

# Study Guide for Benson's Final Exam (January 2015)

- The questions and clues below are intended to refresh your memory. They are related to test questions. There will be 100 multiple-choice questions on the test. There will be five additional "level 2" questions on the honors test.
- Here is how you should prepare for the test.
  1. Read and think about all of the notebook entries since the start of the school year. Try to anticipate questions as you do this.
  2. Be sure to study your handouts, worksheets, etc. since the start of the school year. As you read over the labs and worksheets, pay special attention to the follow-up questions. Do NOT try to memorize - Try to UNDERSTAND.
  3. Go to Benson's web site: [www.bengalfrosh.com](http://www.bengalfrosh.com) - Watch and listen to the PenCasts that are posted. Select "full-screen", then "hide preview", and then play (your volume must be on).
  4. Go over the questions/clues below. Try to find answers in your handouts, text, or notes.

## Questions/Clues Related to MOST (not all) of the test questions . . .

1. How would you determine the density of a solid object (formula, correct units)? (Density Lab)
2. What processes would change the salinity of ocean water? (Lab: The Briny Deep)
3. Make sure you understand Figure 3 on p. 424 of your test (honors fig. 14.3 on p. 407).
4. What does in mean if the salinity is 35 ‰? (Lab: The Briny Deep)
5. How does the addition of salt to icy water affect the temperature, and why?
6. How do salt and temperature affect the density of water? (Lab: The Briny Deep)
7. Make sure you understand what the ocean conveyor belt is, and why it sinks near Greenland. (NE)
8. What are surface currents, and what causes them. (notes handout)
9. What is upwelling, and what causes it? (notes handout)
10. Why is upwelling important to the fishing industry? (El Nino map activity)
11. List three things that are different during an El Nino? (El Nino map activity, Pencast)
12. What helps algae to grow and what do they provide? (NE)
13. What causes an El Nino? (El Nino map activity, Pencast) Make sure you understand figures 16 and 17 on page 546-547 (honors figure 18.23 on page 543).
14. How do we monitor the waters of the equatorial Pacific to see if an El Nino is starting? (El Nino map activity)
15. What causes algae blooms and why are they harmful to animals that have gills? (NE)
16. What is a temperature inversion in the Helena Valley – (NE and Pencast)
17. Why is it warmer in Helena during the summer and why do we have seasons.
18. What is "ozone" and how does it get destroyed? (notes handout)
19. Why has there been so much concern about ozone in recent decades? (notes handout: Ozone)
20. What happens to the temperature as you go up through the troposphere? Why? (Graph Activity: Layers of the Atmosphere)
21. What happens to the temperature as go higher into the stratosphere? Why? (Graph Activity: Layers of the Atmosphere)
22. Why is the air thinner at higher elevations? (Graph Activity: Layers of the Atmosphere)
23. Which nation emits the most carbon dioxide? (Google it if you don't remember)
24. What is the "Greenhouse Theory" of global warming? (Notes handout: Global Warming Issue)
25. What are three ways heat is transferred? Know the difference and provide examples of each. (WS: Greenhouse Effect and figure 9 on p. 483 – honors page 473 figure 16.17)
26. How is the energy that is absorbed by the Earth transferred into the atmosphere? (WS: Greenhouse Effect and figure 9 on p. 483 – honors page 473 figure 16.17)
27. When, where, and why does the hole in the ozone happen? (Notes handout: The Hole in the Ozone)
28. How do greenhouse gases "trap" heat? (notes handout: Goba! Warming Issue)
29. List the three fossil fuels and tell the main use of each. (Notes handout: Global Warming Issue)
30. What two trends have been observed since scientists started monitoring carbon dioxide levels in Hawaii in the late 1950s? (Graph Activity: Climate Data from the Past)
31. List three greenhouse gases. Which one gets the most attention? Why? (Notes handout: Global Warming Issue)
32. What is the main use of coal in the USA? (Notes: Global Warming Issue)
33. What is meant by the phrase "annual temperature range"? (Lab: Heating Land and Water)
34. Compare the heating and cooling of land and water. (Lab: Heating Land and Water)
35. Same as 34

