### GO FISH!

**START**

- Draw a card
- Draw a card
- Alevin Stage! go ahead 2 spaces
- Draw a card

Roll the die to move forward. Your opponent will read you questions.
If you cannot answer a question correctly, you must move back ONE space.
The first “angler” to end their movement on the final square WINS!

<table>
<thead>
<tr>
<th>Over feeding go back 6 spaces</th>
<th>Draw a card</th>
<th>Ammonia Spike! go back 1 space</th>
<th>Draw a card</th>
<th>Swim-up fry! go ahead 1 space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw a card</td>
<td></td>
<td>Draw a card</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrite Spike! go back 4 spaces</th>
<th>Tank cycling! go ahead 3 spaces</th>
<th>Draw a card</th>
<th>Draw a card</th>
<th>Nitrates at 160 ppm! go back to start</th>
</tr>
</thead>
</table>

Created by C. Fernandes and the 2014-15 Life Science class of Grier School, Tyrone PA
What are the percents used in the “wild” survival pyramid?

ANSWER: 10%, 20%, 50%

What are the percents used in the “hatchery” survival pyramid.

ANSWER: 98%, 68%, 45%

Describe 3 parts of the brook trout’s natural habitat.
POSSIBLE ANSWERS:
- Cold water (50°F)
- Darkness (in beginning)
- High oxygen (riffles)
- Vegetation and insects
- Places to hide (tree roots, fallen logs, rocks, undercuts)

What are the 4 types of tests that we perform on the water in our trout tank?

ANSWER: pH, ammonia, nitrite, nitrate

Name Pennsylvania’s 6 river basins.

ANSWER: Erie, Genesee, Potomac, Susquehanna, Delaware, Ohio
Name 2 threats that wild brook trout face that hatchery raised fish do not.

Possible Answers:
- Predators
- Pollution from humans
- Sediments from runoff
- Water that is too warm
- Loss of habitat

Which PA river provides drinking water to the most people?

ANSWER: Delaware River

Which PA river covers the most land?

ANSWER: Susquehanna River

Name 4 organic components of the trout tank ecosystem.

ANSWER: Trout
Nitrosomonas
Nitrobacters
Plants

Name 6 inorganic components of the trout tank’s ecosystem.

ANSWER: water
oxygen
ammonia, nitrite, nitrate
rocks
What watershed is our school located in?

**ANSWER:** Juniata River

What river basin is our school located in?

**ANSWER:** Susquehanna

Name 2 adaptations that a brook trout has to help it blend into its environment?

**POSSIBLE ANSWERS:**
- Light colored bellies
- Stripes (as fry)
- Spots on their sides (as adults)
- Color is brown/green like the environment

What do nitrobacters do?

**ANSWER:** Convert nitrite into nitrate

How do you test pH?

**ANSWER:** Add 3 drops of the test solution and invert the tube several times before taking a reading
What is the scientific name of the rainbow trout?

**ANSWER:** *Oncorhynchus mykiss*

If handwritten, must be underlined!

What is the difference in appearance between an adult brook trout and an adult rainbow trout?

**ANSWER:** Rainbow trout have pink and green sides, brook trout have red spots with blue halos.

How do we know that the sanitizer is working?

**ANSWER:** If the light is green, it’s working. If the light is flashing it needs maintenance or replaced.

Make up your own question relating to the “Fashion a Fish” lesson and answer it correctly!

You are an expert angler!

Move ahead 4 spaces!!!
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the evolutionary advantage of a lateral line?</td>
<td>The lateral line allows brook trout to sense movement of prey (and predators) in the water</td>
</tr>
<tr>
<td>Why aren’t there neon colored fish in PA waters? Where WOULD you find fish colored in this way?</td>
<td>Being a neon color would not help a PA fish blend into the environment because there are not many neon colors in our PA waterways. Neon fish are found in coral reefs.</td>
</tr>
<tr>
<td>At what point do nitrates become toxic to fish?</td>
<td>80 ppm</td>
</tr>
<tr>
<td>What are the 3 largest rivers in PA?</td>
<td>Delaware, Susquahanna, and Ohio</td>
</tr>
<tr>
<td>Describe 2 places in the tank where our trout like to be the most.</td>
<td>They like to be in the pools (in the corners) and under the rocks</td>
</tr>
<tr>
<td>Make up your own question relating to the “6 ways to the Sea” lesson and answer it correctly!</td>
<td></td>
</tr>
</tbody>
</table>
Why do we add Special Blend to the tank?

**ANSWER:**
To add helpful bacteria that will help the ammonia, nitrite, and nitrate levels cycle.

Name 3 solutions to the reducing high nitrate levels in the tank.

