

# FishOn! Lesson Plan



## What Is A Fish?

### Overview:

Students will use their observation skills to draw conclusions about fish and learn their common body parts.

### Students will be able to:

- Describe what a fish is and how it is different from other animals.
- Identify anatomical structures on fish.

### Next Generation Science Standards

#### Practices

- Asking Questions

#### Core Ideas

- LS1: From Molecules to Organisms: Structures and Processes
- LS3: Heredity: Inheritance and Variation of Traits

#### Crosscutting Concepts

- Structure and Function

### Procedure:

**Step 1:** Create a **Know-Wonder-Learned** chart on the board. Solicit what students already know about fish and what questions they have. Students may write these on sticky notes and add them to the chart or the teacher may add ideas as students share. These questions will help guide exploration later in the class.

What is a Fish?		
Know	Wonder	Learned
Fish live in water	How do fish breathe?	
Fish have fins	How many fish are there?	

**Step 2:** Engage students in a fish observation exercise. This can be through interaction with a classroom pet fish, an aquarium fish cam, or a classroom fishing trip. Have students note what they observe about the fish and their behavior and create simple fish sketches, labeling the fish body parts as best as they can.

**Think-Pair-Share:** Have students work in partners or small groups to discuss their observations.





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**Step 3:** Break students into 5 small groups and pass out the **All About Fish** student reading. As a class, review the first three paragraphs of the reading. Assign each small group one of the following topics to find and discuss in the reading: gills, fins, scales, swim bladder, lateral line. Have students underline or highlight information about their assigned topic and circle any words they are unfamiliar with. Ask each group to choose a representative to share a short summary with the class about the group’s assigned topic. As students share, help define words they do not yet know.

After readings are collected, students may work on their own or with others to label the **Parts of A Fish** worksheet.

What is a Fish?		
Know	Wonder	Learned
Fish live in water	How do fish breathe?	Each fin has a special function
Fish have fins	How many fish are there?	Gills remove CO <sub>2</sub>

**Step 4:** Return to the Know-Wonder-Learned chart to fill in the final column. Select students to add something they learned throughout their fish investigation to the chart. Encourage discussion as students add their ideas.





# Student Reading

## All About Fish

There are over 32,000 different species of fish in the world and roughly 2,000 in North America. In fact, fish represent more than half of all **vertebrate** animals. There are flat fish, skinny fish, and fish that crawl on land. There are flying fish, electric fish, and fish that live in schools.

Fish vary greatly in size and color. Some are tiny, measuring only two inches in length like the Naked Goby. Others are giants. The Whale Shark measures some 50 feet. That's longer than a school bus! Some fish are drab and mottled. Some are patterned with stripes, bars, and spots. While others are aglow with brilliant color: red, yellow, orange, green, pink, silver, and blue. The tremendous diversity among fish is a result of 400 million years of evolution and unique environmental conditions associated with life in the water.

### Adapting to life in the water:

The oldest group of vertebrates, fish can be found wherever there's water. Three quarters of the Earth's surface is covered by water, including **saltwater** (oceans, tidal pools, and coral reefs) and **freshwater** (lakes, cold mountain streams, and slow-moving rivers). Fish are specially adapted to life in the water, they have permanent gills, and most have fins and scales.

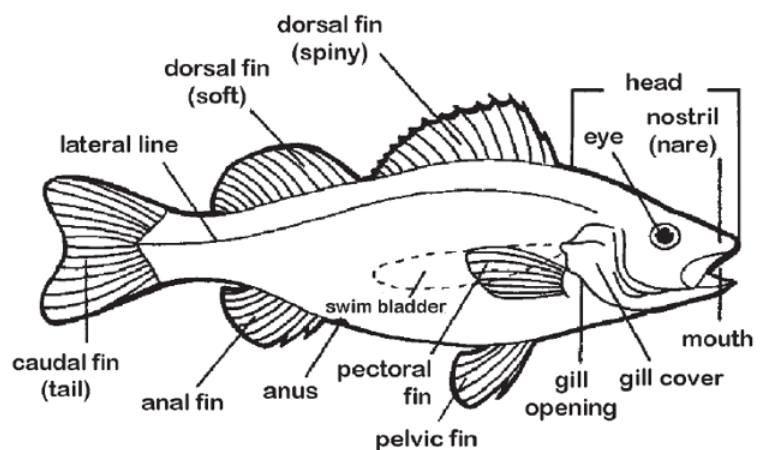
### GILLS

Gills are thin, feathery-like membranes located inside slit-shaped openings behind the head. Fish get oxygen from the water by passing it through their mouths and over their gills. Oxygen is absorbed through the gill membranes and carbon dioxide is removed.

### FINS

Fins aid in maneuverability. Each fin has a particular function.

- The pectoral fin is found at the side behind the gills. It helps with diving, swimming to the surface, and remaining stationary.
- The dorsal fin is vertical from the back. It helps keep the fish from rolling.
- The pelvic fin is a stabilizer. It helps with balance.
- The caudal fin or tail helps to propel and steer. A forked tail allows for increased speed, whereas a broad tail allows for increased maneuverability.
- The anal fin is located near the rear of the belly. It helps with balance.





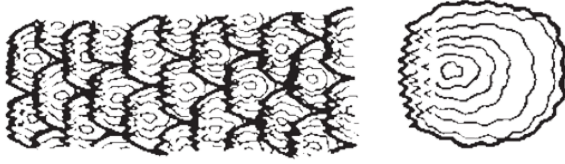
# Student Reading



*Placoid scale (shark)*



*Ganoid scale (gar)*



*Ctenoid scale (perch)*



*Cycloid scale (salmon)*

## SCALES

Most fish have a flexible armor of protective scales covering their bodies. There are four kinds of scales: placoid, ganoid, ctenoid, and cycloid. Placoid are tooth-like. Ganoid are diamond shaped. Ctenoid are comb-like, and cycloid have a rounded appearance. Ctenoid and cycloid are the two most common scale types.

