



SKY IS THE LIMIT



RATIONALE FOR ADVENTURE

This adventure will help Tigers learn about the mysterious night sky.

TAKEAWAYS FOR CUB SCOUTS

- Practicing observation and listening skills
- Increasing confidence
- Developing the ability to speak in front of a group
- Following instructions
- Working as a team
- Taking care of the environment
- A Scout is reverent. 

Tiger Handbook, page 198

ADVENTURE REQUIREMENTS

Complete requirements 1–3 plus at least one other.

1. With your den or with your parent, guardian, or other caring adult, go outside to observe the night sky. Talk about objects you see or might see.
2. Look at a distant object through a telescope or binoculars. Show how to focus the device you chose.
3. Find out about two astronauts who were Scouts when they were younger. Share what you learned with your den.
4. Observe in the sky or select from a book, chart, computer, or electronic device two constellations that are easy to see in the night sky. With your parent, guardian, or other caring adult, find out the names of the stars that make up the constellation and how the constellation got its name. Share what you found with your den.
5. Draw and name your own constellation. Share your constellation with your den.
6. Create a homemade model of a constellation.
7. Find out about two different jobs related to astronomy. Share this information with your den.
8. With your den or family, visit a planetarium, observatory, science museum, astronomy club, or college or high school astronomy teacher. Before you go, write down questions you might want to ask. Share what you learned.

NOTES TO DEN LEADER

This adventure has several choices based on which activities you choose to do with your den. This den meeting plan, when followed as written, meets the requirements to earn this adventure. If you choose to make adjustments, be sure you complete at least the minimum requirements.

The Meeting 2 Plan includes a night hike to observe the night sky. This activity could take place during Meeting 2 or at home with Tigers and adult partners.

Tigers will have a Do-at-Home Project between Meeting 2 and Meeting 3 to complete requirement 5.

Meeting 3 will be an outing to a planetarium, science museum, or other institution where Tigers can learn about the stars from an expert. In advance of the outing, the leader will need to make arrangements with the outing location and confirm the outing plan with families, including transportation and any additional items they need to bring.

See the appendix for optional den meeting activities, including openings, gatherings, and closings.

MEETING 1 PLAN

PREPARATION AND MATERIALS NEEDED

- Research some interesting facts about astronauts. Neil Armstrong and Charles Duke Jr. are mentioned in the opening ceremony. You could find out some interesting facts about them to share with the Tigers during Talk Time.
- Materials for Moon Rock Hunt: moon rocks made from pieces of foam mattress or painted rocks, a collection pail for each team, metal tongs to pick up rocks
- Materials for Constellation Match: 12 to 15 4-by-6-inch index cards for each member of the den, pictures of constellations (4 by 6 inches or smaller) for mounting on the cards, scissors, glue
- Provide a copy of the Quattro game board and playing pieces such as mini-marshmallows versus Goldfish crackers. (See Meeting 1 Resources for a sample of the game board. This can also be drawn freehand.)
- Materials for making tie slides, based on the type of slide chosen:
 - Plaster of paris star: star candy mold, plaster of paris, glitter, markers, and chenille stems or 2-inch pieces of PVC pipe
 - Wood or cardboard star: precut star, paint, glue, stickers, and the chenille stems or pipe pieces
- Tigers will have a Do-at-Home Project following Meeting 1 for which they will create their own constellations and name them (requirement 5).
- Read the Sky Is the Limit adventure in the *Tiger Handbook*.

GATHERING

Play Quattro Tic-Tac-Toe. Quattro is played just like regular tic-tac-toe, but players are working for four in a row. When a player gets four in a straight row, diagonal row, or four that form a box (two in one row and two in the next), they win. (See Meeting 1 Resources for the Quattro game board to duplicate.)

OPENING

- Conduct a flag ceremony of your choosing that includes the Pledge of Allegiance and the Scout Oath and Scout Law.
- If meeting at night and the moon is visible, form a circle outdoors so everyone can look up toward the moon. Perform a flag salute while facing the moon. Explain to the Tigers that this is acceptable, as astronaut and Eagle Scout Neil Armstrong placed a flag on the moon. Follow the flag ceremony by sharing

that both Armstrong, who was the first man to walk on the moon, and Charles Duke Jr., who walked on the moon a few years later, earned their Eagle Scout awards with the Boy Scouts of America! Challenge the Scouts to return next week with an interesting fact they learned about an astronaut who was a Scout (requirement 3). One resource is available here: www.scouting.org/filestore/pdf/210-558_WB.pdf.

