Mapping With a Compass  
(A Simulated Survey)  
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**Lesson Overview:** Using a compass and a grid, students will map the location of artifacts found on a simulated dig site. This activity may be conducted outdoors or indoors.

**Objectives:** Students will
- Apply basic concepts of compass use to plot items in space
- Transfer this data to a map

**Texas Essential Knowledge and Skills (TEKS):**

**Social Studies, Grade 4**
- Social Studies 114.6 (22C), organize and interpret information in maps
- Social Studies 114.6 (22F), use appropriate mathematical skills to interpret social studies information such as maps and graphs

**Mathematics, Grade 4**
- Mathematics 111.16 (9), The student solves application problems involving estimation and measurement.
- Mathematics 111.16 (13A), identify and apply mathematics to everyday experiences
- Mathematics 111.16 (14A), communicate mathematical ideas using efficient tools
- Mathematics 111.16 (24A), use a problem-solving process to identify a problem and gather information

**Materials:** Compass for each team, grid paper, post-it-notes or flags, tape measure (optional)

**Activity:**

Step 1. Before beginning this activity set up a simulated archeological site using classroom items such as a globe, book, pencil, paperclip, etc.

Step 2. Divide the class into archeology teams. Teams should be no larger than 4-5 students.

Step 3. Students pretend they are a team of archeologists in the future. They are going to survey where they believe a school was once located.

Step 4. Either with masking tape, post-its, flags, or even piles of rocks, mark one datum for each survey group. Space these evenly around the perimeter of the “site.” For very small groups a single datum may be set up in the center of the site. This will be the point from which bearings and distances are measured.

Step 5. If this activity is being done outdoors have teams place flags (this can be as simple as a red ribbon tied to a stick) near the artifacts. If this is being done indoors, use post-it notes. This simulates the initial locating of artifacts in a field situation.
Step 6. Explain how to locate coordinates using a compass.

Step 7. Each group gathers at their assigned datum. Marked artifacts are sited with the compass and the bearing recorded. The distance from the datum to the artifact is then measured. This may be accomplished by tape measure, producing an absolute value, or the students may pace the distance, counting the number of steps to produce a relative value.

Step 8. Have students draw a scale map of the artifacts and their locations using directional coordinates and distances. Artifacts may be labeled on the map with numbers that are keyed to descriptions of the artifacts. These may be either definitive (a book), or descriptive (many pieces of paper bound together between two pieces of cardboard; papers are covered with strange symbols).

**Closure**: Have students compare their completed maps with the actual layout of the artifacts. Do they appear similar? Are there any relationships between artifacts that are more apparent on the map than in the field?

**Extensions**: Have archeology teams predict what the artifacts on their digs could have been used for (pretending that they have never seen such items). Have each team share their predictions.

**Play**: “Simon Says.” Simon tells players to face a certain direction (260 degrees). This would also be good practice prior to the mapping exercise.
How to use a directional compass

1. Site on object
2. Align red portion of arrow with red section in baseplate by turning bezel
3. Read bearing here