

1. How does the loss of vegetation from wildfire influence water movement in a forest community? [1 point]

- A) Increases transpiration rates
- B) Reduces evaporation
- C) Increases surface runoff**
- D) Enhances soil moisture retention

2. When analyzing a topographic map to delineate a watershed, which of the following methods is most effective in identifying the boundaries of the watershed? [1 point]

- A) Identifying the highest points (ridges) surrounding the water body and connecting them.**
- B) Following the contour lines that indicate the lowest elevation points
- C) Observing the color coding of different land uses on the map
- D) Counting the number of rivers that flow into the water body

3. In a watershed with a high percentage of forested land, what is the effect on stream habitats compared to a watershed dominated by open agricultural land? [1 point]

- A) Stream habitats will be less diverse in the forested watershed due to fewer species.
- B) The forested watershed will have cooler water temperatures and more diverse habitats.**
- C) Agricultural land will provide better habitats due to increased nutrient runoff.
- D) Both watersheds will have similar habitat characteristics due to the presence of water.

_____/3 points

Collect a water sample and analyze it with the test kits. Use your results to answer Questions 4 and 5.

4. What values did you measure from this sample for the following parameters? [8 points, 2 points each]

- a) Temperature: _____
- b) pH: _____
- c) Dissolved oxygen: _____
- d) Phosphate: _____

5. What is the water quality classification for this sample, according to the Oregon Water Quality Standards for Salmon and Steelhead? [2 points]

- Class AA _____
- Class A _____
- Class B _____

6. What is the primary way aquifers replenish? [2 points]

Answer: Rainfall or snowmelt infiltrates the soil and gradually seeps into underground layers, which replenishes the aquifer.

For 1 point: rainfall or snowmelt. For 2 points: Rainfall or snowmelt infiltrates the soil and seeps underground.

7. Would a confined aquifer be more susceptible to pollution than an unconfined aquifer? Why or why not? [2 points]

Answer: No, a confined aquifer is generally less susceptible to pollution than an unconfined aquifer. A confined aquifer is protected by a layer of impermeable rock or clay, preventing contaminants from entering. An unconfined aquifer is exposed to the surface and more vulnerable to pollution runoff.

For 1 point: Either “No” or correct reasoning. For 2 points: Both “No” and correct reasoning.

_____/14 points

8. Match each freshwater aquatic animal or concept related to energy flow with its correct description. [5 points]

Aquatic Animals and Concepts	Descriptions
__ b __ i. Primary Producers	a) These are the organisms in the food chain that have few natural predators and play a crucial role in maintaining ecological balance.
__ e __ ii. Freshwater Shrimp	b) Organisms that convert sunlight into chemical energy through photosynthesis and serve as the base of the food chain.
_ a _ iii. Top Predators	c) These microscopic organisms create their own food and form the base of the food chain in aquatic habitats. They also produce oxygen and help regulate carbon levels.
_ c _ iv. Phytoplankton	d) Species that primarily thrives in clean, oxygen-rich waters and feeds on insects, small fish, and crustaceans. They are both predators and prey.
__ d _ v. Trout	e) These organisms are essential for nutrient recycling and feed on algae, detritus, and microorganisms. They are small crustaceans and are an important food source in the food chain.

____/5 points

9. Provide two specific examples of the functions of wetland ecosystems. [2 points]

Answer:

Any two of the following or similar:

- Water filtration
- Flood control
- Wildlife/plant habitat
- Regulates Water control
- Regulates water temperature
- Improves water quality

10. What is a riparian zone? [2 points]

Answer: A riparian zone is the area of land adjacent to a river, stream, or other body of water.

For 1 point: An area of land. For 2 points: An area of land adjacent to a water body.

11. Which of the following best describes a healthy riparian zone along a freshwater creek? [1 point]

A) A regularly maintained grassy lawn extending up to the creek bank.

B) Dense plantings of diverse native vegetation, including trees, shrubs, forbs, sedges, and rushes.

C) Occasional scattered trees that create small patches of shade over the creek.

D) Sedges and rushes planted only at the immediate water's edge, with no additional vegetation further back.

12. Which of the following is an invasive species in Oregon? [1 point]

A) Rainbow trout

B) Freshwater shrimp

C) Zebra mussel

D) Salmon

____/6 points

13. Name three effective strategies individuals can implement in urban or suburban areas to improve stormwater quality and reduce water pollution. [3 points]

Answer:

Any three of the following or similar

- Rain gardens
- Permeable pavement
- Native landscaping
- Establish riparian zones
- Green roofs
- Environmentally friendly car wash
- Pick up pet waste
- Never litter/pick up trash
- Never dispose of chemicals in storm drains
- Reduce or properly apply chemicals