TALK TIME

- Carry out business items for the den.
- In this adventure, we will be talking about the sky and what we might see while observing it at night. Give each Tiger an opportunity to tell you one object they might see as they look into the night sky. Tell how to find the North Star and how this star was used by travelers long ago to navigate. Share pictures of constellations, stars, and other objects that are found in the night sky.

ACTIVITIES

◆ Activity 1: Moon Hunt (Optional)

Divide the den into teams. Scatter the “moon rocks” you prepared in inconspicuous corners of a designated area. When Tigers find one of the rocks, they must pick it up with a pair of metal tongs. The team that finds the most rocks in a set number of minutes wins.

◆ Activity 2: Constellation Match (Optional)

Make a concentration card game of constellation pictures. Mount pictures of constellations on at least 12 4-by-6-inch index cards. Make an identical set, so that you have at least 24 cards. Shuffle the deck and lay it face down on a tabletop. Each Tiger tries to find a match by turning over two cards at a time. Each Tiger who gets a match keeps playing until they can't make a match.

◆ Activity 3: Create a Star Tie Slide (Optional)

Option 1: Pour plaster of paris into a star-shaped candy mold (available at most craft stores), and attach a chenille stem or a 2-inch piece of PVC pipe on the back while the plaster is still wet. Paint or decorate with markers, adding glitter as desired.

Option 2: Provide each Tiger with a precut cardboard or wood star (available at most craft stores). Decorate with paint, markers, glitter, and stickers. Then use glue to attach a chenille stem or 2-inch length of PVC to the back.

◆ Activity 4: Star Songs (Optional)

Learn a song about the stars (see Meeting 1 Resources for options). Be prepared to perform your song at the next pack meeting.

CLOSING

- Have each Scout share one new thing they learned at the meeting.



Do-at-Home Project Reminder:

Tell Tigers that they will be creating their own constellations at home before the next meeting (requirement 5). Tigers should draw a picture of the constellation, give it a name, and be ready to share about their constellations with the den.

AFTER THE MEETING

- Work together to clean up the meeting place.
- Serve refreshments, if desired.

MEETING 1 RESOURCES

SONGS

IN THE NIGHT SKY

(Tune: "Alouette")

Flying saucers, planets, stars, and space junk,
Flying, streaming, through the universe.

Looking in the sky at night
Watching space ships making flight.

Sky at night,
Making flight,
Ohhhhhhh.

Flying saucers, planets, stars, and space junk,
What can you see in the big night sky?

Sky at night,
Making flight,
Ohhhhhhh.

