

3.2

Compass

"In your unfailing love you will lead the people you have redeemed. In your strength you will guide them to your holy dwelling."

Exodus 15:13

Objectives:

Recruit

1. Define the following terms:
 - a. Degree
 - b. Cardinal points
2. Name the eight major points of the compass and give their degree readings.
3. Orient a compass and follow a course of one degree reading.

Camper

1. Name the two basic types of compasses and demonstrate their use.
2. Define the following terms:
 - a. Magnetic North
 - b. True North
 - c. Magnetic Declination
 - d. Azimuth
 - e. Back Azimuth.
3. Follow a compass course of at least three degree readings.

Frontiersman

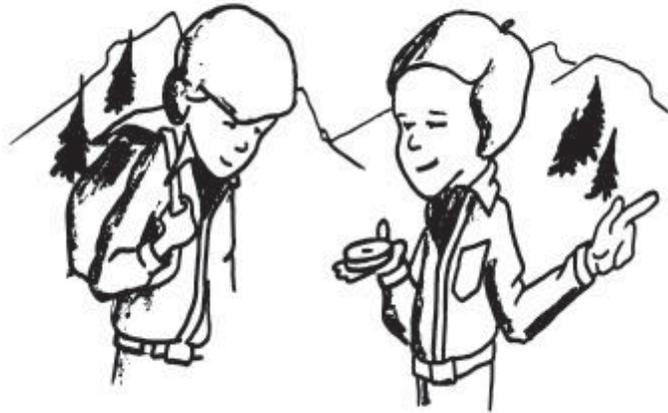
1. Demonstrate the use of each of the following:
 - a. Azimuth
 - b. Back Azimuth
 - c. Deliberate error
 - d. Triangulation

UNIT 3

CAMPING

CHAPTER 2

Compass



Lutheran Pioneers, Inc.
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2. Follow a compass course of at least five degree readings that also goes around an obstacle.



TIPS TO REMEMBER

Parents can be either a huge challenge to or an incredible source of help for your Pioneer ministry. For this reason, make communication with and education of

the parents a primary goal and a major part of your planning.

Applying God's Word to the Lesson

DEVOTION #1

Exodus 13:21-22 *By day the LORD went ahead of them in a pillar of cloud to guide them on their way and by night in a pillar of fire to give them light, so that they could travel by day or night. Neither the pillar of cloud by day nor the pillar of fire by night left its place in front of the people.*

When going for a walk in the woods at night, almost no one would venture out without a flashlight. We don't become as fearful of the night when we have a light to show us the safe way. For a Pioneer who is going hiking in unfamiliar territory any time of day, he will not wisely venture out without using a compass. With a flashlight and the compass, we can be fairly certain that we won't get lost and that we will be able to find our way back to camp.

In a sense we could say that the children of Israel were on one big camping trip for forty years on their journey from Egypt to Israel. They had something better to light their way and guide them than a flashlight or a compass. They had the LORD.

Our reading tells us that God put a cloud in the sky during the day that showed them the way through the wilderness. At night, he led them with a fiery cloud enabling them even to travel in the darkness. God cared for them so much that he never took away these guides even when they rebelled against him and refused his love. He disciplined them at times for their sins, but he still never left them. He protected them. He forgave them their sins because of his promise to send a Savior who would die for them.

God does the same for us and is always with us today, too. He doesn't show us the way we are to go in this life by a cloud or by a fire. In his Word, he tells us that, by following Jesus, we can avoid the pitfalls in this life. We can live a successful life. We can receive God's blessings. We can get to our eternal home in heaven.

The psalmist says in 119:105, "Your word is a lamp to my feet and a light for my path." In God's Word he tells us that he loves us and that Jesus died for us on the cross. In his Word he tells us that, in any situation we encounter in our lives, he will have his angels there to keep us in all our ways.

PRAYER: Heavenly Father, in your unending mercy you guided the Israelites through their wilderness journey. In the same way, continue to be with us and guide us in our journey here on earth. Let your Holy Spirit work in us, so that we attentively hear and believe what you tell us in your precious Word. Help us to understand that, since you proved you love us by having Jesus give up his life for us on the cross, we can confidently come to you and cast all our cares upon you. In the name of Jesus our Savior. Amen.

