

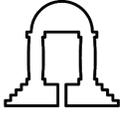
Hubble Academy Log - HAL

Activity One: How Many Objects are There?



I. Compare your estimate with the astronomers'

How similar or different is your estimate when compared with the astronomers' estimate? If your estimate is different, explain why you think this is.



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Activity 2: Classifying and Identifying



I. Compare the Astronomers' Chart to Yours

- 1. List three objects on which you and the astronomers agreed. Use their numbers to identify them.**

- 2. List three objects on which you and the astronomers disagreed. Use their number to identify them.**

- 3. If applicable, give two reasons why you think you and the and the astronomers disagreed.**

A. _____

B. _____

II. Questions about the Astronomers' Classification

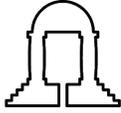
1. How many groups contain at least five objects?

2. Choose any one group and describe the characteristics of its members.

III. Compare Your Descriptions To Those Of The Astronomers.

1. List one similarity that exists between the astronomers' explanation and your hypothesis regarding the group of objects you selected.

2. List one difference that exists between the astronomers' explanation and your hypothesis regarding the group of objects you selected.



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Activity 3: Estimating Distances in Space



I. Your Task

1. Explain why you arranged the objects as you did. Be sure to mention any particular trait upon which you based your decision.

II. Distance: The Reality

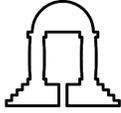
1. Explain how the object labeled "F" can be smaller, yet closer, than the object labeled "C".

III. Comparing Results

1. How is your explanation regarding estimating distances in space similar to the astronomers' explanation?

2. How is your explanation regarding estimating distances in space different from the astronomers' explanation?

3. If we were to visit these six objects (F, D, C, A, E, B), in what order would you recommend we visit them? Please justify your recommendation.



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Activity 4: Are You ready for Space? The Final Task



I. Review Questions:

1. What is the difference between a galaxy and a star?

2. What does the color of a galaxy indicate?

3. What does the shape of a galaxy indicate?

4. Why isn't a galaxy's size alone useful in determining its distance from Earth?

5. Explain why the same galaxy can appear to have different shapes to different observers.

6. Describe the process used by astronomers to estimate the number of galaxies in the universe. Be sure to explain what mathematical operations must be performed.

7. Why is it better to observe the sky from space rather than from Earth?

II. Hubble Academy Final Challenge

1. What does the color of the "oddball" object tell you?

2. What does the shape of the "oddball" object tell you?

3. What do you think this object is? Justify your answer.
