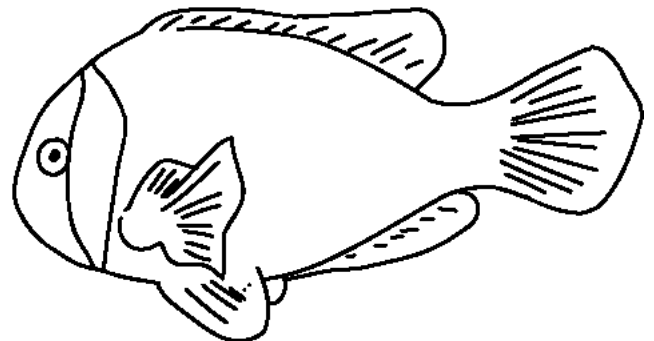
Discuss the meaning of symbiosis with your class. Give them a copy of “Partners”. Tell them that the pictures show examples of symbiosis on the coral reef. Have them try to guess what kind of partnerships the animals in the pictures share.

#### **DEVELOPMENT OF LESSON:**

1. Use the “Peculiar Partners” information page to discuss each symbiotic partnership. Point out differences and similarities. Do they have a similar partnership with anyone?
2. Have the students color the pictures on the “Partners” page. Give each student a copy of “A Fish Tale”. Staple writing paper to the page and cut out to make a shape book. You may want to have this done for younger students.
3. Have the students select one pair of partners to write about in their shape book. The story may be fact or fiction. Paste the picture on the front.
4. Decorate the cover of the book with sequins, glitter, markers, crayons, etc.

#### **SUMMARY:**

Share your stories!



## Peculiar Partners

Life is not easy in the oceans. Animals must have a way to survive. One of these is symbiosis. Symbiosis literally means “living together”. Whenever two different species are interdependent in a relationship that benefits one or both partners and harms neither, we say they are symbiotic. In the coral reef, there are many examples of this kind of peculiar partnership.

### **THE HERMIT CRAB AND THE SEA ANEMONE**

Crabs are a major food source in the ocean, so they have to find ways to avoid predators. Most crabs have hard shells to help protect them. Hermit crabs do not. To protect their soft bodies, hermit crabs live in the abandoned shells of snails and other similar animals. They are especially well protected if they attach a sea anemone to their shell. The sea anemone provides excellent camouflage, allowing the hermit crab to often go unnoticed. Though the sea anemone looks like an underwater flower, its “petals” are actually tentacles tipped with poisonous stinging cells. This makes many predators, especially the octopus, think twice before having crab for lunch. The sea anemone benefits, too. Normally stationary, it gets a free ride on the crab’s back and feeds on the crab’s leftovers.

