Fish Behavior Bingo

Objective:

Students will be able to become familiar with a variety of common fish behaviors.

Materials Needed:

- Fish Behavior Bingo Worksheet
- Pencil and paper for each student

Activity:

Engage students in a discussion of how different human and animal behaviors enable people to come to certain conclusions. Ask students the following questions:

1. If two boys are laughing and joking as they walk together, what might someone conclude about the boys?
2. If a cat is crouching on the limb of a tree and a dog is barking on the ground, what might someone conclude?
3. If it is 12:00 noon and a group of children are walking toward the cafeteria, what might someone conclude?
4. When you start to yawn in the evening, what might someone conclude?

Tell the students that aquarium fish also exhibit certain behaviors that will enable the students to come to various conclusions.

Distribute the Fish Behavior Bingo Worksheet. Divide the class into several small groups. Each group will observe the fish in the aquarium for several minutes (the teacher will specify the time, probably about 3-5 minutes per group). Each group is to look for all of the behaviors in the pictures on the Fish Behavior Bingo sheet. The behaviors are described at the bottom of the sheet. When students observe a pictured behavior, they are to circle the picture.

Groups that are not observing fish are to make up some human or animal behavior situations with conclusions, similar to the questions asked above. Groups can share some of their favorite situations with the class.

Result:

Ask groups to write down at least three fish behaviors that they observed during the specified time period.

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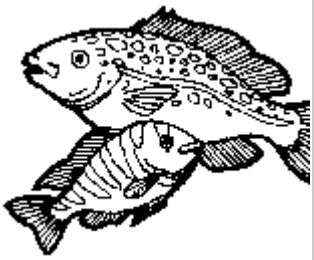
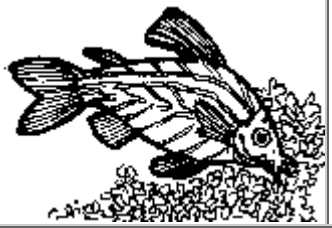
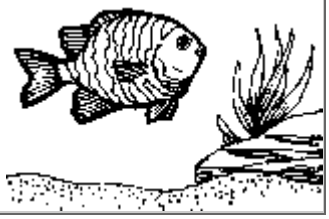
Fish Behavior Bingo Worksheet

Look for all of the behaviors in these pictures as you watch the aquarium's fish. They are described at the bottom. When you see a behavior, circle the picture - how many can you find?

1. 		3. 
	4. 	
2. 		5. 

Fish Behavior Bingo Worksheet (con’t)

1. Cleaning

All fish have parasites. They can get rid of them by "begging" other fish-cleaners to bite them off their skin. Look for fish in strange positions, such as holding still. They're not sick, just signaling.

2. Feeding

You might see a fish eating chopped food, nibbling at stalks of lettuce, or scraping at the bottom.

3. Hiding/resting

Look in the nooks and overhangs of rocks. Fish may not always be swimming. Some are resting quietly and are active later.

4. Schooling

A school is a group of 3 or more fish of the same kind swimming together.

5. Territory

Some fish stake out one spot as "theirs." Other fish that come too close - even divers - will be nipped and chased away.

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Physical Fish Facts

Objective:

The student will be able to describe the physical and behavioral characteristics of fish. This lesson plan will be most effective if taught after the lesson plans on aquarium basics and **after** the teacher has reviewed All About Fish.

Materials Needed:

- Physical Fish Facts Worksheet (one copy per group of students)
- Pencils

Activity:

Pick two students to stand in front of the class. Ask the class to name some distinguishing characteristics of each student up front, such as hair color, eye color, size, freckles, etc. Ask the class to think about why humans are born with so many different distinguishing characteristics. After they have taken a few minutes to respond, tell them that scientists also use differing characteristics to identify and describe fish.

