

Appendix A: Throw a Star Party!

Tips for Offering a Nighttime Viewing Session with Telescopes

- 1. Optional: Contact your local astronomy club or other amateur astronomers.** They can help you determine the best time for viewing Mars in the night sky, offer viewing tips, and provide telescopes — and lots of knowledge! — for your event. To contact your local astronomy club, type in your zip code at [Astronomical League](#) or search at [Sky and Telescope](#). Let them know which planets or other objects you would most like for the children to see.
- 2. Pick a date on which one or more bright objects will be high in the evening sky.** Select a time when planets (especially Mars) will be visible in the early evening sky using sources such as [StarDate](#), the [Planet Finder](#) applet ([planetfinderapp.info](#)), or other planetarium program. Try to avoid dates when the Moon is full or nearly full (see below), as its light will wash out other nighttime objects. The Moon itself is best viewed when it is a crescent or in first quarter. A brief tour of the month's constellations, deep-sky objects, planets, and events is available through [Tonight's Sky](#) ([hubblesite.org/explore_astronomy/tonights_sky/](#)).

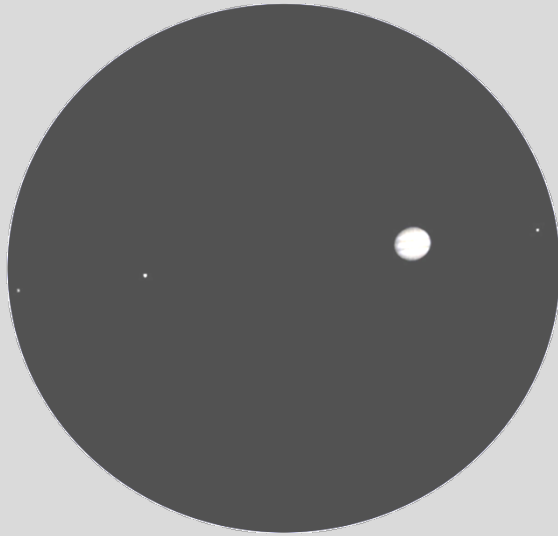
Note: Venus and Jupiter are almost always bright when visible, Mars is often bright, and Saturn and Mercury are always a bit faint. Uranus and Neptune are too faint to see without telescopes or binoculars.

- 3. Identify a start and end time for your program on your intended date.** Best viewing times will begin about an hour after sunset. Find sunset times and Moon phases for your area through [Sunrise Sunset](#) or similar sources.
- 4. Provide a viewing area, preferably away from bright lights and traffic.** Try to avoid nearby obstructions, such as trees or buildings, which will block certain sections of the sky. Will the objects you intend to view be visible from that location in early evening?
- 5. Plan for access to restrooms, and if possible, to drinks.** Have water available for amateur astronomers and visitors.
- 6. Before announcing the activity, have a back-up plan in place in case of inclement weather:** Will the event be canceled, postponed, or moved inside with different activities? If the event is canceled or postponed, at what time or point will the decision be made to do so, and how will the audience hear about it?
- 7. If appropriate, plan to have the viewing area sprayed for mosquitoes or treated for fire ants in advance of the observing session.**

8. **If possible, ask for nearby bright overhead lights and sprinkler systems to be turned off during the period of the observing session.**
9. **On the night of the observing session, arrange for telescopes to be set up before sunset, so that there is still sufficient light to arrange things.**
10. **Optional: Provide sky maps of the current night.** [Monthly sky charts](#) or [simple sky wheels](#) are available free from a variety of websites, including the links offered here; note that the sky wheels require assembly but work year-round.
11. **Review the information below in preparation for discussing the night sky with visitors.**

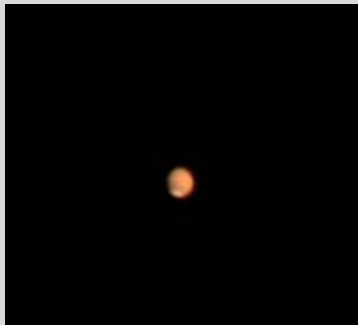
Facilitator's Note:

- Ancient civilizations studied the skies and noted the strange motions of “wanderers” (“planets” in Greek), which seemed to move against the background of familiar constellations.
- Planets don't make their own light. They appear bright because they are reflecting sunlight.
- Mercury, Venus, Mars, Jupiter, and Saturn often can be seen with the naked eye on clear, dark nights.
- Uranus is barely visible in very dark locations to observers who know where to look!
- The existence of Neptune was deduced mathematically and then confirmed by telescopic observations. It can be viewed through binoculars from a very dark location.
- Through a telescope:
 - Venus often looks like the Moon — a crescent, quarter, or gibbous phase. Since Venus lies between us and the Sun, we are able to view both its day (sunlit) and night (dark) sides. Our perspective of Venus changes as Earth carries us in its orbit around the Sun, revealing different angles of Venus. At different angles, Venus appears in different phases.
 - Jupiter has faint bands of different colors, and sometimes a centuries-old storm — called the Great Red Spot — or some of its moons can be seen. Jupiter's four largest moons, Io, Europa, Ganymede, and Callisto, appear as bright dots on the sides of Jupiter, and disappear from view occasionally as they pass in front of or behind the planet.



A view through a telescope reveals Jupiter's banded atmosphere. You might also spot several or all of Jupiter's four largest moons. Callisto, Ganymede, and Europa appear here as small "dots" from far left to far right. Io is often also visible as a fourth "dot."

Credit: Modified from [NASA/JPL/Malin Space Science Systems](#)



Mars is a small red circle through most telescopes; the reddish appearance is due to its rusty soil. Credit: [NASA Science News](#)



Saturn is an incredible sight through a telescope.

Credit: Modified from [Adam Block/NOAO/AURA/NSF](#)

- Galileo first used his telescope to study the Moon, Venus, Jupiter, and Saturn 400 years ago; his observations of depressions and mountains on the Moon, moons orbiting Jupiter, and the phases of Venus revolutionized our understanding of the solar system and Earth's place in it. Telescope optics have improved over time, allowing scientists to make more detailed observations of objects in the night sky.
- Telescopes allowed astronomers to view the *surfaces* of planets; spacecraft instruments now allow us to infer information about the *interiors* of planets.
- Pluto is a tiny, distant dwarf planet and can be viewed through a small telescope from a very dark location.