

Galaxy Hunter Travelogue

1. What method, if any, did you use to select your sample of galaxies?

2. Record your data from the HDF- **N** or **S** (circle one) in the table at left, below.

Type	Frequency	Percentage
Elliptical		
Spiral		
Irregular		

Actual Result For Percentage of Irregulars

3. Record the actual result for percentage of irregulars in the table above, right. Describe the variation between your result for percentage of irregular galaxies and the actual result. What do you think accounts for this difference?

4. Define bias.

5. Based on your current knowledge, was your method of selecting the sample of galaxies described in question 1 biased? Explain.

6. If a computer randomly chooses a fixed number of galaxies, 5 different times, would you expect it to keep getting the same result for percentage of irregulars each time, since the sample sizes were the same each time? Why or why not?

7. Compare the positions of the mean and median on any single min/max plot. How would those positions change if the lowest value were zero?

8. Explain why the variability of sample results approaches zero as the sample size approaches the population size.

9. Predict a range of acceptable percentages for irregulars based on the length of the min/max bar for your best sample size. The range of percentages for the whole chart is 40% to 100%.

10. Copy the table, making sure you fill in your sample size and the full name of the HDF you used. Compare your value for the percentage of irregulars with your predicted range from above.

Galaxy type	Your computer sample size: _____	Astronomers' results using whole HDF - ____
Percentage Elliptical		
Percentage Spiral		
Percentage Irregular		

11. Now that you know about sample size and bias, do you think the percentage of irregulars in your original sample is within acceptable range of the actual results? Explain. (Your results and the actual value for percentage of irregulars can be found in question 2 above.)

12. State the sample size you will use and explain why you chose this size.

13. Do you think your results are close to the astronomers'? Explain.

14. Comparing the two HDFs, could you say that the universe probably looks the same in these **two** directions? Explain.

15. Using what you've learned about sample size and bias, could you use the HDFs to make a general statement concerning the uniformity of the universe? Explain.

16. What is the most common type of galaxy in (a) the local universe and (b) the faraway universe pictured in the HDFs?