1. Divide students into small groups.
2. Give each group of students one copy of Physical Fish Facts Worksheet..
3. Give students about 20 minutes to complete the fact sheet. Challenge students to make educated guesses if they are not sure of the correct answer. (It's OK to give hints!)
4. Go over answers with students, using the Teacher's Answer Sheet.
5. Ask students to list three facts that surprised them about fish.
6. Ask students to list three new facts that they learned about fish.
7. Challenge students to a game of "What Am I?" (Question: I am a fish fin that runs down the middle of a fish's back. What am I? Answer: Dorsal fin)

Result:

Students become very knowledgeable about fish and the way they live.

Physical Fish Facts Worksheet

In the following discussion of fish, key words have been left out. Use the word list provided at the end to fill in the blanks.

Fish are found in almost all of the waters of the world. They are descendants of animals that lived 400 million years ago. Fish with jaws are divided into two major groups based on their skeletal material. Those with cartilage are called the _____ fishes. Included in this group are _____, _____ and _____. These fish occur most commonly in salt water in _____, _____ and _____. The second major group are fish with calcified skeletons. They are called the _____ fishes. In addition to saltwater habitats, they are also common in freshwater _____, _____ and _____.

Fish do not have legs. They move by _____ power. They generally have two sets of paired fins; that is, one of each pair on either side of the body. The paired fins located highest behind the operculum are the _____ fins. The lower fins are the _____ fins. Most fish use these fins for steering and braking. Some, like parrotfish and wrasses, use pectoral fins for propulsion. Fish have three unpaired fins. The _____ fin runs down the middle of the back and the _____ fin is found underneath near the tail. On most fish these fins just act as stabilizers; but some fish, such as the triggerfish, swim by moving the dorsal and anal fins in a sine-wave(~) pattern. Most fish, however, use their tail or _____ fin for power.

Many fish, especially the fast-swimming ones, are fusiform or _____. But some, such as the skates and rays, are _____ from top to bottom. These animals are adapted to live on the bottom. Many fish have a _____ _____ body that is flattened from side to side. This shape is good for maneuvering in and out of cracks in a coral reef or thick vegetation.

Most fish catch prey or graze on algae using _____. Many fish with up-pointing mouths feed on organisms near the water's _____. Bottom dwellers that feed on animals living on the bottom often have sensitive "whiskers" or _____ located on their chin to help find food. _____ and nurse sharks have these. Many fast-swimming fish, like the _____, chase and catch their food, which often includes other fish. _____ maneuver slowly around the reef, picking at animals or _____ with their small mouths. Some large fish like they _____ _____ don't use teeth for feeding. Instead, they _____ small animals from the water using modified gill rakers.

The outside of most bony fish is covered with waterproof _____. Members of the shark family do not have these. Instead, their skin is covered with _____ _____, or "skin teeth." Fish get their _____ from water rather than from air. Water flows in the _____ and over the _____where gases are exchanged with the water. Some fish like tuna and tiger sharks must swim constantly to force water over their gills or they will suffocate. Others like the flounder and nurse shark can pump water over their gills and are able to rest on the bottom. Bony fish have a gill cover or _____; sharks have _____ _____.

Word List

Each answer is used only one time. Students may use a dictionary if needed.

algae	bony	estuaries	laterally compressed	pelvic
anal	cartilaginous	fin	mouth	rays
streamlined	angelfish	catfish	flattened	oceans
rivers	streams	barbels	caudal	gill slits
operculum	scales	surface	basking sharks	dermal denticles
gills	oxygen	sharks	swordfish	bays
dorsal	lakes	pectoral	skates	teeth
strain				

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Physical Fish Facts Answer Sheet

Fish are found in almost all of the waters of the world. They are descendants of animals that lived 400 million years ago. Fish with jaws are divided into two major groups based on their skeletal material. Those with cartilage are called the **cartilaginous** fishes. Included in this group are **sharks, skates** and **rays**. These fish occur most commonly in salt water in **oceans, bays** and **estuaries**. The second major group are fish with calcified skeletons. They are called the **bony** fishes. In addition to saltwater habitats, they are also common in freshwater **lakes, rivers** and **streams**.