### **THE CLOWNFISH AND THE SEA ANEMONE**

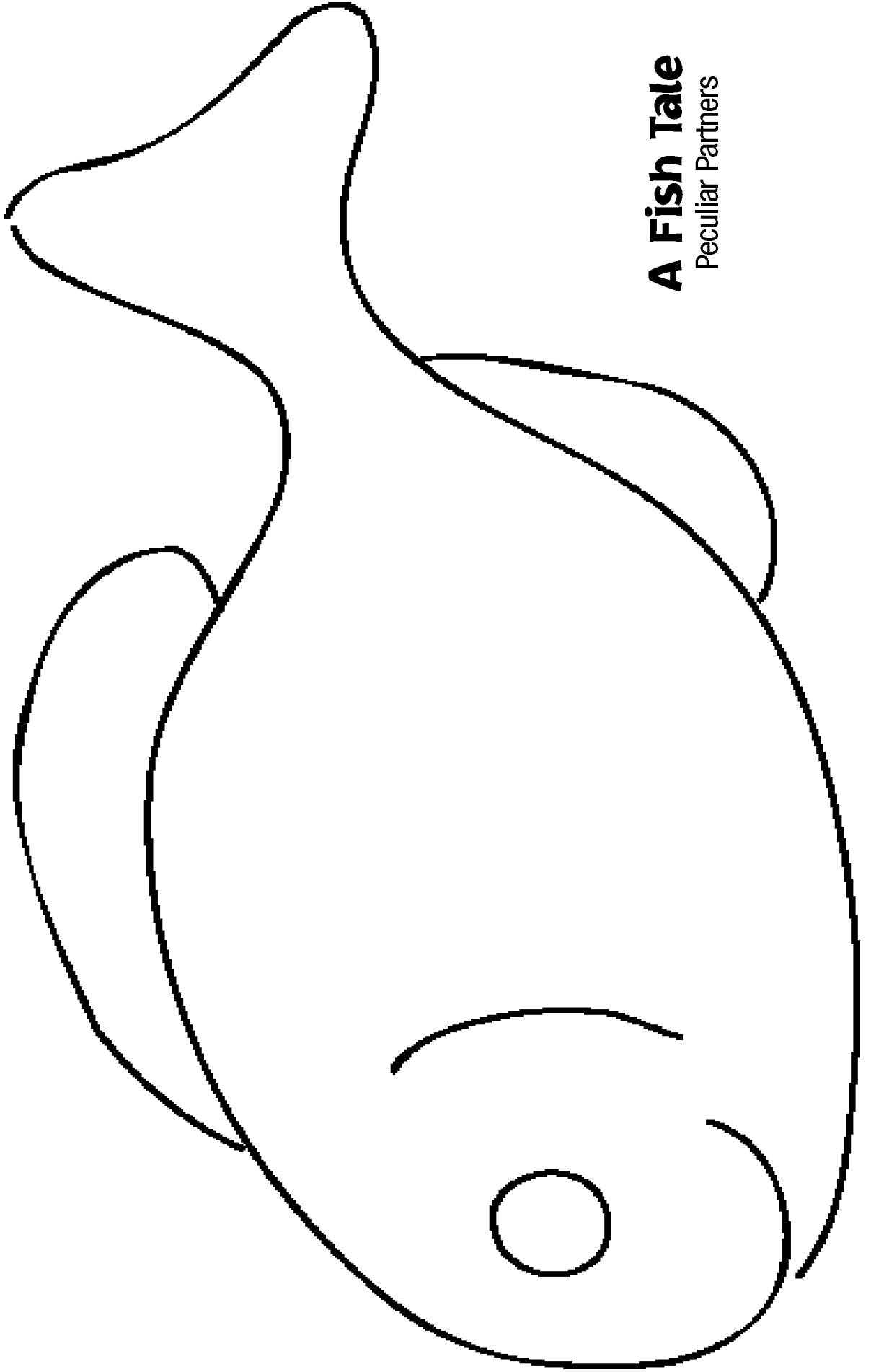
Clownfish, also known as anemone fish, make their homes within the stinging tentacles of the sea anemone. This provides them with a hiding place safe from predators, since other fish would be stung and, most likely, eaten by the sea anemone. Scientists think that the clownfish is able to do this because of a special mucous coating that masks its presence from the sea anemone. In return for a safe hiding spot, the clownfish chases away the sea anemone’s enemies, like the butterfly fish, which loves to eat them. The clownfish also cleans the anemone by eating scraps of food dropped among the tentacles. This gives the clownfish a free meal and keeps the sea anemone healthy.

### **THE PISTOL SHRIMP AND THE GOBY**

The pistol shrimp’s main occupation is to dig and clean a burrow to hide in. Because it devotes so much attention to this task, it is not very fast to notice danger. Fortunately, it has a fish watching out for it. The goby “stands guard” near the mouth of the burrow as the shrimp digs and cleans. When danger approaches, the goby dives into the safety of the burrow, alerting the shrimp to follow. This provides the goby with a safe place to hide, and allows the shrimp to dig and clean in safety.

### **THE GROUPER AND THE GOBY**

In the coral reef, where each fish has staked out its territory, there are certain areas set aside as cleaning stations. Gobies are one of several kinds of shrimp and small fish that provide a cleaning service for other fish that, at other times, would normally eat them. They “advertise” their service with elaborate movements like displaying fins, shivering, and posturing. Larger fish gesture in return to show that they want to be cleaned. Even though the law of the ocean is “eat or be eaten”, the huge grouper will open its mouth to be cleaned without harming any of the gobies. The gobies eat parasites and scraps of food they find caught in the grouper’s mouth. They also check over the fins, body and eyes of the grouper. This keeps the grouper healthy and free of parasites.