HYMN: 428 (TLH) 446 (CW)

Applying God's Word to the Lesson

DEVOTION #2

TEXT: Psalm 23

THEME: God is our Guide

Every time we use a compass in this life we are guided to some temporary goal. But the main purpose of Lutheran Pioneers, which is also the main purpose of every church organization, is to guide the soul to heaven.

The Bible is our compass when traveling through the maze of this life. Even as we may become lost in the forest without the aid of a magnetic compass, so we may be lost in the forest of sin without our spiritual compass. When the devil tempted him, Jesus used the compass of the Word of God to find his way out of the temptation.

The Pioneer who is adept at using the magnetic compass but who does not know the direction that the Bible affords, will become more seriously lost in life than he will in the woods.

PRAYER: Dear God, our Father, be our Guide and Compass throughout life. Dear Jesus, God the Son, be our gentle Shepherd to lead us into all green pastures. Dear God, the Holy Ghost, be our Direction in all we do. Amen.

HYMN: 410 (TLH) 422 (CW)

DEVOTION #3

TEXT: Psalm 103:11-12

THEME: God's Incomprehensible Love

OUTLINE

1. No matter how many paces you go east on a compass course, you can always go farther. The same is true for the west. It seems that east and west cannot possibly meet.
2. The same is true of us and our sins. God, in his infinite grace, has taken our sins as far away from us as the east is from the west. Our sins will no longer be held against us.
3. A similar concept applies to God's love. If we look up, we cannot possibly measure how far the heavens extend beyond the earth. In the same way, we cannot measure God's love for us.

Additional References:

- Joshua 1:7
- Psalm 25:4-5
- Psalm 27:11
- Psalm 42:8
- Psalm 107:2-7
- Psalm 119:33-40
- Proverbs 4:10-11
- Proverbs 4:25-27
- Proverbs 20:24
- Isaiah 48:17
- Isaiah 58:11
- Jeremiah 10:23
- Matthew 2:1-2
- John 16:13
- Galatians 3:24
- 2 Thessalonians 3:5

1 Introducing the Lesson

Some Pioneers and leaders might have a tendency to think that using the compass is an outdated and impractical skill. For this reason, they may approach it with little energy or excitement. It can also be a very difficult lesson to teach exclusively, since its application involves other skills. For older boys who have some of these skills, mapping and measuring can be used to help teach *Compass*. However, for the younger boys, you must try to limit your training to using the compass and keep it simple. The terminology is important only as far as it is necessary to read and use the compass. In initial teaching, the distinction between true north and magnetic north is not important. For many of our Trains, the difference is so negligible that is not even important for the older boys.

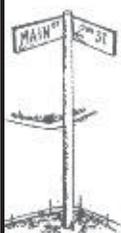
To introduce the lesson, you might ask the boys if they've ever been lost in the woods of how they might get out if they were lost. Of course, the compass is a very important tool in this situation, which could be a matter of life and death. There are other methods that can help, but using a compass is the most reliable, especially if combined with map and measuring skills.

It can also be used for fun games, but don't let this become the only use for teaching compass. "Lost in the woods" is not a game!

CHAPTER 2 COMPASS

Trust in the Lord with all your heart and lean not on your own understanding: in all your ways acknowledge Him and He will make your path straight. Proverbs 3:5,6

God journeyed with the children of Israel through the wilderness and they did not need a compass. He led them with a cloud by day and a cloud of fire by night. The children of Israel trusted the Lord and followed that cloud until it brought them into the Promised Land. God guides us today with the compass of His Holy Word. Trust God's compass and "He will make your paths straight."



Hiking, hunting, canoeing and boating are fun activities, especially for Pioneers who have learned to appreciate this beautiful world that God has given us. This is true even if we never venture far from home. Wouldn't it be a shame though if we could never leave the well marked trails and the familiar lakes and streams for fear of getting lost? We would miss so much. But, before we leave the areas where each corner has a street sign on it, we must take to important steps. We must obtain a dependable compass and learn how to use it.

HISTORY

No one knows for sure when the compass was first invented, but it is known that Columbus relied upon a compass during his famous voyage in 1492. Before that, sailors and explorers used the prevailing winds, tides, physical landmarks, the sun and the stars to guide them. When it was discovered that a magnetized piece of metal would always point in one direction, the compass became the standard reference of direction.

