Lesson Plans are designed to accompany the related Helps documents for each Step. Please refer to the resources in the appropriate Helps document found in the Leader Pages while you prepare your lesson.

The six “F”s are presented in a suggested order, but you are not required to complete them in that order. You may rearrange them as fits your troop’s particular needs.

Necessary Resources

- Crumpled gray paper “rocks”
- Tongs
- Constellation Map
- Oreos

- Crumpled gray paper “rocks”
- Tongs
- Stick
- Star Map
- Binoculars/Telescope

- Map of planets, planet cutouts.
- Bucket or bag to collect moon rocks
- Empty, clean food cans (e.g., a soup can, one for each boy. Leave one end of the can intact.)
- Hammer
• Nails
• Flashlights (ask boys to bring one from home)
• Constellation handout
FUN

Moon Rock Run
Crumple gray paper ahead of time to make moon rocks. Create as many as you need for each team. Place rocks on one end of the race course and a collection bag/bucket on the finish line.

At the meeting, divide the Trailmen into teams, and give each team a pair of tongs. On “go,” one Trailman from each team will run to the rocks, pick up one rock with his tongs, and run back to his team, placing the rock into the collection bag/bucket. He will then hand the tongs to the next Trailman in line. The team that collects all of its rocks first wins.

Discuss how things worked. Were the Trailmen supportive of their teammates or the other team? Did they act with honor? What does that look like?

Consider showing a brief video about the Apollo II lunar landing in 1969:
https://www.youtube.com/watch?v=oDtWnCSsBSQ

Planetary Relay
Show Trailmen the map of the planets in our solar system. Divide into teams. On “go,” one person from each team will race to the end of the room, pick up a planet cut-out, and race back. Each Trailman will tag the next player in line, who will pick up the next planet. When the team has all of the planets, the Trailmen will work together to put them in order. Planet order: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune (Pluto was reassigned as a dwarf planet in 2006). The first team to have all planets in order wins.
FOCUS

Constellations
Discuss things that provide light in our lives (candles, lights, fire, sun, moon, stars). Talk about the great lights that God created to light the world—the sun and moon. Discuss phases of the moon. You may use this video to help explains moon phases, or you may use a chart: http://teachers.henrico.kl2.va.us/staffdev/clough_d/DragDrop/MoonPhases.html

Show the Trailmen a photo with constellation image superimposed over the stars. Let them see how the stars can create constellation and that there are many constellations in the sky.

Celestial Objects
Astronomy is the study of the celestial objects in the sky; the sun, the moon, and the stars! The sun is what gives us light in the day and makes it warm. The moon lights up our night, but not so much that we can’t sleep! The stars decorate the sky around the moon to make a beautiful night sky. Isn’t it amazing that God would create these beautiful things for us to learn about and enjoy?

Tell the Trailmen basic facts about the sun, moon, and stars, such as what they are made out of and what they do. There is an overview of the celestial objects in the Helps document.

Sky Navigation
Astronomy has been used for centuries to navigate the oceans. Historically, people did not have telescopes, binoculars, or GPS technology, so they relied on their eyes to view the nighttime sky. Review the nine planets and discuss which ones are visible from Earth’s sky (visit http://earthsky.org/ for a current guide). Discuss basic astronomy terms such as planet, star, solar system,
galaxy, moon, meteor, asteroid, star map, telescope, binoculars, etc.
FINGERS

Oreo Moons
Give each Trailman a paper towel and four Oreo cookies. Tell the Trailmen to separate the cookies and shape the filling to make each phase of the moon. When they're done, they may eat the Oreo! Make sure to check for food allergies first!

Find North
Near the beginning of the meeting, set up the stick so that you can go back later and find North.

Give each Trailman a star map to study. Identify which constellations are visible during the current month. Point out popular constellations and reference points, such as the North Star.

If possible, show the Trailmen a set of binoculars or a telescope. Teach them about proper care and the different parts of the instrument.
Constellation map or Pin Hole Planetarium
Discuss stars and formations of stars called constellations. In the past, people used star formations to tell stories and to navigate.

http://www.kidskonnect.com/subjectindex/l5-educational/science/l02-star-a-constellations.html
http://www.kidsastronomy.com/astroskymap/constellations.htm

Instructions: Hand out the constellation maps. Instruct Trailmen to turn their cans upside down and gently hammer a nail into the end of the can to make holes resembling one of the constellations. Or, allow the Trailmen to design and punch their own constellations. When all have finished, place flashlights in the open end, turn off the room lights, and shine the constellations on the wall.

During the craft, discuss how very wise people in ancient times discovered how to use stars to navigate.

Optional pinhole planetarium instructions: Using a rubber band, place a square of black construction paper on one end of an empty toilet paper roll. Using a pen, punch out holes for the constellation. Shine the flashlight through the roll to view the constellation.

God Made the Stars
Read and discuss Psalm 8:3-4. Pray and ask God to remind the boys of how much God loves them and how they can have faith in the One who placed the stars in the sky.

Beauty of Creation
Read and discuss Deuteronomy 4:19. Pray for the Trailmen to always worship the King of Kings, to recognize the beauty of his creation, and to be good stewards of God's creation.

We Are Valuable
Psalm 8:3-4 says, “When I consider your heavens, the work of your fingers, the moon and the stars, which you have set in place, what is mankind that you are mindful of them, human beings that you care for them?”

The Bible tells us that out of all that God created, we are the most valuable to him.

Pray with the Trailmen.
**FAMILY**

Creation
Read Genesis 1 and 2 with your Trailman; discuss the biblical account of creation.

Go Stargazing
Go stargazing with your family! Go outside at night and look up at the moon and stars. Try to find some of the constellations that you learned about in class. Maybe you can even show your family a constellation they didn’t know about!
FOREST BADGE

By actively participating in this meeting, each Trailman earned the Astronomy Step on the Science and Technology Branch.

*Note: It is up to the Trail Guide to determine whether or not a Trailman was an active in the meeting. Even if he attended the meeting, you are not required to award him the Step if he did not participate.