

Name _____
Physics
Period _____

Date _____
Lab #8
Mrs. Nadworny

Partners:

Due Date: _____

Vector Treasure Hunt

Purpose

- To create a series of directions that lead to a specific object
- To follow directions to locate a specific object
- To generate a scale map based upon a series of directions

Materials

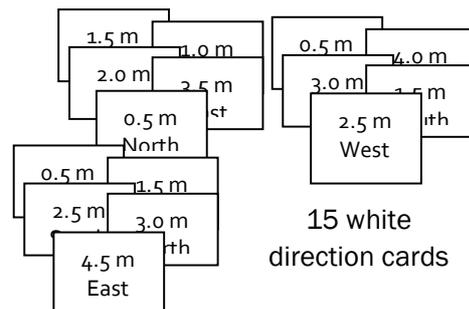
- Meter stick or Tape measure
- Index Card Bundle (15 white cards, 2 color cards, 1 Post-it Note)

Procedure

Creating Directions (Part 1)

1. In this lab, you will be selecting a large, fixed object located within the boundaries indicated by the teacher. The teacher will define the starting point and all physical boundaries for the lab. Going out of bounds during the lab is not acceptable, so make sure you know where the boundaries are located.
2. Select an object within the boundaries, ensuring it is large enough and obvious and is fixed in place, so that other students will be able to find it by following your directions.
3. Plot out a course from the starting point to the chosen object. Remember to work quietly and to avoid disrupting other classes and school traffic. Use a meter stick or long measuring tape to measure the distances along the course.
4. Break the course into 15 different segments of 5 meters or less. Write each separate segment as a distance (in meters) and a direction on an index card. The directions should be specified using only the terms north, south, east, or west. Combining directions is not allowed. You **should not** have any northeast or southwest or up or down type of directions. Do **not** number the cards.
5. These directions may be the most direct path, broken down into 15 segments, or they may describe a complicated path with many direction changes.
6. When you have completed the 15 cards that give an accurate description of a path between the starting point and the chosen object, record each card's value and direction in the space provided.
7. Write your names on one colored index card and place that on the top of the 15 cards. On the other colored index card, write your names and a description of the object you chose, including its location. Give this paper and the deck of directions to the teacher. (5 pts)

NO Lab Write-Up Required
attach map to answer sheet



Questions - Part 1 (35 pts)

1. Record the 15 cards you created:

2. Cards created and turned in _____ Have your teacher initial each group member's sheet

3. Do your cards describe a straight-line path to the object, or do they describe a winding path to the object?

4. Is the path described by your cards the same length or longer than the straight-line path to the object? Can your cards be used to determine the straight line path? Explain.