Possible Materials for Teaching and Demonstrating this Lesson

Several Compasses

Golf or Tennis Balls

Stuffed clothes to serve as a downed pilot

Silva® compass games

Maps of areas that you will work with

2

MAGNETIC NORTH

Basically, the magnetized needle or dial of a compass always points to Magnetic North because it is aligning itself with the magnetic lines of flux that extend from the Antarctic to Northern Canada. Because the north magnetic pole is not at the North Pole, a compass will not always point to true north when used in different parts of the United States. Referring to Figure 2, you can see that a compass will only point to true north (the North Pole) if it is used anywhere on the line that extends from Florida to upper Michigan. This is called the zero declination or variation line. It is along this line that the magnetic pole and the North Pole are aligned. As you head toward the East coast, your compass will point more and more West of the North Pole. Conversely, as you head toward the West coast, your compass will point East of true North. This magnetic declination will become very important as you study mapping in Chapter 3. For now, just remember that depending upon where you live, your compass may not be pointing at true North.

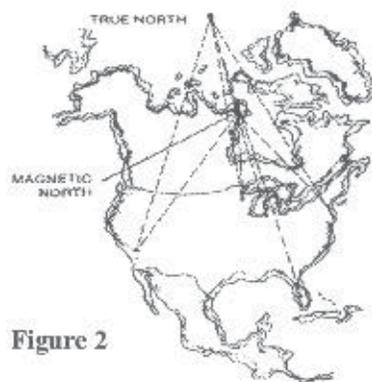


Figure 2

CARDINAL POINTS

To aid in navigation, early compasses were first marked with the cardinal points: North, South, East and West. Later the semicardinal points were added: Northeast, Southeast, Southwest, Northwest. As the need for more accurate navigation arose, eight "combination points" and sixteen "by-points" were added. When sailing ships gave way to steam power, the compass was further subdivided into half-points and quarter-points. The resulting system became so complicated that it was discarded and the present degree compass measure was adopted.

2

Teaching the Lesson

It is important that you teach the Pioneers that a compass only shows where North is. One can expect it to do no more. By using it properly, we can learn more from even this one piece of information.

You will have to teach the older boys how to do triangulation, because obstacles will naturally occur when you are using a compass. However, the math involved in this process is too complicated for the younger Pioneers.

One of the biggest mistakes you can make as a leader is to teach the compass concepts and then play games with involved pacing. This mixes the different lessons and can result in confusion. On the other hand, it is important to teach mapping and measuring well, so that, as the boys learn all of these skills, they can really master them and combine the skills effectively.

There are numerous activities and methods you can use for teaching the compass. Overall, it is not easy for boys to understand and apply, because it is relatively abstract. Do not get frustrated if it seems that the Pioneers just don't understand.

"Expert" Presenters

Because this is a difficult lesson and you would like to keep it simple, especially for your Recruits and Campers, you will want to avoid using too many real experts. If you would like to get a different face in front of

Other Possible Materials for Teaching and Demonstrating this Lesson

First Aid supplies for compass/first aid course

Index cards for recording clues

Military "Lensatic" compass

GPS system

Videos from the Lutheran Pioneer National Office

your Pioneers, perhaps another leader or an "Old Decrepit Pioneer" (ODP) is the answer. For your Frontiersmen and Troopers, if you would like experts to speak about the application of compass skills, here are some ideas.

- A surveyor often uses compass skills along with mapping and measuring and might have access to maps and equipment for the boys to try different exercises to apply their skills.
- Agricultural field agents also measure field coordinates with some of the same skills.
- A pilot also uses a compass or Global Positioning System and can also speak about this field of application.
- National Guard or other current or former military personnel, especially those in special forces, have experience using compasses in the field in situations similar to those Pioneers might face.
- Outfitters and outdoor guides will naturally need to know how to use compasses for survival should something unexpected happen with a group of adventurers; this is an application to which Pioneers can relate well.
- There are orienteering clubs that regularly do compass, map, and measuring exercises and might let a group of boys get involved in such an activity.

