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Astronomy Merit program @ Huntley Meadows Park

Important information about how to prepare for a merit badge program at Huntley Meadows Park!

Important information about how to prepare for a merit badge program at Huntley Meadows Park.

Merit badges are also supposed to be done with the buddy system. ***We highly recommend that you attend the program with your scout especially if he does not have a buddy;*** the chances of your scout completing all the work for the badge, during the allotted time, increases dramatically when he is properly motivated. There is never a fee for adults and you are sure to learn something. Also our policy is that the program will not proceed if there are not 2 or more adults present for the program especially those containing hikes. We will attempt to enlist adult volunteers from our center but this is not always possible so ***prepare for the possibility that you may have to stay for the program and not just drop off your scout.*** This will allow the instructor to concentrate more fully on the task of imparting all the required information and assisting the boys individually if necessary, while other adults keep the atmosphere calm and productive.

These programs are 3-5 hours long be sure to pack a snack and water for your scout and that he is dressed appropriately for being outdoors for some or all of the program time. Merit Badges are in general not designed to be completed in an afternoon therefore in order to complete the badge there is some work the scouts need to do outside of the workshop. We call this prework. We suggest this is done prior to the badge program date but we realize this is not always practical or possible, in these cases we will if requested sign partial cards and accept the assignments after the program or ask that you bring/ send back all the work and the card in order to sign off on the blue card all at once.

Here are the requirements for the astronomy badge, we will attempt to do as many as we can weather permitting (dress to be outside for at least 1.5hrs). Some requirements cannot be completed in one session as they require observations over time. You can attempt to do these before the program and bring the results for me to sign off on all at one time or if you need more guidance I can help you arrange to do them after the program and you can return to me when they are done for a signature. I promise to help in any way I can through the process.

I have **bolded the requirements that we will not be able to do so that you can decide if you want to work on them ahead of time. They are **#4c, #5b, #6b, and #8.****

Astronomy Requirements

1. >Do the following:
 - A. Describe the proper clothing and other precautions for safely making observations at night and in cold weather.
 - B. Tell how to safely observe the Sun, objects near the Sun, and the Moon.
 - C. Explain first aid for injuries or illnesses, such as heat and cold reactions, dehydration, bites and stings, and damage to your eyes that could occur during observation.
1. Explain what light pollution is and how it and air pollution affect astronomy.
2. With the aid of diagrams (or real telescopes if available), do each of the following:
 - A. Explain why binoculars and telescopes are important astronomical tools. Demonstrate or explain how these tools are used.
 - B. Describe the similarities and differences of several types of astronomical telescopes.
 - C. Explain the purposes of at least three instruments used with astronomical telescopes.
 - D. Describe the proper care and storage of telescopes and binoculars both at home and in the field.
4. Do the following:
 - A. Identify in the sky at least 10 constellations, at least four of which are in the zodiac.
 - B. Identify at least eight conspicuous stars, five of which are of magnitude 1 or brighter.
 - C. Make two sketches of the Big Dipper. In one sketch, show the Big Dipper's orientation in the early evening sky. In another sketch, show its position several hours later. In both sketches, show the North Star and the horizon. Record the date and time each sketch was made.**
 - D. Explain what we see when we look at the Milky Way.
5. Do the following:
 - A. List the names of the five most visible planets. Explain which ones can appear in phases similar to lunar phases and which ones cannot, and explain why.
 - B. Using the Internet (with your parent's permission), books, and other resources, find out when each of the five most visible planets that you identified in requirement 5a will be observable in the evening sky during the next 12 months, then compile this information in the form of a chart or table.**
 - C. Describe the motion of the planets across the sky.
 - D. Observe a planet and describe what you saw.
6. Do the following:
 - A. Sketch the face of the moon and indicate at least five seas and five craters. Label these landmarks.
 - B. Sketch the phase and the daily position of the Moon at the same hour and place, for four days in a row. Include landmarks on the horizon such as hills, trees, and buildings. Explain the changes you observe.**
 - C. List the factors that keep the Moon in orbit around Earth.
 - D. With the aid of diagrams, explain the relative positions of the Sun, Earth, and the Moon at the times of lunar and solar eclipses, and at the times of new, first-quarter, full, and last-quarter phases of the Moon.

7. Do the following:

- A. Describe the composition of the Sun, its relationship to other stars, and some effects of its radiation on Earth's weather and communications.
- B. Define sunspots and describe some of the effects they may have on solar radiation.
- C. Identify at least one red star, one blue star, and one yellow star (other than the Sun). Explain the meaning of these colors.

8. With your counselor's approval and guidance, do ONE of the following:

A. Visit a planetarium or astronomical observatory. Submit a written report, a scrapbook, or a video presentation afterward to your counselor that includes the following information:

- 1. Activities occurring there**
- 2. Exhibits and displays you saw**
- 3. Telescopes and instruments being used**
- 4. Celestial objects you observed.**

B. Plan and participate in a three-hour observation session that includes using binoculars or a telescope. List the celestial objects you want to observe, and find each on a star chart or in a guidebook. Prepare an observing log or notebook.