# A Fish Tale

Peculiar Partners

## Coral Reef Chants

Time: 30 minutes

### **OBJECTIVES:**

- 4. 3. 4 C Understand that the elements of natural systems are interdependent.
- TSW list animals that live in coral reefs.
- TSW create a chant about coral reef animals.

### **MATERIALS:**

Chart paper, markers, crayons, pencils, "Coral Reef Chants" student page, optional - ocean pictures, video, poster

### **PROCEDURE:**

#### **ANTICIPATORY SET:**

Duplicate the sample reef chant onto chart paper or the chalkboard and model the chant for the students. Repeat it together.

## Reef Chant

What do you see in the reef?  
I see a lobster in the reef.  
What else do you see in the reef?  
I see a shark and he's looking at me!

#### **DEVELOPMENT OF LESSON:**

1. Brainstorm a list of coral reef animals. Utilize pictures, posters or video for ideas. Build a web or word bank of coral critters. Use the chart or board for everyone to see.
2. Practice the chant by filling in the blanks with words from the word bank together.
3. Have the students work with a partner. Direct them to create their own chants with words from the word bank or to think of their own. Illustrate the chant after it is written.
4. Once they are finished, have the class chant around the room to hear what you might see in the reefs.

#### **SUMMARY:**

Display the chants and illustrations for everyone to share.

Display the chants and illustrations for everyone to share.

# CORAL REEF CHANTS

Create a chant about coral reefs with a partner. Draw the animals down below.

Written by: \_\_\_\_\_

Illustrated by: \_\_\_\_\_

## WHAT DO YOU SEE DOWN IN THE REEF?

I see a(n) \_\_\_\_\_ in the reef.

## WHAT ELSE DO YOU SEE DOWN IN THE REEF?

I see a(n) \_\_\_\_\_

And he's looking at me!



## Where In Pennsylvania Is...?

Time: 45 minutes

### **OBJECTIVES:**

- TSW recognize at least two major Pennsylvania rivers.
- TSW recognize at least two major Pennsylvania cities.
- TSW recognize Pennsylvania's two main mountain ranges.

### **MATERIALS:**

"Where in Pennsylvania is...?" map and answer sheet, pencils, large map of PA, blow-up beach ball globe

### **PROCEDURES:**

#### **ANTICIPATORY SET:**

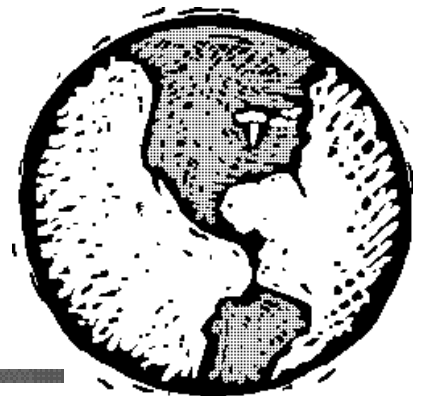
Have students toss the globe around the room, allowing each student a turn to locate North America and Pennsylvania. Also, name one animal that lives in PA.

