

Astronomy Merit Badge - James Shields - nearlyvertical@gmail.com

Information for the class:

- 1) Please complete as much as the merit badge worksheet as possible with the exception of 4 and 8b. We will work on these during the night session. For the other questions please come prepared to discuss and answer the questions. If you fill in the answers, or part of, before hand using the workbook, we will be way ahead.
- 2) Bring the workbook. It is a great source.
- 3) Bring a notebook and a pen.
- 4) **Dress for cold weather.** Bring a hat, gloves, very warm socks, warm jacket, scarf, etc. It is very easy to get cold while doing astronomy. We will be standing in one place most of the time.
- 5) Bring a flashlight that has a **red light. White lights destroys our night vision.** If you do not have a red light, you can duck tape red cellophane over the light.
- 6) If you have a cell phone, we might be able to take some photos of objects.
- 7) Before you arrive do questions 6a and b and bring them.
- 8) For sketching the moon, it helps if you have a pair of binoculars to make it a little **bigger.** Sometimes magnifying with a cell phone will work.
- 9) For tracking the moon across the sky, make sure you are at the same location and you sketch the foreground for reference. It is best to start this before the moon is a quarter moon.
- 10) There is a star chart you should download and bring with you. They release the March star chart March 1st. The second page has a list of objects to look observe. Pick out a few objects you may want to see before you arrive.

<https://skymaps.com/downloads.html>

You should have the Northern Sky March 2025 map. Should be released March 1st.

Hint for Question 4: Identify in the sky at least 10 constellations, at least four of which are in the zodiac.

This is one of the hardest things to do, but there is a trick. You could use an app, but that really isn't you identifying the constellations. However, just about everyone knows where the Big Dipper is (part of Ursa Major), and there are two other constellations that are easy to find this time of year – Cassiopeia and Orion. If you don't know these, don't worry.

With these three constellations you can find all the others you need for this requirement. I attached a star chart with the information you need for 4. Bring it with you, you will be able to use it.

Here how it works. Start with the Big Dipper at the center of Ursa Major (constellation 1). Go to the two stars at the end of the cup – draw a line between these and follow it to the next star just about as bright as the stars in the cup. This is the North Star – it is part of Ursa Minor (#2). Go back to the Big Dipper – follow the arc of the handle to the star Arcturus. This is a very bright star and part of the constellation Bootes (#3). Now go back to the Big Dipper and draw a line between the two top stars in the cup. Follow this to the next bright star. The star is Capella and it is part of the constellation Auriga (#4). One more time to the Big Dipper and the stars at the end of cup. Go the other direction to the next bright star. The star is Regulus and the constellation is Leo the Lion (#5 zodiac). This one is a zodiac constellation since it lies on the line that crosses the star chart.

We used the Big Dipper pointers. Now to use the constellation Cassiopeia. It looks like a 'W' (or an 'M'). Go from the Big Dipper to the other side of the North Star and you will see it. The inside line of one of the 'V's that makes up the 'W' points to Perseus – a hero (#6). The sharper 'V' in the W points to the constellation Andromeda (#7).

Another option is to jump to Orion (#8). Orion has an arm over his head almost touching the feet of Gemini, the Twins - (#9 zodiac). The two bright stars nearby are their heads. Halfway between their heads and Regulus, the bright star in Leo, is a very faint constellation consisting of only a few lines. It is Cancer (#10 zodiac).

So you have 10 constellations, but only three are in the zodiac. We need one more in the zodiac. Follow the stars in Orion's belt up to Taurus the Bull (#11 zodiac) and we are done.

Bring the star chart. You can use it. You will also need to map out the shapes. If you want to remember the shapes it is sometimes easier to apply a shape to them.

Example: Bootes is the sheep herder. It looks nothing like a sheep herder. It looks like a kite or icecream cone. So remember either of those.

Auriga is a charioteer and is often shown riding a chariot. It looks nothing like that! However, it looks a bit like a helmet a charioteer would wear – the bump is where the nose goes. So easier to remember the shape and what it represents.

Don't forget the chart and try using it before arriving. Also notice the number of bright stars we identified that can be used for another requirement.