OUT IN SPACE

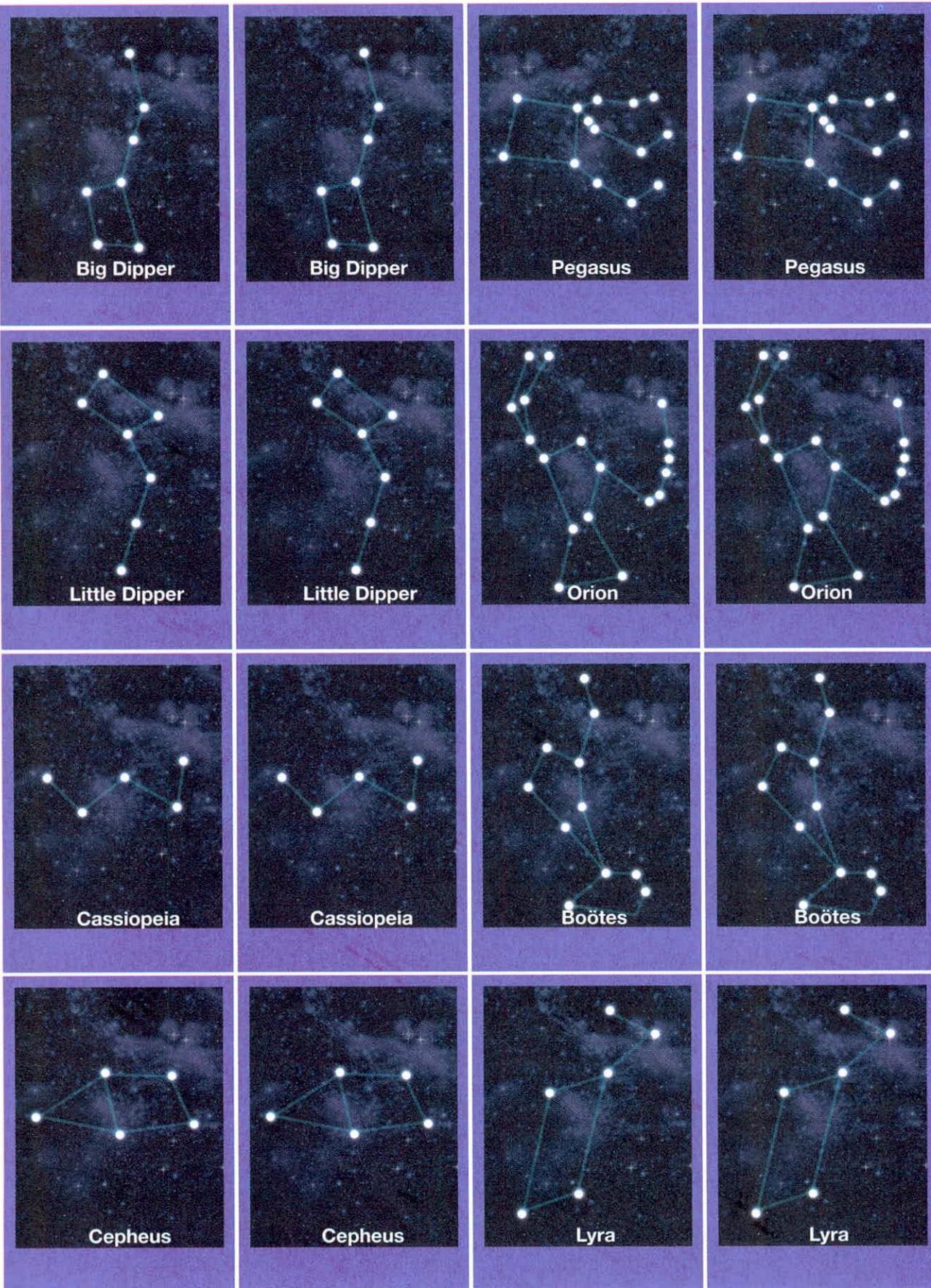
(Tune: "Row, Row, Row Your Boat")

Space junk, meteors,
Soaring through the sky,
What a sight for all to see,
In the sky so high!

Quattro Game Board

(FOUR-IN-A-ROW TIC-TAC-TOE)

Constellation and Star Pattern Game Cards



MEETING 2 PLAN (Night Hike)

PREPARATION AND MATERIALS NEEDED

- U.S. and den flags
- Needed for night hike: flashlights for each Tiger and adult partner; knowledge of two constellations—where to find them in the night sky and the origin of their names
- Items for requirement 6 (see below)
- Telescope or binoculars for viewing the stars
- Materials for Activity 3: kitchen gloves for each Tiger, 6 large pairs of nuts and bolts, 1 pail with water
- Flier to give to Tigers and adult partners with the location, date, and time of the upcoming den outing
- Prepare a thank-you card that Tigers can sign for the den outing tour guide.

GATHERING

- Have beanbags, jump ropes, and rubber balls available for Tiger astronauts to “train” as they gather.
- Set up stations for the Tigers that include short direction cards. For instance, they may jump rope five times or toss a beanbag over their head and catch it.

OPENING

- Conduct a flag ceremony of your choosing that includes the Pledge of Allegiance and the Scout Oath and Scout Law.

TALK TIME

- Carry out business items for the den.
- Allow time for Tigers to share about astronauts they have learned about (requirement 3).

ACTIVITIES

◆ Activity 1: Create a Homemade Constellation (Requirement 6)

- For Option 1, each Tiger will need a small metal coffee can that has been washed out and has no sharp edges; a marker; a small flashlight or click light; large nails; a hammer; safety goggles; and lightweight gloves (e.g., gardening gloves).
- If Option 2 is chosen, each Tiger will need the marker, the flashlight or click light, the lightweight gloves, and a wide-mouth jar (plastic is preferred) with lid. Also needed are a disposable cake pan or heavy-duty aluminum foil; something to punch holes in the aluminum (such as a safety pin); and a pair of scissors. The jar needs to be wide enough to fit the light inside. A pickle jar works well.