**POSSIBLE ANSWERS:**
- Nite Out II
- Reduce feeding
- Replacing the carbon
- Lower the water level to increase aeration
- More frequent water changes
- Add Special Blend

How do you test ammonia?

**ANSWER:**
Add 8 drops of solution 1
Add 8 drops of solution 2
Cap and shake tube for 5 sec
Wait 5 min before reading

List the 4 stages of a trout's life cycle.

**ANSWER:**
- Egg/Alevin
- Fry
- Fingerling
- Adult
Where does the ammonia come from in the tank?

ANSWER: It comes from the fish’s waste. As they eat, more ammonia is produced.

What is the smallest river basin in PA?

ANSWER: Genesee

Where does the nitrite come from in the tank?

ANSWER: Nitrite comes from the nitrosomonas as they utilize the ammonia in the tank.

Where does the nitrate come from in the tank?

ANSWER: Nitrate comes from the nitrobacters as they utilize the nitrite in the tank.
How do you test nitrite?

ANSWER:
Add 5 drops of the test solution
Cap and shake tube for 5 sec
Wait 5 min before reading

How do you test nitrate?

ANSWER:
• Add 10 drops of solution # 1
• Cap and invert tube several times
• Shake solution # 2 for 30 sec
• Add 10 drops of solution # 2
• Cap and shake tube for 60 sec
• Wait 5 min before reading

What type of reproduction do trout do?

A) Eggs deposited on vegetation
B) Eggs deposited on bottom and covered with gravel
C) Free floating eggs
D) Live births

ANSWER: B
Tell one distinguishing feature of a brook trout coloration when it’s at the fry stage.

**Answer:** Verticle stripes or parr marks (dark brown)

Name 2 things a brook trout’s mouth is adapted to eat.

**Possible Answers:**
- Insects
- Small fish
- Crustaceans
- Aquatic plants

Name 2 immediate solutions for reducing stress on a classroom trout tank.

**Possible Answers:**
- Put on the front cover
- Salt bath
- Lower the lights in the room
- Limit activity near tank
- Reduce feeding/water temp

Make up your own question relating to the “Fashion a Fish” lesson and answer it correctly!

Make up your own question relating to day-to-day tank maintenance and answer it correctly!

You are an expert angler!

Move ahead 4 spaces!!!
You are an expert angler!

Move ahead 4 spaces!!!

Brook trout are classified as part of the (?) family of fish

ANSWER: charr (or salmon)

Someone who catches fish for sport is called a ?

ANSWER: angler

Before they are shipped to our classroom, fertilized eggs are sterilized with ?

ANSWER: iodine

What is this?

ANSWER: Where water leaves the tank and goes to the filter

What is this?

ANSWER: powerhead
What is this?

ANSWER: chiller

What is this?

ANSWER: filter

What are the 5 layers of the filter?

ANSWER: Polishing pad
Charcoal
Ceramic tiles
Bioballs
Black sponge

Write the formula for ammonia?

ANSWER: $\text{NH}_3^{1+}$

Write the formula for nitrite?

ANSWER: $\text{NO}_2^{1-}$

Write the formula for nitrate?

ANSWER: $\text{NO}_3^{1-}$
Describe the nitrogen cycle in our TIC tank.

**ANSWER:**
1. Fish produce ammonia.
2. Nitrosomonas take in ammonia and produce nitrite.
3. Nitrobacters take in nitrite and produce nitrate.
4. Watercress uses nitrate.

What is the acceptable pH range for rainbow trout?

**ANSWER:**
5.5 to 9.5

What controls the rate of respiration and growth in trout?

**ANSWER:**
Temperature of the water

How do we provide proper pH range in our TIC tank?

**ANSWER:**
By using spring water

Why do we return the shipping box?

**ANSWER:**
Styrofoam never breaks down in a landfill so we reuse the boxes to reduce waste and save money.

How do we provide clean water in our TIC tank?

**ANSWER:**
Don’t over feed, Adding beneficial bacteria, Use watercress, start with release site stream water and use spring water afterwards, water changes
<table>
<thead>
<tr>
<th>How do we provide limited light in our TIC tank?</th>
<th>How does nature provide limited light for trout?</th>
<th>How do we provide oxygen in our TIC tank?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSWER:</td>
<td>ANSWER: Undercuts, fallen leaves, deep pools, rocks, female covers eggs with gravel using her tail, over hanging trees</td>
<td>ANSWER: riffles at output and power head, air stone/air pump, lower the level of the water in the tank</td>
</tr>
</tbody>
</table>