

# Trout Organ Puzzle

## Description:

Students will learn about the different internal trout organs. These include the heart, liver, gills, kidney, swim bladder, gonads, and stomach. Students will understand the function of these organs and where they are in the trout. After they have discussed what the organs do, students will guess where the organs go in the trout based off what they learned. This lesson is intended for middle and high school students, but can be adapted for elementary use.

## Objectives:

- Identify the inner parts of a trout
- Learn the functions and placement of the trout's organs
- Analyze why these organs are vital for the trout

## Vocabulary:

Buoyancy, capillaries, gills, gonads, heart, kidney, liver, swim bladder, stomach

## Materials:

- Trout puzzle illustration
- Trout organs stencil sheet
- Glue

## Background:

All living things have internal structures, whether organs or other, that conduct essential functions for survival. For the trout, this includes the heart, gills, liver, kidney, swim bladder, stomach, and gonads.

Some of these organs play the same role in other living organisms. The heart pumps blood around the trout's body. It's stomach digests food and retains much needed nutrients. The trout's kidney helps maintain a balance of salt and water within the body, as well as gets rid of waste products that could harm the trout. The liver has a similar role - it detoxifies heavy metals and other potentially harmful elements. The gonads produce the reproductive cells of the trout. Besides these organs, there are others that are unique to fish and trout, including the gills and the swim bladder.

The gills allow for fish to breathe under water. Fish cannot breathe in oxygen the same way humans and other land animals do since they do not have lungs. The dissolved oxygen in the water is not readily accessible to trout and other fish, so gills have small blood vessels called capillaries that, when water passes through them, are able to absorb oxygen from the water. The swim bladder helps the trout swim in the water. As the trout takes in air, it displaces water, meaning it allows for less water to enter, thereby increasing buoyancy. This allows for the trout to be lighter and able to float upwards.

## Method:

- Have students *think-pair-share* about the internal anatomy of a trout. Ask them what organs they think trout have.
  - What do these organs do? Why do trout need them?
  - Bring the class together to talk about what they came up with.
- If they are unfamiliar with some of the organs, ask them what they think the purpose of those organs is. Provide hints

towards their function and/or relate them to other things they are familiar with.

- After discussing each organ of the trout, hand out the trout outline and stencils. Explain that, using what they learned, students will place the stencils onto the outline.
  - The outline contains different areas where students can place the stencils (numbered 1-7). Each will correspond with a hint at the bottom of the sheet.
- After students have had some time to glue the stencils onto the illustration, students can share their now complete trout puzzles with their peers.
  - Are they different from one another? Are all the organs in the right place?
- After sharing and comparing with their peers, bring the class back together and show a complete illustration with organs.
  - Did students place the organs in the correct areas? Were there any that were harder to guess?
  - Finish the lesson by completing a final review of the organs.

### Discussion:

- What organs do trout have?
  - Do we have any of these organs?

- Are there any organs unique to fish?
- How are some of these parts of the trout related to parts we have as humans?
  - E.g. gills and lungs
- Do any organs have similar functions to each other? How?
- What parts of the trout did you find difficult to understand?
  - Are there any objects we can relate these organs to, so we understand them better? (e.g. swim bladder is like a balloon)