DEGREE SYSTEM

In the degree system, the compass circle is divided into 360 divisions called Degrees. North is located at the 0 or 360 degree mark. East is at 90 degrees, South at 180 degrees and west at 270 degrees. It is much easier to understand a course of 14 degrees than one set at "N by E, quarter E."

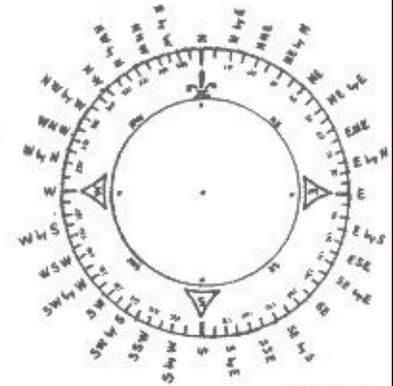


Figure 3

Today, the 32-point compass is of little interest beyond that of history. The "point" is still used on some nautical charts and it means 1/32 of the compass circle or 11.25 degrees.

COMPASS STYLES

The modern hand held compass comes

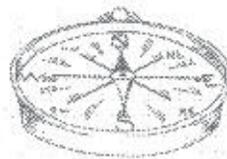
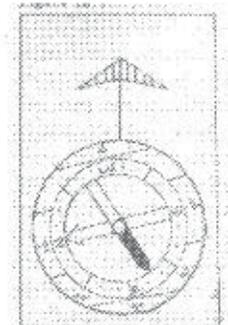


Figure 4

in two basic styles: floating needle and floating card. Figure 4 shows a needle compass that is very popular for orienteering. The



card compass, or sighting compass, as it is sometimes called, is shown in Figure 5 and is used by Pioneers. It is more accurate.

Figure 5

USE

A compass is an instrument that does just one thing: it points to the magnetic North. It does not keep you on your course automatically nor does it guide you back to your campsite. You must learn how to use it properly.

An Important Addition to this Chapter—Alternate Navigation Tools

In teaching proper wilderness travel and survival skills, which are most often the point of compass work for Pioneers, it is wise to teach other natural tools that can be used for navigation if a compass is not available. This information will likely be included in a future update of this chapter of *A Boy's Handbook*.

One method is using the sun. In the morning, a shadow from the sun will fall generally west. In the afternoon, it will fall generally east. Of course, the time of year may set the sun farther south in the sky and alter the shadow slightly. If one does not know the time, he can watch a shadow move, since it will

4

To use the orienteering compass, point the compass in the direction that you want to go. When the needle has stopped moving, align the orienteering arrow and the compass needle. The direction of travel arrow will now indicate the Azimuth or bearing that you must travel to reach your goal.

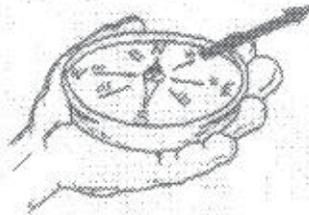


Figure 6

With a card type compass, point it in the direction you want to travel and the compass heading or azimuth will automatically line up with your target (see Figure 7). As with the needle type compass, allow the needle to stop moving before taking your readings.

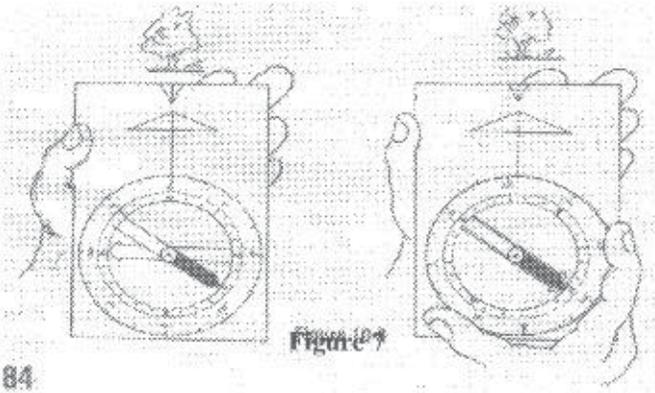


Figure 7

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There is a phrase that will help you remember how to use your compass. It works for either type but best with the card type of compass. The phrase is, "Put Red in the Shed and follow Fred." You begin by naming the direction you want to go (on the card it is your direction arrow) "Fred." Secondly you hold the compass in front of you and then turn your body until the "Red" arrow on the compass (which always points north) is inside the arrow outline ("Shed") on your compass face. Then you follow "Fred" to where you want to go.

