

LESSON PLAN
NAVIGATING USING MAP AND COMPASS
(45 Minutes)

MATERIALS REQUIRED

1 100' tape measure	1 pace card per Scout
3 stakes	1 pencil per Scout
1 pathfinder compass per Scout	1 set of compass courses per Scout
1 set of pace beads	

INTRODUCTION

In the previous lesson we learned how to locate our own position or the position of other objects on a map using a compass. In this lesson we will determine the length of our pace and the number of paces it takes to cover certain distances. With this knowledge, we can navigate accurately, even if the point we are aiming for is unmarked.

PURPOSE AND MAIN IDEAS

The purpose of this period of instruction is to teach how to use compass bearings and pacing to negotiate multi-leg routes, and how to chart an unmapped route.

We will do this by:

- Determining our pace and recording the number of paces required to cover certain distances.
- Navigating using compass bearings and pacing.
- Charting an unmapped route.

Upon completion of this period of instruction you will be able to:

1. Determine and record the length of your pace and the number of paces required to cover specific distances.
2. Successfully navigate using compass bearings and pacing.

BODY

1st Main Idea: Determining Pace Length.

A *pace* is two normal steps. For most of us, a pace will be about 5 feet under normal conditions. If we are carrying packs, our pace will be slightly shorter than when we are not. If we are going uphill, our pace will also be slightly shorter than when on level ground. Going downhill, our pace will be slightly longer.

Paces are counted by stepping off with the left foot and counting every time the right foot strikes the ground.

By definition, a pace is two steps, so in order to determine our pace we must first determine how long a single step is. We do this by counting how many steps it takes us to cover 100 feet. We then divide 100 by the number of steps to determine how long one average step is, and then we multiply the result by two to determine our pace.

If we are going to cover a long distance, counting our paces is not a good method because we can easily lose count. However, if we know how many paces it takes us to cover certain distances, say 10 meters, 50 meters, and 100 meters, we can use pace beads to help us keep track.

Once we know what our pace length is, all we have to do is determine how many paces it takes us to cover 33 feet (10 meters). With a pace of 5 feet, for example, we cover 10 meters every 6½ paces. We cover 50 meters every 32½ paces, and 100 meters every 65 paces. So we don't have to remember all these numbers, it's a good idea to record this information on a *pace card* that we can refer to.

Pace beads are simply a string of beads. We assign an arbitrary value to each bead and use the beads to help us keep track of how far we have gone. For example, if we say each bead equals 100 meters, then every 65 paces we move one bead. To determine how far we have gone (within 100 meters), all we have to do is count the number of beads we have moved. For example, if we have moved 13 beads, we have covered about 1300 meters.

2nd Main Idea: Navigating Using Compass Bearings and Pacing

We can lay out a route on a map that goes to several different points. Each point along the route is called a waypoint. Then, using only a compass and pacing, we can accurately navigate the route by going from one waypoint to the next.

1. Determine the compass bearing from the starting point to the first waypoint. Use your compass to pick out an object you can use as an aiming point to keep you on course.
2. Determine the distance from the starting point to the first waypoint, and divide this by the length of your pace to determine how many paces you must take to reach the waypoint. If the waypoint is over about 500 meters away, it is a good idea to divide the distance by 100, and use pace beads to keep track of the distance covered.
3. Step off with your left foot, walking toward the aiming point identified in Step 1 and counting off paces every time your right foot strikes the ground.
4. After the prescribed distance is covered, move on to the next waypoint by repeating steps 1 through 3.

3rd Main Idea: Charting an Unmapped Route

Sometimes we may want to record the route we took to get someplace, or update a map by adding a road or trail that does not appear on the map.

To do this, we simply mark the starting point on our map and look down the road or trail to the first bend. We take a bearing to the bend and walk to it, counting our paces as we go. When we get to the bend, we can either write down the direction and distance on a piece of paper or actually plot the leg on our map. Then we take a bearing to the next bend, and start over, repeating the process for each bend or turn until we reach our destination or the end of the road or trail.

QUESTIONS FROM THE CLASS

QUESTIONS TO THE CLASS