Name_____ Class _____ Date _____

Skills Worksheet

Directed Reading

Section: Water Beneath the Surface

1. Surface water that does not run off into streams and rivers may _____ into the upper layers of Earth's crust.
2. When water seeps underground, it fills _____ between rock particles.
3. Water that fills and moves through spaces in rock and sediment is called _____.

PROPERTIES OF AQUIFERS

4. What is an aquifer?

_____

_____

_____

5. The percentage of the total volume of rock or sediment that consists of open spaces is called _____.
6. The amount of uniformity in the size of rock or sediment particles is called _____.
7. How does well-sorted and poorly sorted sediment differ in terms of particle size?

_____

_____

_____

8. Loosely packed particles of rock have many open spaces, which results in _____ porosity.
9. Rock with tightly packed particles contains few open spaces, so it has _____ porosity.
10. In addition to sorting and particle packing, _____ also affects porosity.

11. Generally, the more irregular the grain shape, the more _____ the rock or sediment.

12. The ease with which water passes through a porous material is called _____.

13. For a rock to be permeable, the open spaces must be _____.

14. Sandstone is one of the most _____ rocks.

15. Because clay is composed of flat, fine-grained particles, it is _____.

ZONES OF AQUIFERS

16. What pulls water down through rock layers until it reaches impermeable rock?

_____

_____

17. Define *zone of saturation.*

_____

18. What does the term *saturation* mean?

_____

In the space provided, write the letter of the description that best matches the term or phrase.

_____ 19. water table

_____ 20. capillary action

_____ 21. capillary fringe

_____ 22. zone of aeration

a. the attraction of water molecules to other materials

b. the upper surface of the zone of saturation

c. the area in which water is drawn from the zone of saturation

d. area between the water table and Earth's surface

23. Between the soil moisture region and the capillary fringe is a region that contains _____.

MOVEMENT OF GROUNDWATER

24. The rate at which groundwater moves horizontally depends on what?

_____

_____

25. Define *gradient.*

_____

26. The velocity of groundwater increases as the water table's gradient

_____.

TOPOGRAPHY AND THE WATER TABLE

27. List four factors that affect the depth of a water table.

_____

_____

_____

_____

28. What happens to water tables during times of prolonged rainfall?

_____

_____

29. What happens to water tables during times of drought?

_____

_____

30. How many water tables do most areas of Earth have?

_____

_____

31. In some areas, what lies above the main water table?

_____

32. What is a perched water table?

_____

_____

CONSERVING GROUNDWATER

33. In many communities, the only source of fresh water is

_____.

34. How long might it take for the water level in an aquifer to renew itself?

_____

35. List three ways that a community might regulate the use of groundwater.

_____

_____

_____

36. What is a recharge zone?

_____

_____

37. Why are recharge zones environmentally sensitive areas?

_____

38. Name four ways that pollution can reach an aquifer.

_____

_____

_____

_____

WELLS AND SPRINGS

_____ 39. A hole that is dug to below the level of the water table and through which groundwater is brought to Earth's surface is called a(n)
   a. well.
   b. spring.
   c. ditch.
   d. artesian formation.

_____ 40. A natural flow of groundwater to Earth's surface where the ground dips below the water table is called a(n)
   a. well.
   b. spring.
   c. hole.
   d. artesian.

_____ 41. Ordinary wells work only if they penetrate
- a. highly permeable sediment or rock below the water table.
- b. the water table.
- c. impermeable rock.
- d. groundwater.

_____ 42. Pumping water from a well lowers the water table around the well and forms a(n)
- a. ordinary well.
- b. cone of depression.
- c. ordinary spring.
- d. drought.

_____ 43. If too much water is pumped from a well, what might happen as a result?
- a. Nothing will happen.
- b. The well and surrounding wells might go dry.
- c. The well will refill.
- d. A spring will form.

_____ 44. Which of the following formations are usually found in rugged terrain where the ground surface drops below the water table?
- a. cones of depression
- b. perched water tables
- c. ordinary wells
- d. ordinary springs

_____ 45. When might an ordinary spring go dry?
- a. when a nearby well goes dry
- b. during the rainy season
- c. during dry seasons or severe droughts
- d. during periods of high winds

_____ 46. An extensive aquifer through which water travels to a distant location may become part of a(n)
- a. ordinary well.
- b. ordinary spring.
- c. water table.
- d. artesian formation.

_____ 47. An artesian formation is a(n)
- a. sloping layer of permeable rock between two layers of impermeable rock.
- b. aquifer at a recharge zone.
- c. artesian well.
- d. artesian spring.

_____ 48. In an artesian formation, the top layer of impermeable rock is called the
- a. artesian well.
- b. aquifer.
- c. recharge zone.
- d. caprock.

49. When water enters the aquifer through the recharge zone of an artesian formation, the weight of the overlying water causes pressure in the aquifer to _____.

50. Water can flow freely through a(n) _____ without being pumped.

51. When cracks occur naturally in the caprock, water from an aquifer flows through the cracks, forming a(n) _____.

HOT SPRINGS

52. Groundwater is heated when it passes through rock that has been heated by _____.

53. Groundwater that has been heated to at least 37 °C and then rises to Earth's surface before cooling produces a(n) _____.

54. Mineral deposits around a hot spring create step-like terraces of calcite called _____.

55. When chemically weathered rock mixes with hot water from the spring, it forms a sticky, liquid clay called a(n) _____.

56. Mud pots that are brightly colored by minerals or organic materials are called _____.

GEYSERS

57. What is a geyser?

58. What happens when the water in a geyser vent begins to boil?

59. How long will a geyser eruption continue?

60. What happens after a geyser erupts?