Field Trips

With the possible exception of an office of one of the "experts" listed on the previous page, there are very few places to visit to learn more about compass use. There are a vast number of places to visit to practice compass skills, including city streets (see Projects & Activities), area parks, and camps.

Other Resources

There are other resources available to help you learn about using the compass. These might give you new ideas or tools to use for your presentation.

- *The Boy Scout Handbook* and *Fieldbook* both provide additional illustrations and information, including natural navigation techniques.
- The internet may provide other such illustrations and project ideas.
- The Lutheran Pioneer Library also has videos about, map, compass, and orienteering.

Projects & Activities

Getting the boys involved in projects and activities often will keep them interested in the subject matter and make it more memorable. Here are a few ideas for activities for teaching *Compass*.

- Repetition of what one might call the "equilateral exercise" on a regular basis is a good way of reinforcing compass skills

move east as the sun moves west. This knowledge can help a Pioneer approximate his direction of travel. One can use the moon (but not a flashlight) on a bright night in an open area in the same manner.

The North Star is always in the north (oddly enough). In fact, it is more accurate than magnetic north. Finding this point of reference in the night sky has long been a means of navigation.

One reference that is less reliable (but may be useful on a cloudy day or night) is knowing the direction of the prevailing wind (often west) and assuming that the wind is from that direction. One myth is that moss only grows on the north side of a tree (although it will not grow on a rolling stone!).

in a simple way. Here is how it works:

- ◇ Give each boy a golf or tennis ball with a number on it. Have each toss it into a field and stand at his ball.
 - ◇ Then give each boy a different degree reading and a number of paces to travel (by doing paces, it omits a need for measuring skills).
 - ◇ The next reading for each boy is 120 degrees greater than their previous reading and the same distance.
 - ◇ Doing this one more time should bring them back to their ball (since this is an equilateral triangle), where you might drop some kind of wrapped candy while they are following their mini-course.
 - ◇ This can also be done with squares (add 90° each time with 4 readings), pentagons (add 72° each time with 5 readings), hexagons (add 60° each time with 6 readings), and so on. Just divide 360° by the number of readings you want to use.
- Simple compass courses can be run anywhere, including a gymnasium (be careful of metallic objects).
 - Silva® has some good, simple compass games to use.
 - Integrating compass with other skills gives opportunities for other games/challenges.
 - ◇ For a compass/first aid course, a Pioneer must correctly treat an injured victim before the victim gives him the next reading on the course.
 - ◇ A survivor scenario can be used, in which teams find a downed pilot (a stuffed dummy) in a tree with a “treasure” map or bearing clue in his pocket. (A smoke device could lead to the “crash” site.) Further clues can be hidden on trees or in bottles, buried under ground, or otherwise hidden and hinted at in the clue. At the end, the treasure could be a “chest” of candy, soda, or other prizes.

One common source of error when using a hand held compass is the influence of nearby ferrous metal. Since the needle or card is magnetized, it will be attracted to any nearby iron object. This is called deviation. When sighting your compass, keep it away from your belt buckle, metal posts, other compasses, etc.

No matter which compass you use, once you have your bearing, look for a prominent landmark (such as a tall tree) and hike to it. In this way it is not necessary for you to constantly refer to your compass as you walk. Once you reach this landmark, take another bearing toward another prominent landmark. You can repeat this procedure until you arrive at your destination.

DELIBERATE ERROR

Sometimes when you are traveling through deep woods, it is better not to try and hit a small target such as your camp, but to hit a large target such as a nearby lake, from which your camp can easily be found. Another time your camp might be located on a river that runs in just one direction. If you were to head directly for your camp, you might miss it and then not know whether you were upstream or downstream from your camp. In either of these situations the solution is to deliberately miss your camp by walking too far to the left or too far to the right. This is called deliberate error or aiming off. In the second example, if you aimed to the right of your camp, when you reached the river, you would just turn left and follow it to your tent (see Figure 8).