#### **DEVELOPMENT OF LESSON:**

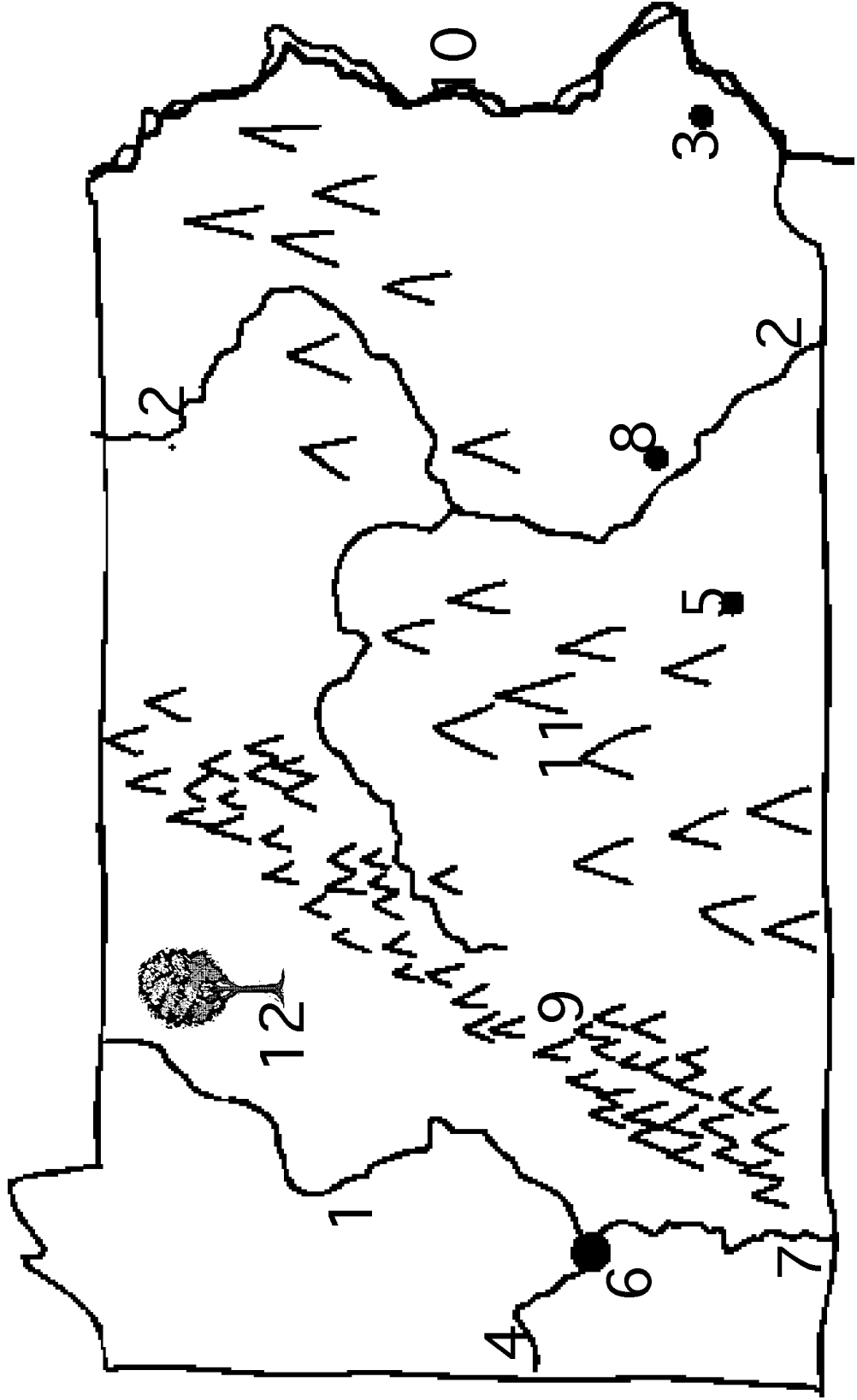
1. Pass out a Pennsylvania map and answer sheet to each student. Hold up a copy of the map or make it into an overhead. Tell them they have to label major Pennsylvania rivers, cities, and mountains. The dark squiggly lines are rivers, the large round dots are cities, and the triangles are the mountains. The numbers refer to the landmarks.
2. Hold up a copy of the answer sheet and tell them the number on the answer sheet refers to the number on the map. Give an example. For instance, number 8 on the answer sheet refers to number 8 on the map. The list of landmarks is found at the top of the answer sheet, and each answer is used only once. Give them 5 minutes to complete the ones they know, then bring out a large map of PA so they can locate the answers they did not know.

#### **SUMMARY:**

Go over the answers with the students. Using an overhead of the answers would be very beneficial. Have them correct their wrong answers. If the class is studying a unit on Pennsylvania and/or North America, this activity can also be used as a quiz.



