

(Please Print) Scout's Name \_\_\_\_\_ Phone \_\_\_\_\_ Class Time \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

**Astronomy**  
**Requirements Sheet**  
**Merit Badge Powwow 2009**

The scout is to read the Astronomy Merit Badge pamphlet before the Powwow (2004 edition or later). Some requirements may take up to 90 days to complete before coming to the Powwow. Read all the requirements below and bring necessary items to guarantee passing off the merit badge on the day of the Powwow. Bring to class paper, pen or pencil, and any other items asked for. Write your name, merit badge and class time (9:00 or 1:00) on **every** paper or project. (If there are any questions pertaining to requirements, the most recent Boy Scout Requirements handbook will always be used).

**Recommended Requirments to complete before Powwow**

**Completed:**

4. Do the following: (can bring a note from a scout master or parent stating this item was complete prior to the Powwow).
  - 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.
6. At approximately weekly intervals, sketch the position of Venus, Mars, or Jupiter in relation to the stars. Do this for at least four weeks and at the same time of night. On your sketch, record the date and time next to the planet's position. Use your sketch to explain how planets move.
7. 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 a week. 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.
10. List at least three different career opportunities in astronomy. Pick the one in which you are most interested and explain how to prepare for such a career. Discuss with your counselor at the Powwow what courses might be useful for such a career.

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 Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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 Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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 Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

10 \_\_\_\_\_  
 Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_



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**Requirments that will be passed off at the Powwow**

**Completed:**

1. Describe the proper clothing and other precautions for safely making observations at night and in cold weather. Tell how to safely observe the Sun, objects near the Sun, and the Moon. 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.
2. Explain what light pollution is and how it and air pollution affect astronomy.
3. 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.
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) 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. Update your chart monthly to show whether each planet will be visible during the early morning or in the evening sky.
8. 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. Define sunspots and describe some of the effects they may have on solar radiation.
  - b) Identify at least one red star, one blue star, and one yellow star (other than the Sun). Explain the meaning of these colors.
9. We will visit the planetarium on campus as a class. Afterwards discuss with your counselor the activities that occurred there, the exhibits you saw, the telescopes and instruments used, and the celestial objects you observed. If you desire, you can select a requirement in #9 and complete it on your own. Bring a written report of the one you selected to show your counselor.

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Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

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Signature of counselor \_\_\_\_\_ Date \_\_\_\_\_