14. Identify the three specimens provided using the macroinvertebrate identification key that follows. [6 points, 2 points each]

stonefly nymph

dragonfly nymph

snail shell

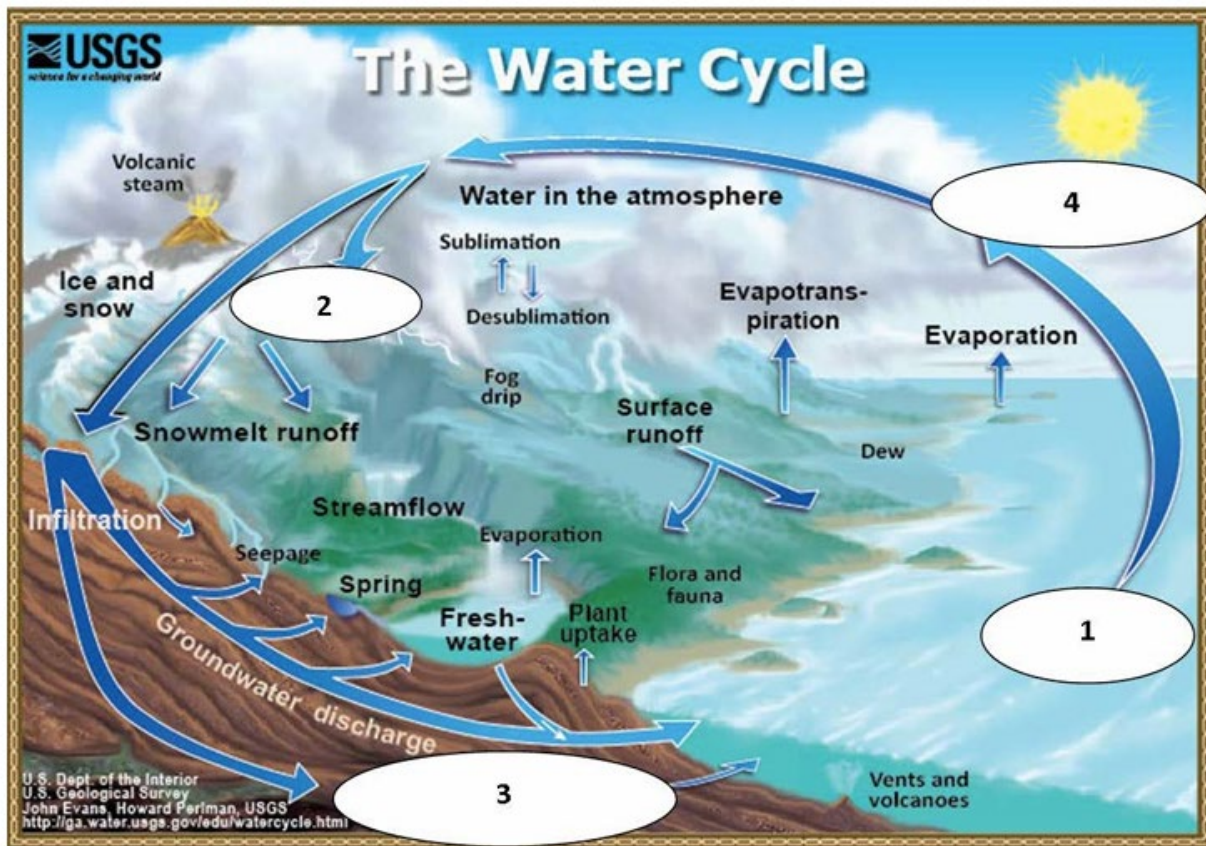
____/9 points

Macroinvertebrate Key



15. Name the numbered elements from the water cycle diagram below. [4 points]

1. Ocean
2. Precipitation
3. Ground storage
4. Condensation



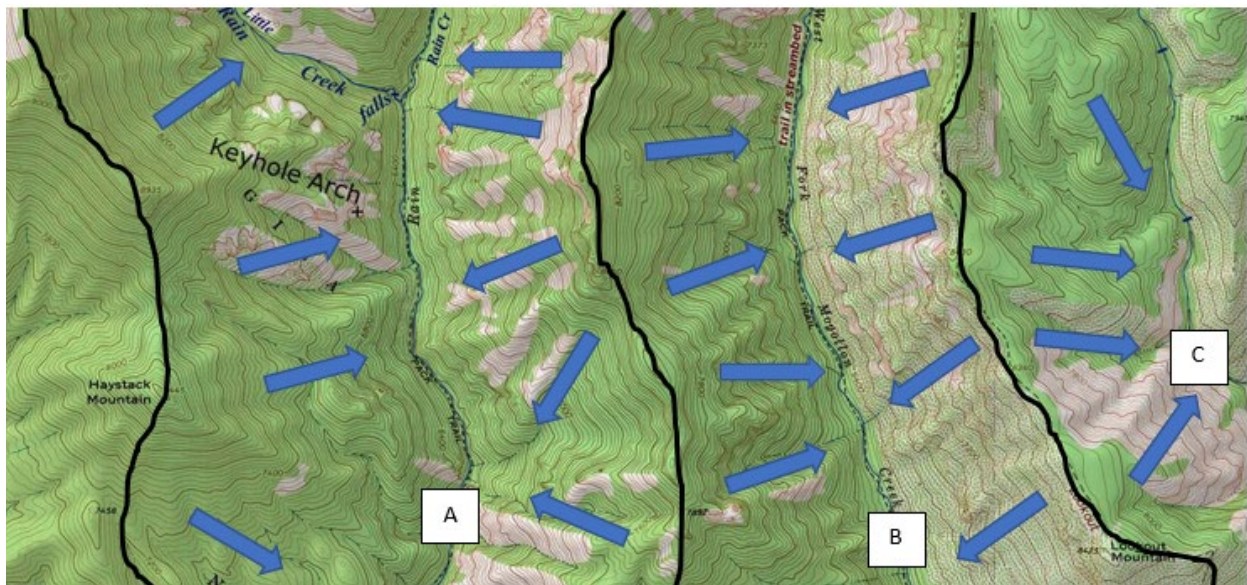
____/4 points

Use the topographic map below to answer questions 16-17.

16. Draw thick black lines on the map to show where the ridges (drainage divides) are located. [2 points]

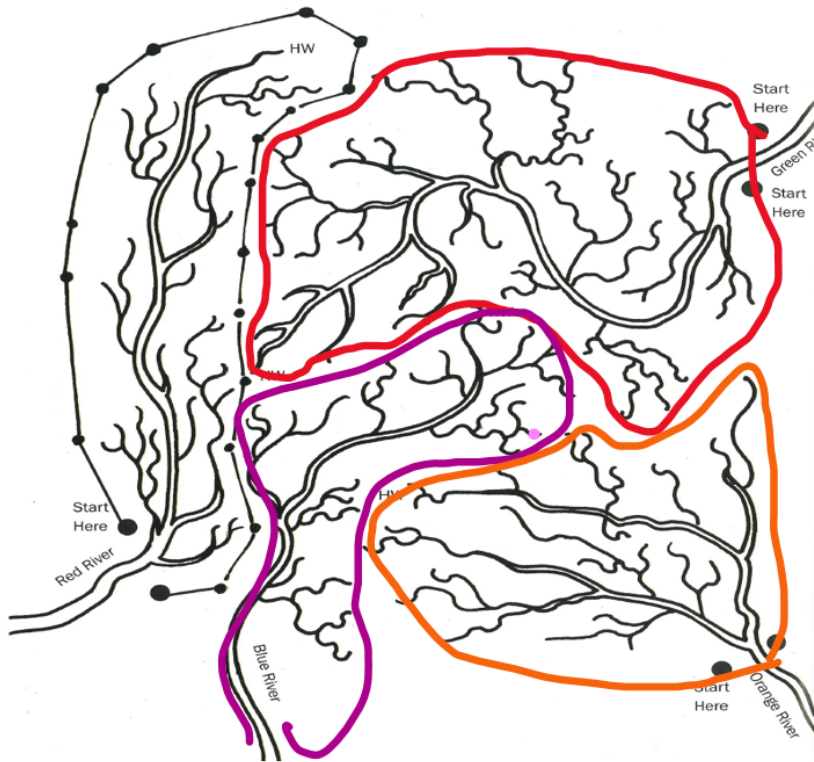