36. What would cause frost to form instead of dew? (Notes handout: Humidity Topics, Lab: Relative Humidity)
37. What is a "dew point" and what would cause rising air to reach its dew point? (Notes handout: Humidity Topics, Notes handout: Cloud Formation)
38. Why do clouds often form in air that is rising? (Note handout: Cloud Formation, Lab: Recipe for a cloud)
39. What was the purpose of adding smoke to the bottle in the "Recipe for a Cloud Lab"?
40. Why does sweating make you feel cooler? (WS: Vapor, Clouds, Precipitation)
41. How does a psychrometer work? What happens if the air is really dry? (WS: Vapor, Clouds, Precipitation)
42. What does the relative humidity tell you? (Pencast, Notes handout: Humidity Topics)
43. In the cloud lab and cloud demos, why did the cloud evaporate when the bottle was squeezed? (Lab: What's the Recipe for a Cloud?)
44. List five situations that would help clouds form? (Lab: Recipe for a Cloud)
45. What does a really high dew point tell you about the air? (Lab: What's the Relative Humidity?)
46. What is the source of heat that makes the Chinook Winds so warm? (Notes handout: Cloud Topics)
47. What 3 things/conditions are needed for cloud formation? (Notes handout: Cloud Formation and Lab: Recipe for a cloud)
48. What is the Coriolis Effect and how does it influence flowing water and air? (Notes handout: Global circ.)
49. What and where are the Doldrums and what is air doing there? (Map Activity: Prev. Winds)
50. What are the monsoons and what causes them? (Lab: Convection)
51. Same
52. What is the correct sequence in the development of winds? (Lab: Convection Causes Wind)
53. What are three things that would cause air to rise? (Notes: Cloud Formation)
54. What are jet streams? (NE)
55. How does a mercury barometer work? (WS: Pressure)
56. How do meteorologists determine where to put the "H's" and "L's" on a map? (Map activity: Isobars)
57. How do areas of rising and sinking air affect the pressure at the surface? (NE)
58. Why did the can get crushed in the can-crush activity and demos? (Handout: Can Crush Demo)
59. Describe the 3 aspects of cyclonic flow in the N. Hemisphere. (covered in class multiple times!)
60. How does a warm front differ from a cold front? (illustrations on p. 565-566, honors: 556-567)
61. Why is colder air more dense than warmer air? (Lab: Convection)
62. There will be 4 questions about the Blizzard of '93. (Map Activity: Blizzard of '93)
63. What is the purpose of weather balloons? (Map Activity: Jet Streams)
64. Why is it safer to be in a car during a lightning storm? (covered in class many times!)
65. What technology is best for determining where it is currently raining or snowing? (NE)
66. What are the three types of images that weather satellites provide? (NE)
67. What does the presence of a "hook" on a RADAR image indicate? (NE)
68. What kind of weather is most likely to cause a "squall line" to form? (map Activity: Blizzard of '93)
69. Which three phase changes cause the surrounding air to get warmer? Why? (Latent Heat Lab)
70. What is a microburst? (Notes handout: T-storm hazards, Latent Heat Lab)
71. What are the three types of cyclones we learned about?
72. What is the difference between a "tropical storm" and a "hurricane"? (Notes handout: Tropical Cyclones)
73. What would cause a hurricane to start to die down? (Notes handout: Tropical Cyclones)
74. What were the worst hurricanes in USA history? (Notes handout: Tropical Cyclones)
75. What is a storm surge, and what causes it? (Notes handout: Tropical Cyclones)
76. What may have caused Mars to lose its magnetic field? (Video sheet: Magnetic Storm)
77. What is the difference between Earth's outer and inner cores? (Video sheet: Magnetic Storm)
78. What are the three things that influence the global pattern of winds? (Notes handout: Global Circulation)
79. Why is Earth's magnetic field important to us? (NOVA: Magnetic Storm)
80. Explain what paleomagnetism is and tell how it was used to support the theory of Plate Tectonics. (Notes handout)
81. What are the forces that make crustal (tectonic) plates move? (notes hanout)
82. How does paleomagnetism support the theory of sea-floor spreading? (test pages 258-259, honors 215-216)
83. What kinds of evidence did Alfred Wegener use to support his theory of continental drift? (notes handout)
84. Study the timeline portion of the notes handout: Plate Tectonics to get a sense of the order of events.
85. There will be 5 questions that will require you to look at a map similar to the one on page 262-263 (honors 202-203) with diagrams like those found on pages 264-268 (honors 206-207).
86. Make sure you understand ALL the diagrams in chapter 9 (Honors – Chapter 7)