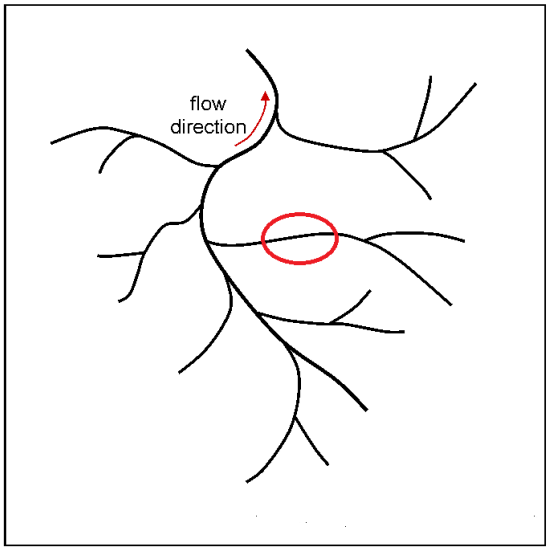
1. Using the Strahler Stream Order Classification System, identify the Stream Order for the stream circled in red.



   a. First order
   b. Second order
   c. Third order
   d. Fourth order

2. Physical stream characteristics which provide habitat that can be observed in the stream at this reach include All EXCEPT:

   a. Backwater habitat
   b. Undercut banks
   c. Root mats/root wads
   d. Siltstone

3. What is the origin of the water in this stream?

   a. Surface water
   b. Groundwater
   c. Springs
   d. All the above

4. Which of the following is NOT a characteristic of a healthy watershed?

   a. Mostly natural land cover
   b. Diverse aquatic life
   c. Low levels of suspended sediments in the stream
   d. Large areas of impervious surfaces

5. Which process involves plants releasing water through their leaves?

   a. Sublimation
   b. Transpiration
   c. Evaporation
   d. Condensation

6. Cyanobacteria blooms, or "blue-green algae", are most often caused by an overabundance of which nutrient in freshwater systems?

    a. Phosphorus
    b. Nitrogen
    c. Potassium
    d. Iron

7. Pollution entering a waterbody from a large area of land, such as agricultural fields, is considered what type?

    a. Point Source
    b. Runoff
    c. Non-Point Source
    d. Erosion

8. Soil erosion can lead to sedimentation in streams, rivers and lakes. What is NOT a best management practice to prevent soil erosion on agricultural fields?

    a. Planting a cover crop
    b. Using no-till methods
    c. Installing grassed waterways
    d. Moldboard plowing in the Fall

9. Which of the following is NOT a pathway for oxygen to enter the water as dissolved oxygen?

    a. Absorption from the atmosphere
    b. Organic matter decomposition
    c. Photosynthesis
    d. Turbulence from current, wind, or waves

10. This tributary is a headwater stream and is unnamed. This waterway is part of which watershed?

    a. Mississippi
    b. Cuyahoga
    c. Lake
    d. Chagrin

11. What are the three factors used to determine if an area is considered a wetland by US Army Corps of Engineers and other regulatory agencies?

    a. Soil, vegetation, and hydrology
    b. Soil, vegetation, and fauna
    c. Water quality, plant density, and hydrology
    d. Ducks, cattails, and frogs

12. Vernal pools provide crucial habitat to a wide variety of macroinvertebrates and amphibians and are found throughout our forests in Ohio. What is a good definition of a vernal pool?

    a. Dominated by soft-stemmed plants like grasses, reeds, and sedges
    b. Peat-accumulating wetlands that receive most of their water from rainfall and are characterized by acidic conditions and sphagnum moss
    c. Seasonal depressions that fill with water in the spring and dry out in the summer.
    d. Forests are inundated with floodwater from nearby rivers and streams.

13. Biogeochemical cycling involves:

    a. the conversion of wetlands to uplands
    b. the transportation of suspended sediments to wetlands
    c. the biological, physical, and chemical transformations of various nutrients within the biota, soils, water, and air.
    d. a shift from the herbivore-carnivore food web to the detrital food web in estuaries.

14. Which of the following are NOT true about eutrophication?

    a. Eutrophication leads to overgrowth of algae
    b. Decomposers consume dead algae
    c. **Eutrophication arises due to the lack of nutrients**
    d. Decomposer population grows and consumes oxygen

15. Which of the following statements best explains how a watershed influences the productivity of a lake?

    a. **A watershed is the total area that drains into a lake, and land used within the watershed can regulate nutrient loading, thereby influencing primary productivity and potential eutrophication**
    b. A watershed is the region of deepest water in a lake where thermal stratification determines nutrient cycling and primary productivity
    c. A watershed functions primarily as a physical barrier that prevents external nutrients from entering a lake, thereby stabilizing productivity
    d. A watershed effects lake productivity only through groundwater inputs and has little influence on surface nutrient transport

16. Some organisms rely on Ohio primary headwater stream habitat for a place to live. Certain fish and salamanders require these cold-water habitats like this headwater creek in Holden's Working Woods. In this stream and in Northeastern Ohio, which of the following are found in these small stream habitats?

