Name _____
Date _____
Per _____

1. _____ is water that lies beneath the ground surface, filling pore space between grains of sediment and clastic sedimentary rock.
2. Groundwater makes up _____% of the Hydrosphere.
3. Generally, groundwater is recharged through _____ of _____.
4. Match the following words with their correct definition.

_____ Porosity	A. Area where all rock openings are filled with water.
_____ Permeability	B. The percentage of rock/sediment that consists of open spaces.
_____ Water table	C. The uppermost surface of the saturated zone.
_____ Vadose zone	D. The capacity of a rock to transmit a fluid through pore spaces.
_____ Saturation zone	E. Unsaturated area above the water table.
_____ Perched water table	F. Body of groundwater that is trapped above impermeable rock.

5. Granites, Schists, and unfractured rock are generally _____ to the movement of groundwater.
6. In general, groundwater moves (Quickly/Slowly) through porous sediments and rock.
7. Using your understanding of Darcy's Law, calculate the following (show all your work or no credit):
    a. A sand aquifer has a permeability of 10^{-2} cm/sec, and a porosity of 26%. In the subsurface it has a width of 5000 meters and a thickness of 10 meters. How much water will the aquifer transmit per day if it has an elevation drop of 5 meters/100 meters. Give your answer in meters^3/day (5pts).
    b. How fast will the water travel in cm/sec (5pts)?
    c. How fast is that in feet/day (1 inch = 2.54 cm) (5pts)?
    d. How many gallons/minute will the aquifer transmit (1 gallon/minute = 5.42 meters^3/day) (5pts)?

8. An _____ is a body of saturated rock or sediment through which water can move easily.

9. Name five geologic materials that would make good aquifers (5pts).

    a.
    b.
    c.
    d.
    e.

10. An _____ is any rock or sediment that retards ground water flow due to low porosity and/or permeability. Shale, clay, and unfractured rock is a good example.

11. A _____ aquifer sits on top of an aquatard and is under hydrostatic pressure.

12. A/an (confined/unconfined) aquifer recharges quickly and may only be partly filled with water.

13. When a well is installed in an unconfined aquifer, the water level in the well before pumping is the _____ _____.

14. When a well is pumped faster than the recharge, the water table dips down and forms a _____ of _____. If pumping is excessive, then the well may go dry.

15. An _____ well occurs in a _____ aquifer and the water is under enough pressure that it rises to a level above the top of the aquifer.

16. A _____ is a place where water flows naturally from rock or sediment onto the ground surface.

17. _____ streams receive water from the saturated zone and _____ streams lose water to the saturated zone .

18. Name six things that could potentially contaminate groundwater (remember, contaminated groundwater can be very difficult and expensive to cleanup).

    a. b.
    c. d.
    e. f.

19. Currently, the residents of Monroe use septic tanks for home wastewater disposal. What are some of the problems associated with septic tanks, and why could Monroe be more susceptible to groundwater contamination (5pts)?

20. Dropping the water table significantly can lead to ground _____. This is when the surface of the ground drops as buoyancy from ground water is removed, allowing rock or sediment to compact and sink.

21. Most caves are formed when acidic groundwater dissolves limestone, leaving behind openings. Write the chemical equation for the dissolution of limestone by acidic groundwater (5pts).

22. When underground caverns collapse, _____ may develop.

23. Rolling hills, disappearing streams, and sinkholes are common in areas with _____ topography.