Name _____ Date _____ Period _____

MINILAB

Distance and Displacement

The words distance and displacement refer to two very different quantities. If you leave home and walk a distance 10 km, you might end your walk 10 km east of home, 5 km east of home or back at your home. Your final position or displacement depends not only on the distance you travel but also the direction in which you walk. Displacement includes both the distance and the direction of change in position, measured from the starting point. Therefore, displacement is a vector quantity and can be represented by an arrow-tipped line segment. The length of the arrow drawn to scale represents the magnitude of the quantity. The direction of the arrow represents the direction of the quantity. The vectors are added by placing the tail of one vector at the head of the other vector. The sum or resultant is drawn by connection of the tail of the first vector to the head of the second vector.

Equipment

sharp pencil
paper
ruler
protractor

Objectives

During this minilab you will
- make and use scale drawings to determine distance.
- use vector addition to determine displacement.

Procedure and Interpretation

A. Practice in Using the Map Scale

1. Use the scale on the map and determine the distance in meters
   a. from Granville Road along N 11th Street to Church Street and down Church Street to the YMCA.

   _____

   b. along Moull Street from N 21st Street to Mt. Vernon Road.

   _____

B. Adding Two Vectors

2. Take a walk from the corner of N 21st Street and Granville Road down N 21st Street to Church Street and s down Church Street to the YMCA.
3. Using the map scale, find the magnitude in meters of each of the distances.

   _____

   _____

   _____

4. Using a scale of 1 cm = 92 m, draw on your paper a vector diagram representing your trip.