



# Astronomy Bowl IV

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Participants should be familiar with the basic concepts of general observational astronomy. The questions will be based on visual identification and/or explanation of various kinds of images projected in the Planetarium dome. Most, if not all, of the specifics will be found in any mid-level astronomy book or star atlas, such as Peterson's Field Guide and the like. You may also find some good resources on the web at sites with sky maps such as <http://www.astroviewer.com/interactive-night-sky-map.php> (just click the button "Start AstroViewer" at the upper left) or a suggested free download that may assist your study can be found at [www.stellarium.org](http://www.stellarium.org). To get acclimated to our domed theater environment, you could attend a "Tonight's Sky" show, presented every Thursday through Sunday at 2:00 PM (\$7 for students).

## **Study Guide Outline**

The Astronomy Bowl competitions will be organized so that each participant will answer one question per round. If the question is answered correctly, the participant will receive one point. If it is answered incorrectly, the participant receives no points. Once all rounds have been completed, the points will be added and the two participants with the most points will be the winners. A tie-breaker will be provided if needed. We will start with easy questions and work toward the harder questions.

## **Section I - Constellations**

The progression will be from more familiar to less familiar constellations. Medium-difficulty and advanced levels may include Southern Hemisphere constellations, if needed, to determine the winner.

### **Part 1: Art Figures**

Identify constellations based on classical artistic depictions which will be projected over the stars in the night sky. You may ask to have the artistic depiction removed once it is shown.

### **Part 2: "Stick" Figures**

Identify constellations from line patterns connecting stars. "Standard" stick figures are used though some representations may vary depending on the source. The stick figures will connect stars in the constellation in the night sky. You may ask to have the lines removed once they are drawn.

### **Part 3: Constellation Borders**

Identify a constellation contained within its traced border in the night sky. The borders of all neighboring constellations will be shown as well as all the stars visible in the night sky. You may be handed a laser pointer and asked to circle the general area occupied by a particular constellation.

## **Section II - Solar System**

Identify planets, dwarf planets, major asteroids, and major moons of planets from projected images.

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### ***Section III - Messier Objects***

From the 18th-century list compiled by Charles Messier, identify images projected on the theater dome. These deep-space objects include open and globular clusters, nebulae and galaxies. The easier ones with names in addition to their "M" number will be used first. (e.g. the Ring Nebula or the Andromeda Galaxy).

### ***Section IV - Individual Stars***

Identify and/or point to the brightest and/or more popular stars in the night sky. A star may be circled and you will be asked to name it, or a name may be given and you are asked to circle it with a provided laser pointer. (Some popular stars from the southern hemisphere may be used for the higher difficulty levels.)

### ***Section V - Lines in the Sky***

Identify/describe celestial sphere mapping lines (ecliptic, meridian, celestial equator, right ascension, declination, etc.) that are projected against the night sky.

### ***Section VI - Earth Orientations***

Given some information relative to the sky being projected, you will be asked to provide additional information such as general location (e.g. near the equator), direction (e.g. facing south), poles (e.g. north pole), seasons (e.g. it is spring), time (e.g. it is around midnight), etc.

### ***Section VII - Common Surface Features on Earth***

Identify common surface features on Earth from projected images (e.g. North America or Great Britain).

\*\*\* Check back to the Astronomy Bowl web page occasionally to see if there are any study guide or other informational updates (<http://www.starhop.com>). Consider attending a "Tonight's Sky" show at the Planetarium for theater familiarization.