17. Draw arrows that show the direction that water would flow from the ridges down into streams A, B and C. For each of the 5 slopes, draw at least 4 arrows to indicate the direction of flow. (You should end up with 20 or more arrows.) [2 points]

Answer:



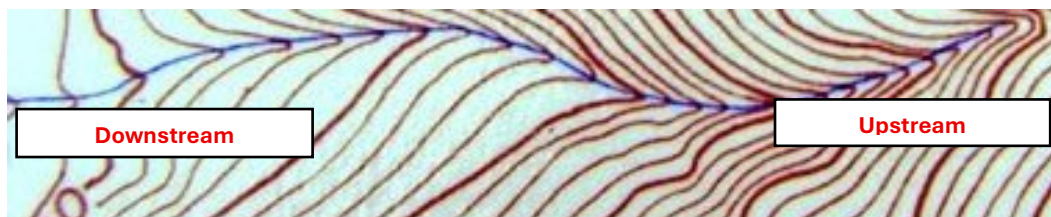
____/4 points

17. There are four watersheds on this map. One of the watersheds is outlined. Find the remaining three watersheds and outline them with a dark line. [3 points]



18. Look at the way the contour lines point or bend on the topographic map below.

Fill in the blanks on the map below using the terms "Upstream" or "Downstream" based on the direction the stream is flowing. [2 points]



___ / 5 points