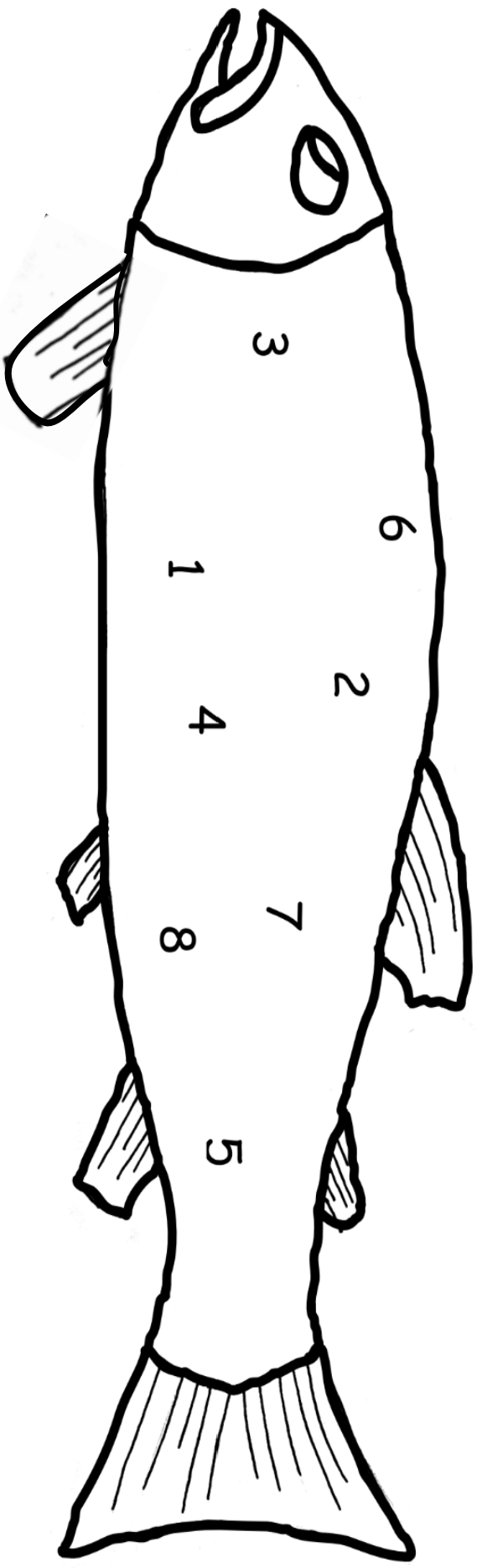
### Extension:

- Make it a challenge! Have students guess where the trout's organs go without any hints.
  - Make sure to discuss the thinking behind their placements.
- Have students compare and contrast the anatomies of trout, humans, and plants. Discuss the similarities and differences.
- Students can dive deeper into the anatomy of the trout. Have students research trout anatomy and create their own illustration.

**NYC Department of Environmental Protection**

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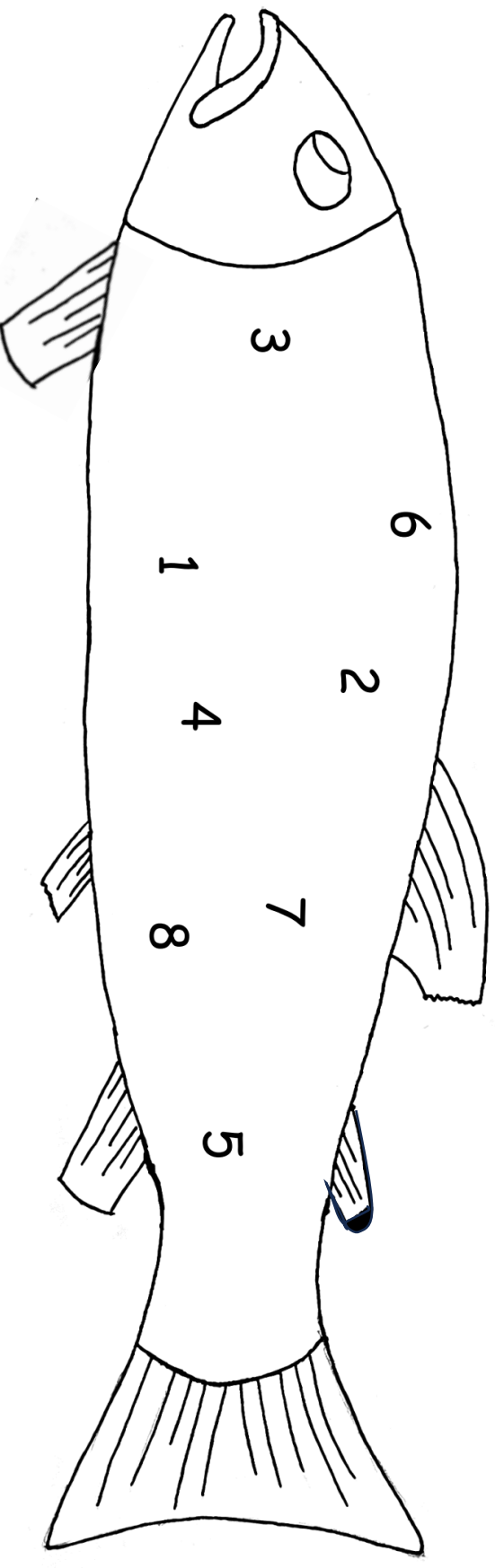
For more information visit [www.nyc.gov/dep](http://www.nyc.gov/dep)