Option 1: Turn the can so the uncut end faces up. A Tiger chooses any constellation from the patterns in Meeting 2 Resources, and uses a marker to mark the stars of the constellation on the lid of the can. The adult partner supervises and helps the Tiger hammer each star point to make a hole. Remind Tigers to wear safety goggles while using the tools. When the holes are made, write the name of the constellation on the side of the can. Put the lighted flashlight or click light in the can and let it shine on a flat surface.

Option 2: Wearing the lightweight gloves and using the scissors, the Tiger cuts a strip of the cake pan or foil to be the same height as the jar and long enough to fit around the inside. The Tiger then smooths out the aluminum on a table and uses the marker to draw one of the constellation patterns, marking dots for the stars and poking holes in the dots with the safety pin—being careful not to stick themselves. Smaller holes can be added as desired to represent surrounding stars. The aluminum can then be rolled and slid into the jar to fit in place. Now put the light inside, replace the lid, and take the jar into a dark room to see the night sky!

◆ **Activity 2: Night Hike (Requirements 1, 2, and 4)**

- With their adult partners, have Tigers take a night hike in a safe, flat area. Stop several times during the hike, look at the sky, and listen to the night sounds.
- Show Tigers the different parts of a telescope or binoculars and how to focus the device.
- Using pictures of constellations, have the Tigers locate two of them in the sky.
- Make sure Tigers are prepared to tell the den about the two constellations they observe and how each constellation got its name.

◆ **Activity 3: Space Station Repairs (Optional)**

If time permits, complete “space station repairs.” Give each Tiger a pair of kitchen gloves. Drop six large pairs of nuts and bolts into a pail of water. Each player has to try to screw the nuts and bolts together underwater. The one who finishes the most sets in a specified amount of time wins.

◆ **Activity 4: Song Practice (Optional)**

If time permits, practice your song selection for the next pack meeting.

CLOSING

- Ask the Tigers to share the names they gave to their constellations and why they chose those names.
- Ask each Tiger to share their constellation with another Tiger.
- Give Tigers time to share what they learned or liked best about this “starry” meeting.
- Have everyone sign the thank-you card for the upcoming outing.
- Hand out a flier you have made with the outing location, time, and date. On the flier, remind the Tigers and their adult partners to write down a few questions they can ask about astronomy and people who have jobs in that field.



Do-at-Home Project Reminder:

