Telescope Hunt

Description: Using a small telescope (Galileoscope or your own), find at least 10 deep sky objects from 5 different categories (binary stars, nebulae, galaxies, planets, star clusters) and sketch them. Calculate the field of view of your telescope. Note that you are welcome to borrow a galileoscope, but will need to find a tripod to use it with.
Caution: Galileo was a very impressive and patient man. Although Galileoscopes are a remarkable contribution to the field of low budget astronomy, they are very difficult to use, and virtually impossible to use without a tripod. If you choose this option, you will need to be very patient.

Materials needed: telescope, stopwatch, planisphere

Resources:
List of good deep sky objects to observe with a small telescope

Instructions:
Part 1:

1. Using a borrowed Galileoscope or a telescope of your own, observe 10 deep sky objects. You need to observe at least one object from each of the following categories, however you do not have to complete all of your observations on the same night.
    a. Binary Stars
    b. Nebulae
    c. Galaxies
    d. Planets
    e. Star Clusters
2. Note the date, time, moon phase, eyepiece and conditions (windy? Cloudy?) of each observation.

Part 2:

1. Using at least two different eyepieces, calculate the field of view of each eyepiece. To do this:
    a. First, watch through your eyepiece for a minute or so and observe how objects drift in your field of view.
    b. Find the celestial equator (A great arc across the sky 90 degrees from the north star and marked on your planisphere).
    c. Choose a star near the celestial equator that's reasonably bright and place it at the very edge of your field of view so that it will drift right across the center. Start a timer.
    d. Watch the star until it hits the opposite side of your field of view and stop the timer
    e. Do this for each eyepiece you have

Data:

1. Sketch of each of the 10 objects you observed

2. Calculation of your telescope's field of view

Questions to Address in Your Poster's Data Analysis Section:

1. Describe each of the objects you observed. Include:
   a. Your sketch
   b. Did you see any color?
   c. Which eyepiece or eyepieces did you use?
   d. Could you also see this object with the naked eye (and/or binoculars if you have them?) If so, how did its appearance change through the telescope?
2. Research each of the objects that you observed. Include:
   a. How far away is it?
   b. What type of object is it and how was it created?
   c. Who was the first person to see it?
   d. How would it look different if you had an infrared, UV or x-ray telescope (and eyes that were sensitive to those wavelengths)?
3. Calculate the field of view for each eyepiece. Show your work. To do this, make a ratio of the time it took the object to drift across your field of view to an entire 24 hour day and translate that to the fraction of a 360 degree circle that's been completed as follows:

$$\frac{DRIFT\ TIME}{24\ HOURS} = \frac{FIELD\ OF\ VIEW}{360\ DEGREES}$$