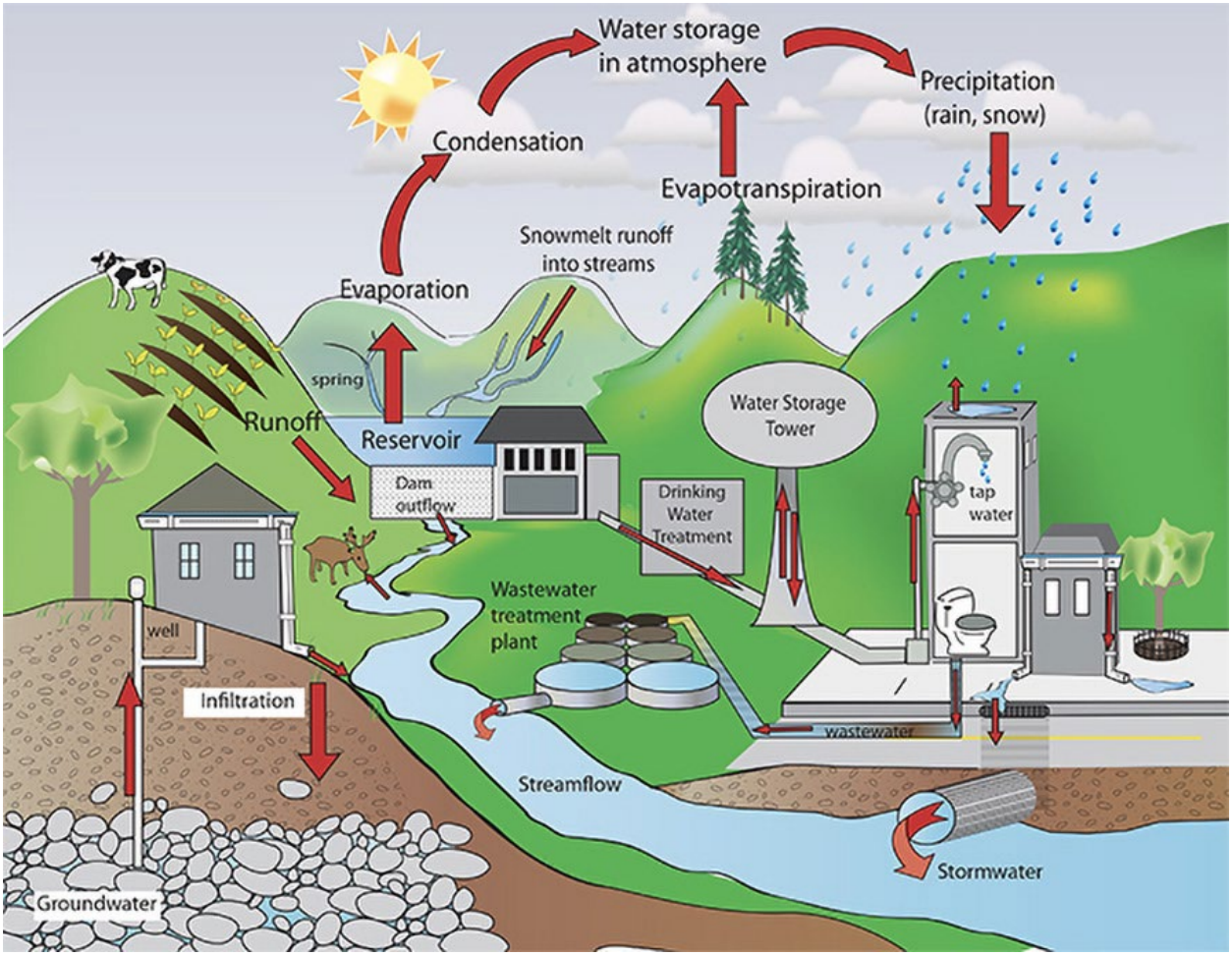
    a. Mudpuppies
    b. Two-lined salamanders
    c. Spring salamanders
    d. Spotted salamanders

17. Which factor below is NOT a reason that headwater streams are degrading?

    a. Increase in agricultural drain tiles
    b. Removal of riparian vegetation
    c. Removal of woody debris within streams
    d. **Increase in groundwater input**

18. Looking at the below water cycle diagram, which contributes the most to runoff? Picture from Caryinstitute.org

    a. Evaporation
    b. Condensation
    c. Precipitation
    d. Infiltration



19. Also using the water cycle diagram (from Question 18.), if a *Cladophora* bloom was present below the wastewater treatment plant what would that tell you about the discharge from the treatment plant?

    a. *Cladophora* was coming in from the treatment plant
    b. The turbidity was increasing from the treatment plant discharge
    c. **Nutrients were increasing in the stream below the treatment plant**
    d. The treatment plant is discharging above its mandated discharge allowance

20. What is a pitfall of using the fish-IBI technique to assess ecological integrity in headwater streams in Ohio?

    a. Creek chubs are always the most abundant fish
    b. **Low water in some streams produces low numbers of fish**
    c. Stream water temperature is variable in headwater streams
    d. Electroshocking in small streams is not possible

21. Which common practice is causing increased chloride levels in surface water?

    a. Spreading fertilizer on agricultural fields
    b. Grazing livestock near streams
    c. **Applying salt and brine to roads during snowstorms**
    d. Burning coal in power plants

22. In 1968 Ohio became a pioneer in stream preservation with the nation's first river law. What is its name?

    a. The Riparian Doctrine Act
    b. Stream Litter Law
    c. Ohio Scenic Rivers Act
    d. Ohio Strip Mine Law

23. This term refers to the bottom of a lake where organic sediment serves as a refuge and foraging area for fish, amphibians, birds, insects, and crustaceans:

    a. Littoral zone
    b. **Benthic zone**
    c. Limnetic zone
    d. Euphotic zone

24. Some macroinvertebrates are indicators of stream health. This macroinvertebrate is indicative of excellent water quality and is a: (see specimen, use key provided)

    a. Mayfly
    b. Stonefly
    c. Caddisfly
    d. Dobsonfly
    e. Crane Fly

25. Identify the zebra mussel from the images below:

a. A.
b. B.
c. C.
d. **D.**