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**

- Examples of Simple Tools
- Supply “prize.” This could be candy or a ball (tennis ball).

- Examples of Simple Tools
- Supply “prize.” This could be candy or a ball (tennis ball).
- A simple pulley construction (one per Trailman or per small group). Ideas include: rope, hanger system for pulley (strap or strong rope), 5-gallon bucket, etc.

- Examples of Simple Tools
- Supply “prize.” This could be candy or a ball (tennis ball).
• An inclined plane, such as a log or flat board (2x4 or 2x6), a simple lever (such as a 2x4 or concrete brick), some type of heavy load (a bucket with rocks, etc.)
Lever Stomper
Build lever from a small board like a 1x3x36 (inches) and
a fulcrum about 2 inches high. One end of the lever
should have a small bowl attached.

Trail Guide places prize in the bowl then stomps the
other end of the lever. The prize flies through the air and
is caught by a Trailman.
Introduction to Simple Tools
Simple tools are basic machines that have a variety of uses. Many big machines are made up of simple tools. Trailmen should understand the names and functions of the simple tools and have a few hands-on activities of each. Here is a website with some helpful resources:
Resources for teaching children about simple machines:
http://pbskids.org/designsqaud/parentseducators/lesson-plans/simple_machines.html

Explain the following simple tools. More information on these simple tools is found in the Helps document:

- Lever
- Wheel and Axel
- Pulley
- Inclined Plane
- Wedge
- Screw
FINGERS

Play with Simple Tools
Bring a small example of each simple tool you learned about (such as a toy car with the axle visible, a doorstop, or a wood screw) so that the Trailmen can see how each one works. When the meeting is done, go look at the lever and the pulley that the Hawks and Mountain Lions made!

Build a Lever!
Discuss with the Trailmen how simple materials, such as sticks and rocks, can be used to construct a lever. A lever consists of an arm and a fulcrum and is useful for picking up something heavy or moving a large, heavy object. Inclined planes are useful for moving heavy loads as well. A log or flat board (2x4 or 2x6) can easily do the job. Using levers may be necessary during camping trips.

Have the Trailmen put together the lever and inclined planes. Review the parts of each simple machine.

Give the Trailmen time to use machines to safely carry heavy loads. Review the parts of each simple machine.

Build a pulley!
Discuss with the Trailmen how a pulley reduces the amount of load on the machine or the person using it. The load reduction is greater with each pulley added. A pulley consists of a shaft and a wheel. Most local hardware stores will have a simple pulley, or you can be resourceful and make your own with scrap parts around your house (old wheel to a wheel barrow, bicycle wheel, etc.). Discuss the practical uses of a pulley (lift heavy objects into trees, lift water from a well, rescue person from deep ditch).

Have the Trailmen put together the pulley system. You may use a beam or tree to support the pulley system. Review the parts of each simple machine.
Give the Trailmen time to use the pulley to safely carry heavy loads. Point out how much easier it is to lift the load with the pulley. Review the parts of each simple machine.
**FAITH (TRAIL GUIDE THOUGHTS)**

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God Protects Us
Read and discuss Ephesians 6:13-17. The Lord provides for a way to protect us from evil because he loves us. Truth, morals, peace, and faith are taught in the Bible and through other Godly people. Look to those who are good examples and try to learn and apply those values to your life. These tools consist of the Word of God (the Bible), truth, the gospels, and salvation. They are all to be used together. Are you utilizing all of these? On a daily basis?

Pray with the Trailmen.

Order in the Universe
Read and discuss I Corinthians 14:33. Everything that God has created is orderly, structured, and organized. This means we can explore and discover the order that God has created. Using science is one of the ways we can discover God’s created order.

Pray with the Trailmen.
FAMILY

Find Simple Tools
Discuss simple tools with your family. Look for simple tools in your home.

Look for Levers
Discuss levers and inclined planes. Try to find them in use around your house, on the highways, and at construction sites.

Look for Pulleys
Discuss pulleys, and try to find them in use around your house (for example, on the front of your car’s engine), on the highways, and at construction sites.
By actively participating in this meeting, each Trailman earned the Simple Tools 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.