

Hydrologic Cycle WebQuest

Go to each of the websites below and answer the questions regarding each. Answer each question thoroughly. We will not spend much time on the Water Cycle in class but it will be part of your unit test.

<http://www.physicalgeography.net/fundamentals/8b.html>

Define each of the following terms:

- Biosphere
- Lithosphere
- Atmosphere
- Hydrosphere

<http://ga.water.usgs.gov/edu/watercycle.html>

1. What does it mean when we say that the earth's water is always moving, or part of a cycle?
2. Is it possible that the water you drink today was around when the dinosaurs were? Explain.

The diagram at the bottom of the page shows the water cycle. Click on each part of the cycle to answer the questions below.

Water Storage in Oceans

3. What percent of the world's water is held in oceans?
4. What does "saline" mean?
5. Is the volume of water stored in the ocean's permanent?
6. What happens to the ocean level (and the coastline) during cold periods of the Earth's history?
7. What happens to the ocean level (and the coastline) during warm periods?
8. What causes tides?
9. What causes waves and movement in the oceans?
10. What does the Gulf Stream do?

Evaporation

11. Define evaporation.
12. This is the primary pathway that liquid turns to water vapor. True or False
13. Evaporation only accounts for 90% of water vapor, what makes up the other 10%?

14. What is sublimation and where does it occur?
15. What is necessary for evaporation to occur?
16. Why is the process of evaporation "cooling?"
17. How much of the water that evaporates from the ocean ends up as precipitation over the land?
18. How long does the average water molecule spend in the atmosphere before moving on in the water cycle?
19. List 2 ways that evaporation is useful to our everyday lives.

Condensation

20. Define condensation.
21. Why is condensation crucial to the water cycle?
22. How does the arrangement of water molecules in liquid compare to the arrangement of water molecules in water vapor?
23. Is there water vapor in the air even if there are no clouds in the sky?
24. Where is the air less dense?
25. What do we call condensation that forms on the ground?
26. Where do we find condensation in our daily lives?
27. Explain how clouds form.
28. What is a contrail?
29. Are clouds heavy? Explain.

Water Storage in the Atmosphere

30. How much of the world's water is stored in the atmosphere?
31. If all of the water in the atmosphere rained down at once, how deep would the water be that covers the ground?

Precipitation

32. What is the precipitation?
33. If you look closely at a cloud you can see some parts disappearing _____ while other parts are growing _____.

34. What is the nucleus of a raindrop?
35. Explain what must happen in order for a raindrop to fall?
36. What shape are raindrops?
37. Does precipitation fall in the same amount worldwide? Why do you think this is the case?
38. Which location in the world receives the largest annual rainfall?
39. What's the world's record for the least amount of precipitation? Where did this occur?
40. In a drizzle, how fast (velocity) do raindrops fall?
41. In an "excessive rain" how many drops fall per second in one square foot?

Water Storage in the Ice and Snow

42. What is meant by "storage?"
43. Is water still a part of the water cycle if it is stored as ice in the same place for 2,000 years?
44. Look at the map of the world that is shown. The white parts show glaciers and ice sheets. Where are the largest ice storages found?
45. How much of the earth's ice is in Antarctica?
46. What is an iceberg and how does it move?
47. When was the last ice age?
48. Where were the ice and glaciers located during the last ice age?
49. How do ice caps and glaciers affect the world's weather?
50. If all of the world's glaciers melted, how much would the oceans rise? (If this happened, most of the Bay Area, particularly, San Francisco and the peninsula, would be under water.)
51. Icecaps, glaciers and permanent snow make up what percentage of the earth's total water?
52. Are glaciers and ice caps freshwater or saltwater?

Surface Run-Off

53. What is surface run-off?
54. Why is run-off not good for water quality?

55. What percentage of the precipitation that falls on land runs into streams and rivers to be returned to the ocean? What happens to the other percentage of precipitation?
56. What "meteorological factors" affect run-off?
57. What physical characteristics affect run-off?
58. How do humans affect run-off?
59. How does urban development affect run-off and flooding?

Groundwater Storage

60. Where does water in the ground come from?
61. What does saturated mean?
62. Explain what an "aquifer" is.
63. How do people access freshwater for their daily needs?
64. Why do some wells go dry? Explain thoroughly.
65. What percentage of the world's water is in groundwater storage?

Use the diagram of the water cycle to answer the last few questions.

66. List two paths snow can take once it falls to the Earth's surface.
67. Starting with water stored in the ocean, draw a flowchart showing one complete path the water can take through the hydrologic cycle.