# Where in Pennsylvania is...?



## Where In Pennsylvania Is...?

Monongahela River  
Ohio River  
Philadelphia  
Appalachian Mountains

Delaware River  
Allegheny River  
Harrisburg  
Allegheny Mountains

Susquehanna River  
Pittsburgh  
Gettysburg

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

**BONUS:** NAME THIS NATIONAL FOREST (12) \_\_\_\_\_

## Where In Pennsylvania Is...?

### Answer Key

Monongahela River  
Ohio River  
Philadelphia  
Appalachian Mountains

Delaware River  
Allegheny River  
Harrisburg  
Allegheny Mountains

Susquehanna River  
Pittsburgh  
Gettysburg

1. Allegheny River
2. Susquehanna River
3. Philadelphia
4. Ohio River
5. Gettysburg
6. Pittsburgh
7. Monongahela River
8. Harrisburg
9. Allegheny Mts.
10. Delaware River
11. Appalachian Mts.

**BONUS:** NAME THIS NATIONAL FOREST (12) ALLEGHENY NATIONAL FOREST

## 1st Base, 2nd Base, 3rd Base...Homestate!

Time: 45 minutes

### OBJECTIVES:

- TSW be able to test their knowledge on Pennsylvania geographical information.
- TSW be able to identify at least three main Pennsylvania landmarks.
- TSW learn teamwork skills by working together on teams.

### MATERIALS:

"1st base, 2nd base, 3rd base... Homestate!" map, index cards, markers, stickers, blow-up beach ball globe

### PROCEDURES:

#### **ANTICIPATORY SET:**

Have students toss the globe around the room, allowing each student a turn to locate North America and Pennsylvania. Also, name one animal that lives in Pennsylvania.

#### **DEVELOPMENT OF LESSON:**

1. Make a transparency of the map enclosed. Tell the students you are testing their knowledge on our home state. Have students break up into teams and have each team designate a "leader." The leader is the one who gives the answers by holding up an index card with their guess. Reinforce that after you ask a question, they must discuss with their teammates which number(s) they will guess. Easier questions are best to reach first base, and from there they should get more challenging to reach "home state."

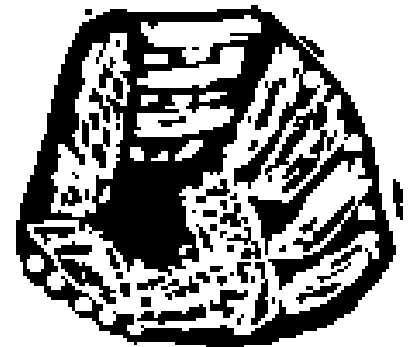
### Sample Questions:

- What number is Pittsburgh?
  - Name a river that flows into Pittsburgh
  - What number is the Allegheny river?
  - What number is the Ohio River, and what city is closest to it?
  - Where is Philadelphia and which river is closest to it?
  - Number 12 (the tree) marks a national forest. Name it.
  - Name one of the mountain ranges.
  - What mountain range is number 11?
  - What is the nickname of our state? (Answer: Keystone state)
  - What is our state flower? (Answer: mountain laurel)
  - What is our state insect? (Answer: firefly)
2. Show the transparency of the map on an overhead and tell them the object of the game is to get to "home base" or "home state," by answering the questions you ask them based on the map. Whichever team reaches home state first will receive a prize (a sticker, or a prize at your discretion).

3. After you ask the question, the team “leader” has to write their team’s answer on an index card. Give them 30 seconds, and after you say, “Time’s up!” each leader has to hold up the index card. Whichever team guesses correctly will advance to 1st base. Whichever team guesses incorrectly, does not advance, but is still in the game.
4. Ask the second question, repeat the procedure. This continues throughout the game, until a team or teams reach “home state.” If there is a tie, you can ask more questions to get one team as the final winner.

**SUMMARY:**

Show a large map of Pennsylvania and point out each of the landmarks that are labeled on the enclosed map or use the other Pennsylvania map included as a follow-up quiz.



# 1<sup>st</sup> Base, 2<sup>nd</sup> Base, 3<sup>rd</sup> Base...Homestate!

2<sup>nd</sup> Base



3<sup>rd</sup> Base



1<sup>st</sup> Base

Homestate!!!