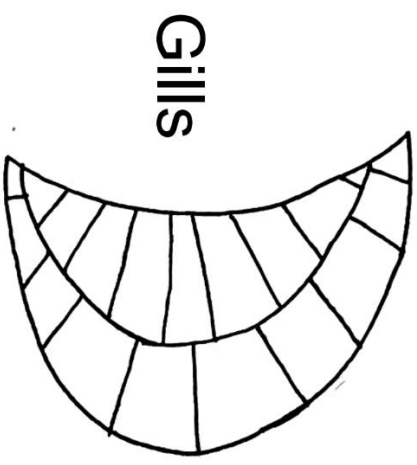
#### Answer Key

1. Heart
2. Swim Bladder
3. Gills
4. Liver
5. Gonad
6. Kidney
7. Stomach

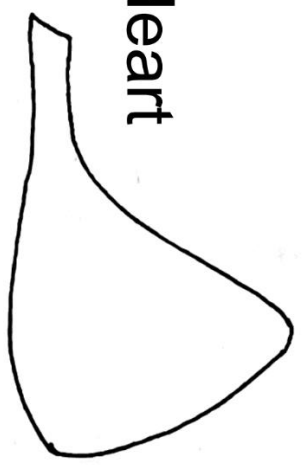
1. This organ pumps blood throughout the entire body
2. This organ allows for the trout to maintain buoyancy (to float) in water
3. This organ allows for the trout to breathe underwater
4. This organ detoxifies harmful elements
5. This organ contains the reproductive cells of the trout



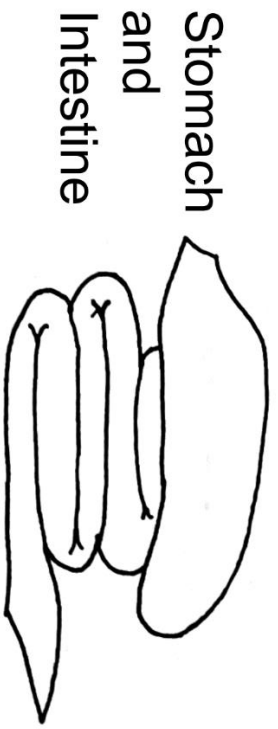
6. This organ gets rid of waste products
7. This organ digests and processes food
8. This organ absorbs nutrition



Gills



Heart



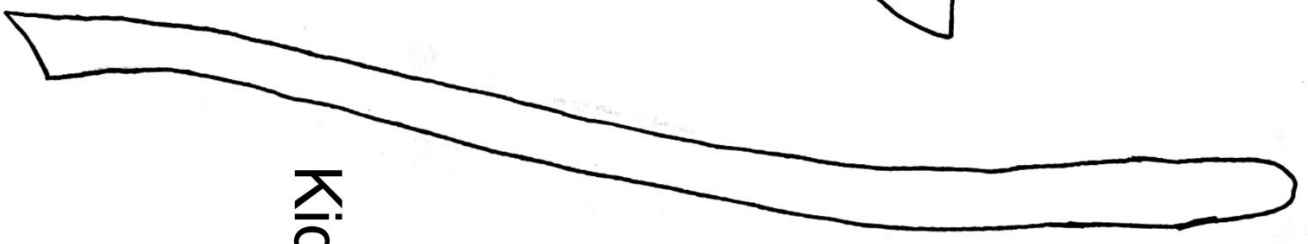
Stomach  
and  
Intestine



Gonad



Liver



Kidney

