

**#30: Groundwater I**

**name:** \_\_\_\_\_

Use the textbook (Glencoe Earth Science) for this assignment.

1. Read pages 239-243 first. According to the table on page 240, where is most of the world's freshwater (not salty)?
2. Where is there more freshwater? . . . in the world's lakes, or in the ground?
3. The porosity of sand is usually around 30%. Explain what this means.
4. In the diagram on page 241, what color is the area where groundwater is present?
5. What is the top of the area where there is groundwater called?
6. Where is the water table closest to the surface? . . . in a swamp, or on a hilltop?
7. What two factors will determine how fast groundwater will flow toward a lake, river, or well?
8. Look at the diagram atop page 243. The dark brown layer is "impermeable". Explain what this means.
9. An "aquifer" is an area underground that contains plenty of groundwater. Beneath the Helena Valley there is an aquifer (Helena Valley Aquifer), which is made of sand and gravel. How can sand and gravel contain water? (Where is the water?)
10. Read pages 244-248 first. What type of rock is especially vulnerable to being dissolved away by acidic water?
11. How does groundwater become acidic? (2 ways)

12. Go back to page 238 and look at the photo. Notice the person in the photo. How do caves like this form in limestone (p. 245)? (NOTE: Lewis and Clark Caverns formed this way.)

13. Look at the diagram and photo on page 246. How do sinkholes form?

14. What is "hard water"?

15. Look at the photo atop page 247. What happened here?

16. What is the source of pollution that is contaminating the wells in the diagram on page 255?

17. The source of water for residents who live within the city limits of Helena is surface water (a stream called Ten-Mile Creek). Residents in the valley, residents of East Helena, and anyone else who lives outside the Helena City limits, rely on groundwater. What is the source of water where you live? Circle one:

surface water

groundwater

18. We have three ways of dealing with sewage (wastewater) in the Helena area. The city of Helena uses the big (stinky) wastewater treatment plant located near Cost-Co. Smaller communities like East Helena, East Gate, and Townsend use lagoon systems (can also be stinky). Individuals that live away from communities use septic systems. Which is used where you live? Circle one:

wastewater treatment plant

lagoon

septic system

not sure