

BSA First Class Requirement 4a

- a) Using a map and compass, complete an orienteering course that covers at least one mile and requires measuring the height and/or width of designated items (tree, tower, canyon, ditch, etc.).

Learning fundamentals (prior to using the course)

NOTE: It is highly recommended to learn the fundamentals at a different meeting because of the length of time it needs.

Materials needed: tape measure, 20-foot rope or string, two cones or other markers

1. Determine various distances specific to you:

Thumb = _____ inches	Hand Span = _____ inches	Arm Span = _____ inches
Foot (shoe) = _____ inches	Pace = _____ ft	Arm Span = _____ ft _____ inches

- Thumb = either length from first knuckle to tip, or width (both are useful)
 - Hand span = spread fingers out, from end of thumb to end of pinky
 - Arm span = stretch out arms parallel to ground, measure fingertip to fingertip
 - Pace = to measure: Find 100-foot location (5x measurements of 20-foot rope) and walk off pace (pace is heel of same foot touching); Length of Pace = 100 ft / ____ paces = _____ ft/pace.
2. Declination
- To get current declination go to online calculator at <https://www.ngdc.noaa.gov/geomag-web/>.
 - Use Latitude: 43.623169, Longitude: -116.347076
 - In 2017 the declination at the course is 13.5° E, meaning you need to adjust your magnetic compass reading 13.5 degrees west (counterclockwise) to get to true north.
3. Orienting a map - align landmarks, or use compass
4. Measuring height - 2016 Boy Scout Handbook, pages 329-330
5. Measuring width - 2016 Boy Scout Handbook, pages 330-331
6. Taking a bearing - 2016 Boy Scout Handbook, page 344
- Line up compass with North marking, accounting for declination. Twist until direction of travel is lined up. Read the angle at the white line.

Orienteering Course - Kleiner Park, 1900 N. Records Avenue, Meridian, ID

Materials needed: map, compass, calculator, information (declination, your specific distances/measurements [above]). All directions are shown in True North in the answer. A copy of the map and course worksheet for each scout. The answer guide for leader.

Figure out your pace. Go to the basketball court next to Shelter A-1. It is 90' from east to west, grass edge to grass edge (Marked "A" on map). Walk it, starting with one heel (or toe) on the starting edge, counting each time that same heel (or toe) touches the ground. Stop counting when you cross the other end. You may get a fraction of a pace (e.g. ½ if your other heel touched on the other end).

Calculate your Pace: 90 ft / ____ paces = _____ ft / pace

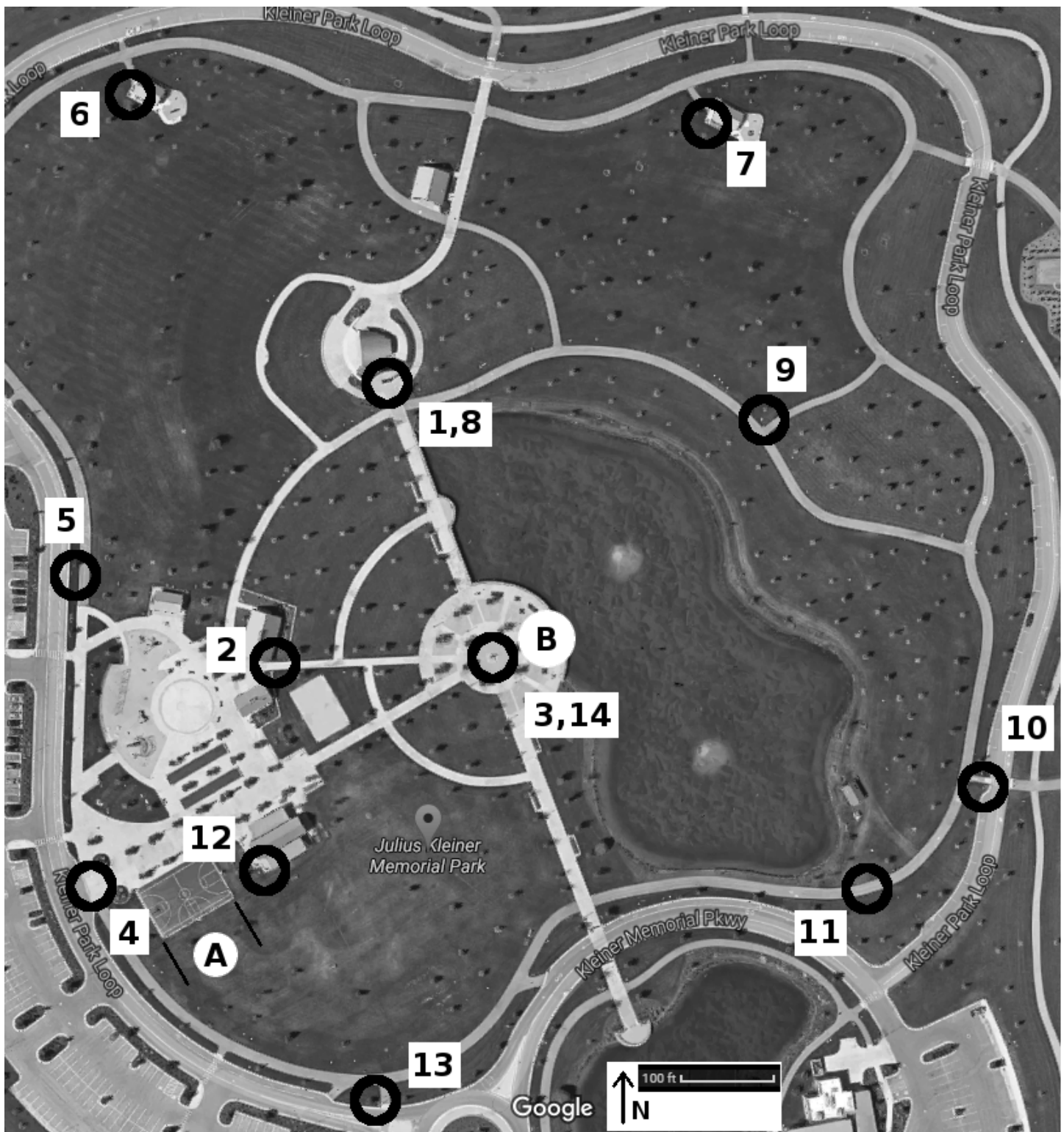
Now you can multiply this number by the number of feet for each direction to determine the number of paces, which is easier to count.