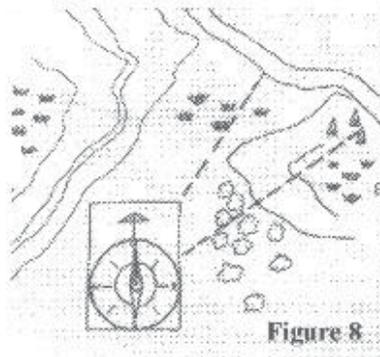


Figure 8

AV Materials for This Chapter Available from Lutheran Pioneers

- AV 113 *BY MAP AND COMPASS* - 27 Minutes - Ages 9-Adult
- AV 117 *ORIENTEERING--WHAT'S THAT?* - 14 Minutes - Ages 8-Adult
- AV 120 *MAP AND COMPASS KIT* - 90 Minutes - Ages 10-Adult
- AV 121 *FINDING YOUR WAY IN THE WILD* - 35 Minutes - Ages 10-Adult

6

TRIANGULATION

If you were out on a lake fishing and wanted to return to you can do it.

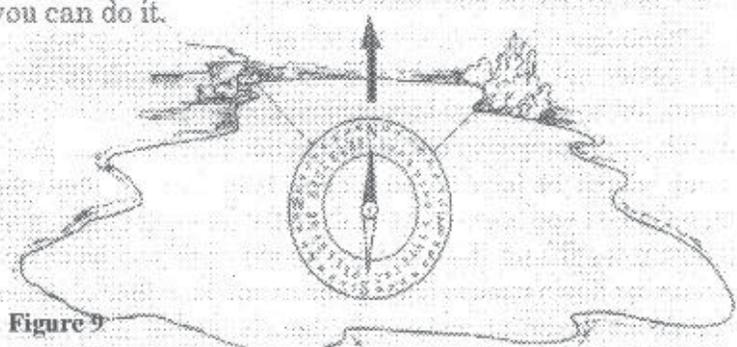
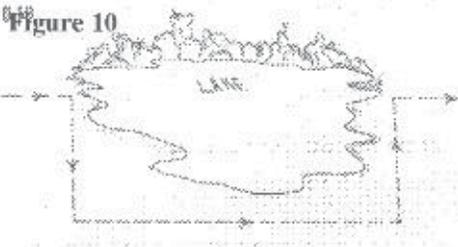


Figure 9

the same spot the next day, you could find it again with your compass by using a method called triangulation. Take a compass bearing of two prominent landmarks before you leave your favorite fishing hole. Those two bearings will only cross at one point on the lake. The next day it is just a matter of locating one of the bearings and paddling along that line to find the other bearing. This works just as well on land too. Study Figure 9 and see if you can do it.

TRAVELING AROUND AN OBSTACLE

If, while hiking through the woods on a bearing you come to an obstacle such as a lake, just spot a landmark on the other side, walk around the lake to the landmark and resume your bearings. If you can't see across the obsta-



cle, you will have to lay out a course around it. Practice going around an obstacle by studying Figure 10. Once you leave your original heading, don't forget to begin counting your steps so that you will end up on your original heading on the other side of the obstacle.

3 Practicing and Testing the Material

The best way to practice and test this information is by using the simple activities in the lesson. To keep this information fresh, it is a good idea to review/test it annually in some fashion.

You might also test it by requiring a Pioneer or team of Pioneers to complete a course, with varying difficulty for age levels, and return the clue cards to you.

Trains that are located in cities may have difficulties finding a field or other outdoor location to use for practice and testing. In this case, Trains can use parking lots or city streets. A given course could end at a fast-food restaurant or ice cream shop. You might give a number of bearings from a given location along the route and ask questions about the other bearings. For example, a card might read: (1) What traffic sign do you see at 75°? (2) What color (or house number) is the house at 120°? (3) At what degree reading is the sign for the post office? (4) Go 180 feet at 15° to get your next clue.

Some Trains and Districts hold Klondike Derbies in the winter for which they review their compass skills. At the Derby, the skills are tested in various competitions.

Expanding the Lesson—Global Positioning Systems

If you are looking for ways to expand this lesson either for Troopers who have already completed their Frontiersman objectives or simply to mix it up and give your boys a little more information, global positioning systems (GPS) might be the answer. This technology has grown rapidly to fit a variety of different applications, including outdoor navigation. A simple system can be purchased for less than \$100, which can then be learned and taught with little difficulty.