Grade: 4th – Adult
Time: 1- 1 1/2 hours
Season: All

Basic Orienteering

(Basic Orienteering, Shapes Activity, Red Rock Course, Topographical Maps)

National Science Teaching Standards

A. Science as **INQUIRY**
B. PHYSICAL Science
C. LIFE Science
E. Science **TECHNOLOGY**
F. Science in **PERSONAL** and **SOCIAL PERSPECTIVE**
G. HISTORY and **NATURE** of Science

Background Information:

Orienteering is the combined use of a compass and map to find a desired location or to navigate through unfamiliar territory.

Objective: (basic orienteering)

- Students will be able to identify the parts of a compass.
- Students will learn how to set a bearing on a compass and follow that bearing.

Pre Activity:

- Research the tools used through history for navigation.
- Review the directions: North, South, East, and West; know the intermediate directions: Northeast, Northwest, Southeast, Southwest. Play the old game "Simon Says" using the above directions.

Equipment:

- Compass for each student
- Demonstration compass

Procedure:

1. Explain the parts of a compass and how each part works:
    - **Free-floating needle/magnetic needle (RED FRED)** – The needle has one red end that points to magnetic north. Let students experiment with the compass to find the exception of when the red needle does not point toward magnetic north (too close to metals…metals affect the magnet on the needle)
    - **Dial** – This is the part of the compass that turns in circles, and contains the numbers (degrees) to use to set bearings. Talk about the lines: bigger lines represent 10 degrees and the smaller lines represent 2 degrees.
    - **Orienteering Arrow (THE SHED FOR RED FRED) –** This is the outlined arrow on the basis of the compass dial (red, blue, or black). This arrow points to letter "N" on the compass dial. Ask the students when the "N" points north…only when the orienteering arrow is aligned with the magnetic needle.

- **Index Line –** This is the little white line at the top of the dial. It doesn't move and is often easier to identify from the underside of the compass.
- **Directional Arrow –** This is the arrow located on the base plate of the compass. It **ALWAYS** points in the direction you will travel. This is **ALWAYS** the place you set the bearing and read the bearing. Emphasize this idea. Most students think you follow Red Fred…no, no, no…you **ALWAYS** travel in the direction the directional arrow is pointing!

2. Demonstrate how to use the compass.
   - Decide the bearing you wish to travel…start out easy (i.e. 40 degrees, 140 degrees, choose a bearing that is marked on the compass dial)
   - Turn the dial to the given bearing, lining up the bearing with the index line.
   - Hold the compass level against your body so the directional arrow is pointing directly out in front of you. (With younger students, I tell them to hold it level at their belly button. Straight out from your belly button is the directional arrow and that is the direction you will walk!)
   - Turn your body so RED FRED will be exactly in his SHED! Often students will turn their arms…wrong, they need to turn their **whole body** as one function. I will often tell them to bring their elbows into their sides and pretend like they are glued to your sides and then turn with your feet. Demonstrate this movement for the students.
   - Review the steps of setting a compass:
     1. Set your bearing
     2. Put RED FRED in his SHED
     3. Look at the direction the directional arrow is pointing…walk STRAIGHT AHEAD
3. Have students practice a setting like 50 degrees, 150 degrees, 270 degrees…a bearing that is not numbered on the compass.
4. Have students practice setting a bearing that is an even number like 42 degrees, 168 degrees, 362 degrees.
5. Have students try a bearing that is an odd number 67 degrees, 159 degrees, etc. Remind students the little lines represent 2 degrees so they will have to be in the middle of two little lines for an odd number. Reassure them, you know this is difficult, but to be as exact as they can.
6. Once all of the students understand how it works to set and read a bearing, explain it is pretty unrealistic for someone to give you a bearing. It is more realistic to find the direction you would like to travel and then set the bearing to travel in that direction.
7. Practice this. Find an object outside you would like to walk towards: flag, light post, a big tree, etc. If you do this as a class and you are all heading toward the same object, each student will have a different bearing on his/her compass…reason being, each student is starting from a different location!
8. After everyone has a good understanding of the fundamentals of using a compass, there are several activities that you can follow up with (if time allows or next time you visit Springbrook): Shapes, Red Rock Courses, Topographical Maps.

Post Activity:

- If compasses are available, go to playground and practice setting bearings and following them.
- If compasses are not available, using directions and intermediate directions, have students create a "treasure hunt." Give each student a piece of wrapped candy or a new pencil. The student finds a place to put it on the playground. The student then creates the hunt by choosing a starting point, walking a designated number of steps in a designated direction, then students follows the next set of steps and direction, and so on until he/she is lead back to the "treasure." Each student should create a treasure map as he/she is mapping out the number of steps and the direction of travel. Have students switch treasure maps to see if they can find the treasure using another student's map!

Post Discussion:

- Discuss the problems you had using a compass.
- Discuss how just having a compass if you are lost does not help you! You also need a topographical map to get your bearings from.
- Discuss how early explorers must have felt going off into "unknown" territories.
- Talk about how explorers of today (astronauts, deep sea explorers) must feel exploring.
- Research some of the tools used of the past and present to help explorers find their way. Share that information.