Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lab Night \_\_\_\_\_\_\_\_\_\_\_\_\_\_

 VIRTUAL SKY IV (Rev 2/17/15)

PART I OBSERVING MESSIER OBJECT

There is a telescope on one of the Canary Islands that has a telescope that can be operated by remote control.

Pretend you are applying for time to observe an object. You will have to select an object and determine if it is visible from the Canary Islands. For additional information about the telescope go to [www.slooh.com](http://www.slooh.com).

1. Do an Internet search to find the latitude and longitude of the Canary Islands.

Latitude = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Longitude = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Start the Voyager 4.5 program. Use Windows > Location Panel to set program to Canary Island lat and long. Use Windows > Time Panel to set to **tomorrow’s date** and then set to 1 AM in Canary Islands (1 AM there = 8 pm in Auburn today). Use Display Menu to turn on star names and constellation lines and names.
2. Look at list at end of this handout to find the Messier object you are to use. Use the Voyager program (Center > Find & Center) to find where this object is in the sky at 1 AM. Go to Display>Sky & Horizon to turn on cardinal points labels.
3. For the chosen object give the following data. Use the Voyager Info panel.

# Messier Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Name (if no name listed give NGC #) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 C) Type of object (spiral galaxy, planetary nebula, etc) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 D) In which constellation is the object located? \_\_\_\_\_\_\_\_\_\_\_\_\_

 E) How high to point telescope (altitude) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Brightness (apparent magnitude) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Compass direction to point telescope (use azimuth)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PART II PLANET TREK

Go to File > Open Settings > Settings Files > Spacecraft & Missions to tell which planet these space probes visited (other than Earth). If a space probe visited more than one planet, give either one.

Cassini \_\_\_\_\_\_\_\_\_\_\_\_\_ Pioneer 11 \_\_\_\_\_\_\_\_\_\_\_\_\_

Galileo \_\_\_\_\_\_\_\_\_\_\_\_\_ Voyager I \_\_\_\_\_\_\_\_\_\_\_\_\_

Magellan \_\_\_\_\_\_\_\_\_\_\_\_\_ Voyager II \_\_\_\_\_\_\_\_\_\_\_\_

PART III VOYAGER SHORT PROGRAMS (Uses Voyager 4.5)

1. Go to File > Open Settings > Settings Files > Stars & Deep Sky and open “Bowls of the Dippers” . Go to the Display menu and change the color of the lines used to draw the constellation to a color that is easier to see. On the left below draw the Big Dipper as it appear now. On the right below draw the Little Dipper as it appears now. Use the time panel to see how the shape changes in 100,000 years. Draw the future appearances below the drawings of the way they look now. (3 pts each)
2. Go back to File > Open Settings > Settings Files > Stars & Deep Sky and run the program “Double Pole” Name the two stars that are near the celestial north pole. \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Change the time interval to 50 yrs. Run time backwards to about 452600 BC. Change the time interval to 1 hour and adjust time until it is night. Which bright star was close to the celestial North Pole then? \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Go to Settings Files > Comets & Asteroids > Orbit of Quaoar. It is pronounced like “kwa war”. The Voyager program calls it the largest asteroid. According to Wikipedia it might be called a \_\_\_\_\_\_\_\_ planet. Which of these statements about the orbit is correct? A) Always closer to Sun than Mercury B) Always between orbits of Venus and Earth C) Located in the asteroid belt between Mars & Jupiter like most asteroids D) Quaoar’s orbit carries it further from the Sun than Pluto. Put letter of answer here: \_\_\_\_\_\_\_\_\_.
4. This is based on a real incident. Pretend you have been hired as an astronomer by Abraham Lincoln. A witness said that the moon was full and overhead so that there was plenty of light to see the accused hit the victim. Use Voyager 4.5 to find answers. Location: use Springfield, Illinois Time: 11 pm (turn off auto DST in time panel) Date: Aug. 29, 1857. What was the phase of the Moon? A) New B) waxing gibbous C) Full as witness said D) waning gibbous Put letter here \_\_\_\_\_\_\_\_\_. How high was the Moon ? A ) witness was correct about it being overhead B) altitude ~45 deg above horizon C) altitude ~ 10 degrees above horizon D) below horizon Put letter here \_\_\_\_\_\_\_\_\_ .

Messier object to use: Dec-Jan M42 Feb-Mar M44 Apr M13 May-June M8

 July-Aug M57 Sept M31 Oct-Nov M45

**Points: 4 pts each blank**