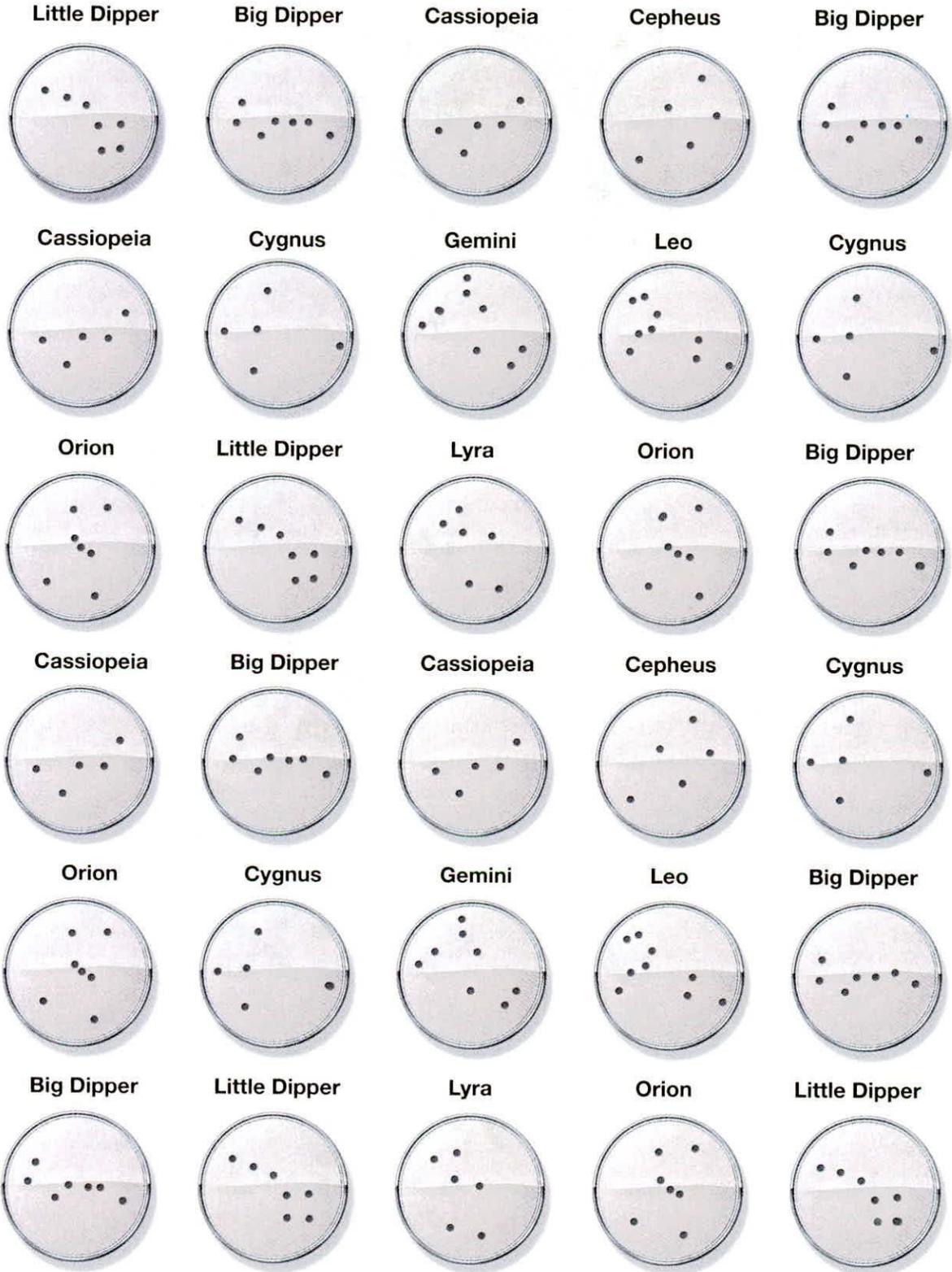
The next meeting will be an outing to a planetarium, observatory, science museum, etc., or a visit with an astronomy expert (requirement 8). Ahead of the outing, Tigers should prepare any questions they would like to ask.

AFTER THE MEETING

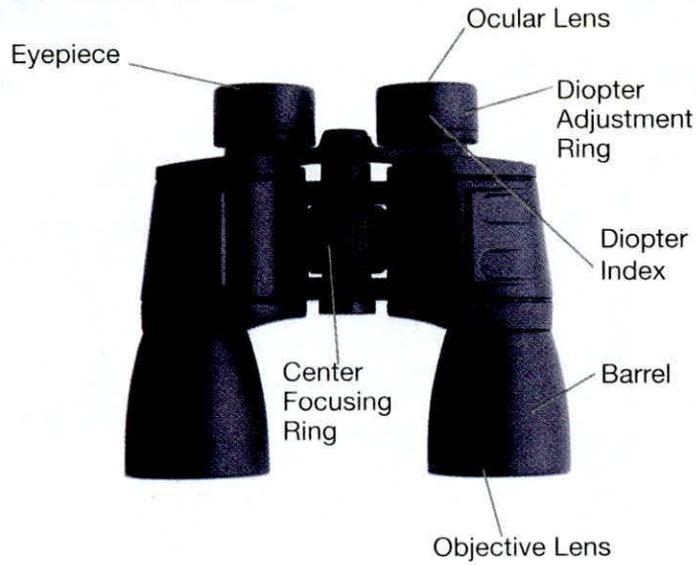
- Serve refreshments, if desired.
- Record completion of requirements 1, 2, 3, 4, 5, and 6.
- Work together to clean up the meeting place.