Scales vary in size from one species to another and may be as large as a silver dollar. Scales do not increase in number but grow as an animal grows. Scales grow faster during the summer months when food is abundant. Each year, an "annual ring" is laid down within each scale. Counting the consecutive annual rings will provide an estimate of the age of the animal. The scales are coated with a slimy layer of mucous that has antiseptic properties, which protect the animal against disease and parasites.

## GAS BLADDER OR SWIM BLADDER

Most fish have a gas bladder or swim bladder, which is an airtight sac or balloon-like organ in the gut area. The gas bladder or swim bladder selectively takes in gases from the bloodstream to regulate floatation and buoyancy. Some fish, including the shark and tuna, do not have a gas bladder or swim bladder, which is why they must remain in constant motion or they will sink.

## LATERAL LINE: "A SIXTH SENSE"

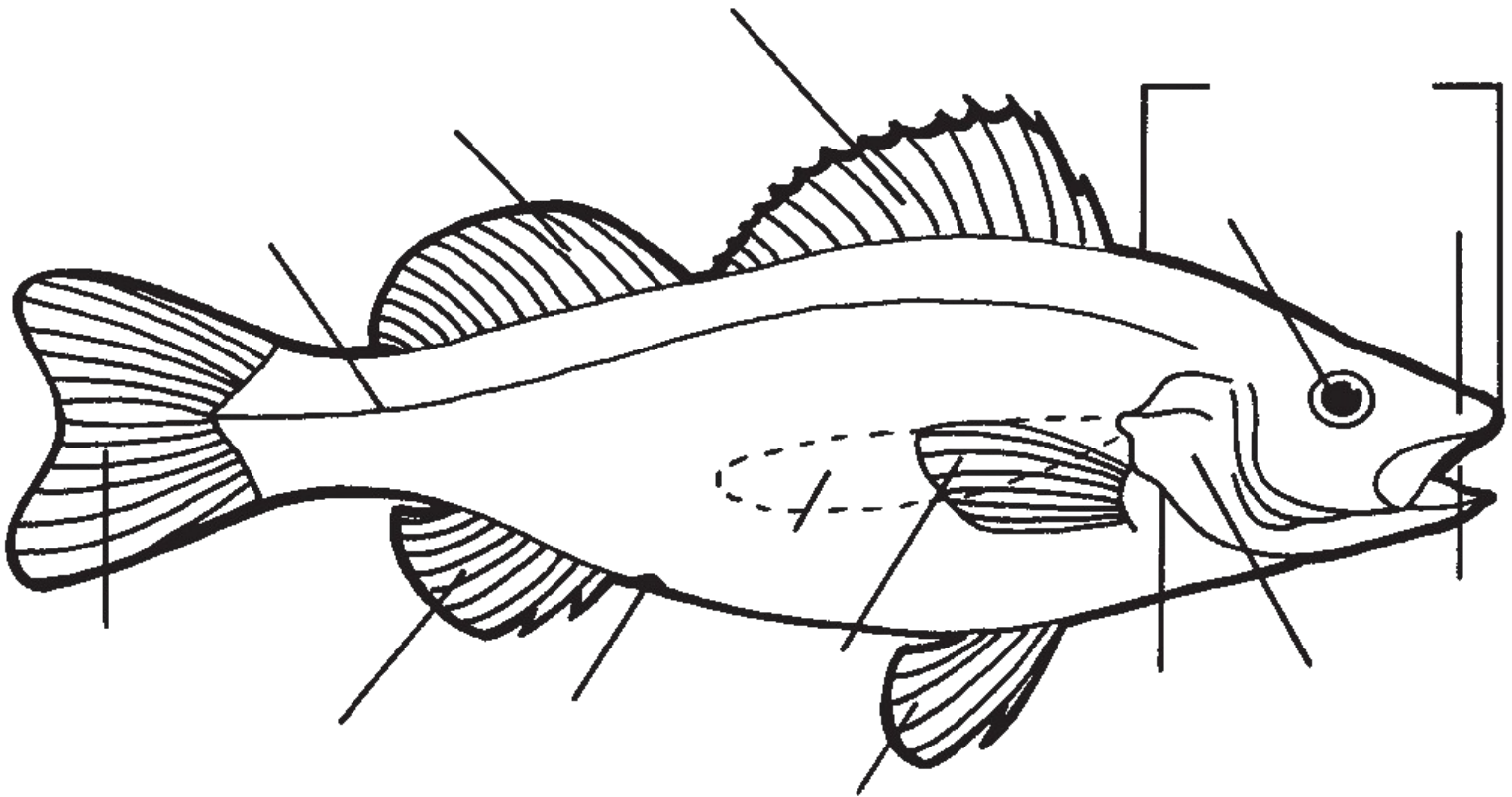
Fish have a unique system of sensory nerves located in the skin called the **lateral line**, which in many ways serves as their sense of touch. The lateral line extends from just behind the head along to the tail on either side of the fish. The lateral line detects the slightest movement of water, which helps a fish to avoid danger or to capture food in otherwise dark or cloudy water.



# Student Worksheet

## Fill in the Blanks

Name: \_\_\_\_\_



### Word Bank:

- |                   |                 |              |              |                  |
|-------------------|-----------------|--------------|--------------|------------------|
| Tail (caudal fin) | Mouth           | Pelvic fin   | Gill opening | Swim bladder     |
| Head              | Pectoral fin    | Gill cover   | Anal fin     | Spiny dorsal fin |
| Eye               | Soft dorsal fin | Lateral line | Anus         |                  |