5. What was the most difficult part of plotting the path of the object?

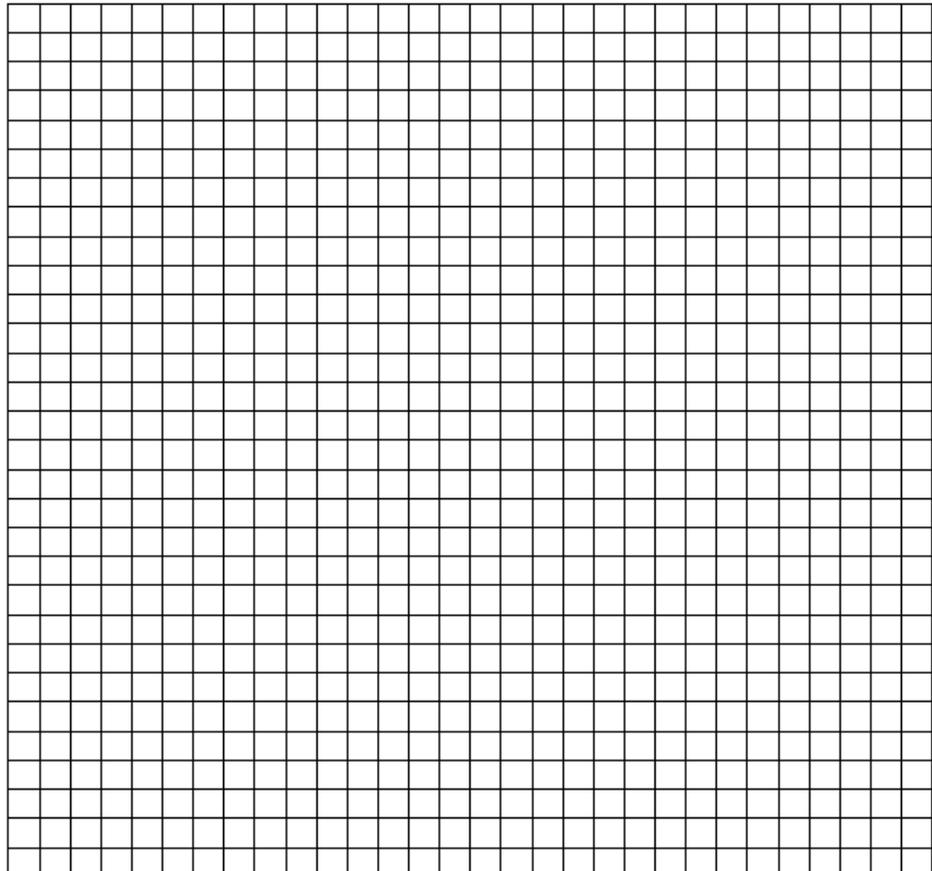
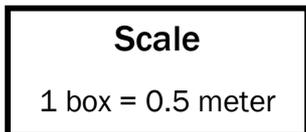
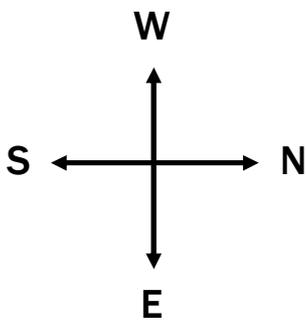
6. Are you confident that another group will be able to find the object using your direction cards? Explain why or why not.

7. Would another group be able to find the object using your direction cards if your cards were placed out of order? Explain.

Mapping the course (Part 2)

(30 pts)

1. Using the values of your 15 original direction cards, you will be generating a map of the complete set of directions you used to your object.
2. You will make the map by drawing each direction indicated on a card as an arrow.
3. Draw the first arrow so that its tail is at the starting point, and the point of the arrow is pointing in the direction specified on the card and the length of the arrow represents the distance on the card.
4. Continue through the entire set of 15 cards. Draw the arrows head-to-tail so that each arrow begins where the preceding one ends. If a direction overlaps another, shift it to the side slightly. Neatly label each vector that you drew.
5. Label the finishing point.
6. Add a dotted line with an arrow to represent the total displacement.



Questions - Part 2 (5 pts)

1. Does the map accurately reflect the path you used to your object? If not, explain any differences.

Following Directions (Part 3)

1. You will now receive a shuffled deck of direction cards made by another group.
2. You will follow the cards in the exact order they are given to you. Do not reorder them.
3. When you find the object, go back through the cards to make sure you have correctly identified the object selected by another group.
4. When you are sure that you have found the correct object, report your results to your teacher. She will confirm whether you have correctly identified the object. If not, review the cards and start again. Once it has been verified that you have found the correct object, report back to the group who created the directions and let them know.
5. Return the cards to your teacher.

Questions - Part 3 (30 pts)

6. Did shuffling the deck make it more difficult for you to locate the object? Explain.

7. Would you be able to place the cards in their original order? Explain why or why not.

8. Did you find the object described by the other group's cards? If not, explain what happened.

9. Explain the method you used to find the object, and include any tricks you discovered while working.

10. Was the other group able to correctly identify the object described by your direction cards? ____

11. Based on this exercise, describe the most efficient method of using the set of direction cards to locate the object. Would this work for any set of directions? Explain why or why not.
