Name(s): _____ _____

_____ _____

Date: _____ Course/Section: _____

Grade: _____

Exploring the Night Sky

Objectives:

Students will familiarize themselves with how to use start charts and star wheels.

Checklist:

- ☐ **Complete the pre-lab quiz with your team (if required).**
- ☐ **Compile a list of resources you expect to use in the lab.**
- ☐ **Work with your team to complete the lab exercises and activities.**
- ☐ **Record your results and mark which resources you used.**
- ☐ **Share and discuss your results with the rest of the class.**
- ☐ **Determine if your team's answers are reasonable.**
- ☐ **Submit an observation request for next week (if required).**

Resources:

Pre-Lab Quiz

Answer the pre-lab questions and explain your answers.

1.
2.
3.
4.
5.
6.

Part 1: The SC001 Constellation Chart

Using the SC001 Star Charts, answer the questions below.

1. Complete the tutorial available on the lab website (skip the quiz at the end.) Then, determine the declination of the most southern star you can see in Iowa City.

2. The celestial coordinates for the planet Venus during the week Sept 5, 2017 are RA = 9h 0m, Dec = +17d. What constellation is the planet in on that day?

3. Where is the Sun relative to Venus at this time?

4. What bright star has the following coordinates: RA = 14h 15m, Dec= +19.7d?

5. Find the location of the meridian at 8PM CST for tonight. Write down the bright stars that are close to the meridian and say whether they are east or west of the meridian.

6. The stars Betelgeuse and Rigel are in the constellation of Orion. Find them on the star chart and record their RAs and Declinations.

7. For the week of Sept 5th, the coordinates of the planet Saturn are RA= 17h 21m, Dec= -22d.
    1. What constellation is it in?

    2. Which bright star is near Saturn at 8pm tonight?

    3. What time of day will Saturn cross the meridian and therefore be most easy to observe?

Part 2: Using a Star Wheel and Star Walk

1. Dial up the 8pm on your star wheel. Find a constellation that has just risen. Find a constellation that has just set.

Just risen – Star Wheel	
Just set – Star Wheel	

2. At 8pm tonight, where is the constellation *Ursa Major*, also called the Big Dipper?

3. The constellation Orion is a favorite nighttime object for many observers. During which months is Orion observable in the early evening? (Explain how you define *early evening.*)

b. Is Orion above the horizon right now?

4. What does it mean for a star or constellation to be circumpolar?

a. Name 3 circumpolar constellations for Iowa City, IA.

Using the Sky Walk App (Ipads)

With Star Walk set to the current time, determine the information below.

What is the purpose of the red solid line in the *Star Walk* display?	
Which planets are above the horizon at this moment?	

Using the Star Walk app, fill in the information for Iowa City, IA for today.

Sunrise, sunset times	
Phase of the moon and its rise and set times.	

Using Stellarium

Use the Stellarium program to complete the following exercises.

1. Turn on the Equatorial and Horizontal coordinate axes in the lower right. Then, press fast-forward a few times on the time dial (lower left). Which coordinate system is more static? Which one would you rather use to give coordinates of night time objects?

2. Your TA will give a short demo. Describe the motion of the Moon from the demo. Why does the Moon wobble?

3. What constellation is M44, the Beehive Cluster, located in?

Is M44 observable tonight? If so, where in the sky would it be located? If not, what time of year would be best to observe it?

4. An object of great interest in astronomy can be located at the following coordinates:
RA = 0h 43m, Dec = 41° 16' *(Sometimes, Stellarium doesn't go right to it)*

What is this object's name and what type of object is it?

Find and describe two interesting facts about this object.