Course Rules:

- You will never cross a road; if you are about to cross a road, stop!
- Be aware of bicycles, runners, walkers on the bike paths.
- Metal objects affect the compass. You may need to step away towards the next point to get a bearing.
- Leave no trace. You will be travelling in straight lines but avoid damaging vegetation.
- Use your measuring skills with a compass or body distances to determine heights and widths.
- You may not be able to see a course point so determine direction using map and take a bearing on a spot closer that you can see, travel to that spot, and then continue your bearing. You may have to re-orient with the map and take a new bearing.
- This course may take a couple of hours to complete, so give yourself plenty of time.

Course Start:

Go to the statue of Julius Kleiner, slightly north east of the basketball courts, near the big pond (Marked "B" on map). Orient map (true north is up, but use landmarks). For each numbered step determine the bearing and distance. Some points are visited twice. You may want to convert feet to paces using a calculator. Use the map to determine the direction and distance. Scouts can work in pairs (buddy system) or small groups for best learning.

**Design**

This course was designed by Mike Lydon, Assistant Scoutmaster, Troop 62 in Meridian as a Wood Badge (W1-106-16 – Owl Patrol) ticket item. Any mistakes are mine.

Course Worksheet

Determine the direction and distance using the map and see where you end up. Each target is in the center of the black circle. Use map to verify location. **Bearing:** from compass; **Measured Distance:** estimate from map scale; **Paces** (Guess): Measured Distance / Pace; **Actual Paces:** Counted to the target; **Actual Distance:** Actual Paces * Pace.

The first few targets are show. Starting with Step 6 fill in the target when you find it.

Way Point	Bearing (True north)	Measured Distance (ft)	Paces (Guess)	Actual Paces	Actual Distance	Target	Measurement
1	339°				310	Tall, metal artwork	
						A. Measure height of metal artwork	
2						Path by building	
3						Back to starting statue	
						A. Measure width of base of statue	
4						Curb at end of straight path	
5						Fire hydrant	
6							
						A. Measure Long Side of picnic table	
						B. Measure Height (at peak) of shelter	
						C. Go to drinking fountain for next starting point. Drink some water if it is a warm day or you are thirsty.	
7							
8							
9							
10							
11							
12							
13							
						A. Measure the distance across the road at the crosswalk. This is a rapid, roaring river. Do not cross!	
14							

Answers (for leaders)

Way Point	Bearing (True north)	Distance (ft)	Target	Measurement
1	339°	310	Tall, metal artwork	
			B. Measure height of metal artwork	67 ft
2	200°	313	Path by building	
3	89°	210	Back to starting statue	
			B. Measure width of base of statue	8ft
4	239°	500	Curb at end of straight path	
5	358°	341	Fire hydrant	
6	6°	525	Shelter A-3 (SW corner)	
			B. Measure Long Side of picnic table	8 ft
			C. Measure Height (at peak) of shelter	13 ft 6 in
			D. Go to drinking fountain for next starting point. Drink some water if it is a warm day or you are thirsty.	✓
7	91°	590	Shelter A4 (SW corner)	
8	232°	445	Tall metal artwork	
9	96°	385	Garbage can where paths meet	
10	149°	475	Light pole by crosswalk	
11	230°	176	Path south of pump house	
12	271°	635	Shelter A-1 (SW corner, cement wall):	
13	152°	280	Light pole by crosswalk	
			B. Measure the distance across the road at the crosswalk. This is a rapid, roaring river. Do not cross!	40 ft (may vary a bit)
14	15°	483	Back to Julius Kleiner statue	

Optional larger map (for leaders) - bigger view of course