MEETING 2 RESOURCES

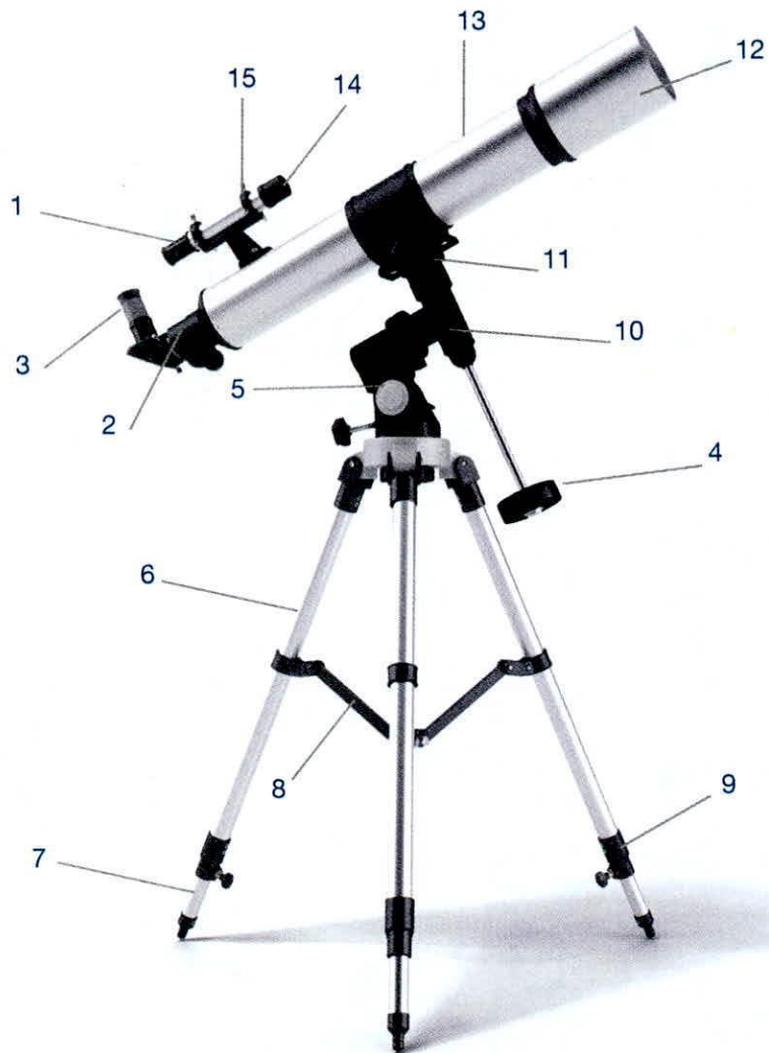
PATTERNS FOR HOMEMADE CONSTELLATIONS AND STAR PATTERNS



BINOCULARS AND TELESCOPES



1. Finderscope
2. Focuser
3. Eyepiece
4. Release Control for Mount
5. Mount Base or Mounting Plate
6. Outer Tripod Leg
7. Tripod Leg Extension
8. Tripod Support Brace
9. Tripod Leg Clamp
10. Mount Axis
11. Mount
12. Mirror Cell—Primary
13. Telescope Tube
14. Finderscope Eyepiece
15. Finderscope Bracket



MEETING **3** PLAN (Den Outing)

PREPARATION AND MATERIALS NEEDED

- Make arrangements ahead of time to visit a planetarium, science museum, observatory, or college science lab that teaches astronomy. You might also choose to invite an astronomy club or stargazers club to visit the den meeting. Plan to provide hands-on opportunities for everyone, such as observing and focusing a telescope, observing a night sky demonstration, or participating in a science project.
- The den leader should bring a copy of the *Guide to Safe Scouting*. Confirm that all adult partners have the date and time, meeting place, and directions for the outing.

GATHERING

- Review expected behavior with the Tigers.
- Set up and enforce the buddy system.
- Discuss ahead of time appropriate questions that may be asked.

OPENING

- Say the Pledge of Allegiance and the Scout Oath and Scout Law.

TALK TIME

- Carry out business items for the den.

ACTIVITIES

◆ Activity 1: Conduct the Visit (Requirements 7 and 8)

Have each Tiger ask the questions they prepared about the night sky or about jobs that are related to astronomy.

CLOSING

- Present the tour guides with thank-you cards prepared ahead of time.
- If time permits, gather the Tigers and review what they learned.

AFTER THE MEETING

- Provide refreshments, if desired.
- Record completion of requirements 7 and 8.
- Make sure everything is cleaned up.

Upon completion of the Sky Is the Limit adventure, your Tiger will have earned the adventure loop shown here. Make sure they are recognized for their completion by presenting the adventure loops, to be worn on their belts, as soon as possible according to your pack's tradition.



NOTES