Fish do not have legs. They move by **fin** power. They generally have two sets of paired fins; that is, one of each pair on either side of the body. The paired fins located highest behind the operculum are the **pectoral** fins. The lower fins are the **pelvic** fins. Most fish use these fins for steering and braking. Some, like parrotfish and wrasses, use pectoral fins for propulsion. Fish have three unpaired fins. The **dorsal** fin runs down the middle of the back and the **anal** fin is found underneath near the tail. On most fish these fins just act as stabilizers; but some fish, such as the triggerfish, swim by moving the dorsal and anal fins in a sine-wave(~) pattern. Most fish, however, use their tail or **caudal** fin for power.

Many fish, especially the fast-swimming ones, are fusiform or **streamlined**. But some, such as the skates and rays, are **flattened** from top to bottom. These animals are adapted to live on the bottom. Many fish have a **laterally compressed** body that is flattened from side to side. This shape is good for maneuvering in and out of cracks in a coral reef or thick vegetation.

Most fish catch prey or graze on algae using **teeth**. Many fish with up-pointing mouths feed on organisms near the water's **surface**. Bottom dwellers that feed on animals living on the bottom often have sensitive "whiskers" or **barbels** located on their chin to help find food. **Catfish** and nurse sharks have these. Many fast-swimming fish, like the **swordfish**, chase and catch their food, which often includes other fish. **Angelfish** maneuver slowly around the reef, picking at animals or **algae** with their small mouths. Some large fish like the **basking sharks** don't use teeth for feeding. Instead, they **strain** small animals from the water using modified gill rakers.

The outside of most bony fish is covered with waterproof **scales**. Members of the shark family do not have these. Instead, their skin is covered with **dermal denticles**, or "skin teeth." Fish get their **oxygen** from water rather than from air. Water flows in the **mouth** and over the **gills** where gases are exchanged with the water. Some fish like tuna and tiger sharks must swim constantly to force water over their gills or they will suffocate. Others like the flounder and nurse shark can pump water over their gills and are able to rest on the bottom. Bony fish have a gill cover or **operculum**; sharks have **gill slits**.

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Observing Fish Behavior

Objective:

The student will be able to describe some typical fish behavior based upon observations of aquarium fish during a 5-10 minute period.

Materials Needed:

- Watch with second hand or class clock with second hand
- Aquademics® Science Worksheet #2 (one per student)
- Paper and pencil for each student

Activity: Ask the students to make a brief profile of their own behavior during a typical day. Pose questions such as:

- Do they like to play alone?
- Do they like to play in groups?
- Do they eat one type of food at a time or mix it together?
- Do they like to play quiet games or active games?

Tell students that aquatic scientists spend lots of time (hours and hours!) observing fish and recording data about their observations. Today, each student will become an aquatic scientist.

Students will work in pairs for this lesson plan. Each pair will pick any fish in the aquarium and observe it for 5-10 minutes. One partner calls time every 15 seconds and records behaviors listed on the Observing Fish Behavior Worksheet. The other partner describes what the fish is doing when time is called.

Distribute the Observing Fish Behavior Worksheet and go over the list of possible fish behaviors. Show students how to make a "tic" mark on each line if that particular behavior is observed. Tell students NOT to guess at the fish's behavior if it is in a crevice or missing from view at the time interval; in this case, they should place a "tic" mark on the line for NOT SEEN.

At the end of the specified time period, ask student groups to tally their "tic" marks and to make a graph showing the frequency of various fish behaviors. Invite them to comment on and discuss which behaviors were seen and why.

Each pair should have at least 20 "tic" marks at the end of the specified time period.

Result:

Have students draw the outline of a fish on a blank piece of paper. Ask them to write at least four different observed fish behaviors inside the outline.

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Observing Fish Behavior Worksheet

Partners:

Date:

Fish Selected:

Time Start:

Time Finish:

Behaviors	#of Times Seen
SWIMMING alone	
SWIMMING in pairs	
SWIMMING in group (schooling)	
CHASING bigger fish	
CHASING smaller fish	
PICKING ON other fish	
BEING PICKED ON by other fish	
CLEANING another fish	
BEING CLEANED by another fish	
NOT MOVING on bottom	

NOT MOVING in water
EATING
ROLLING/SCRAPING along bottom
NOT SEEN
Other descriptions:

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