

## Lab 3-1: Where is the X?

**Purpose:** To give someone a set of directions that you and your group have carefully measured, and see if another group can follow those directions and end up at the same place as you did.

**Procedure:**

1. You will be divided into groups for this lab. Each *group* will get **5** (five) 3x5 cards, a meter stick for measuring distance, a protractor for measuring angles, five plain pennies and one penny with an X marked on it.
2. Your teacher will tell you which way is north. Take a minute and figure the other points of the compass.
3. At your table find the piece of masking tape, this is your starting point. Mark each card with your lab group number.
4. Move out from the starting point and note on the first blank card how far and in what direction you moved. For example, **.6 m SW**. (This is your first "Move.") **DO NOT NUMBER YOUR "MOVES."**
5. Decide upon your next move, example .45m N from that point. Do it and put the distance/direction on the next card. Continue doing this until a total of 5 cards have been completed each with its individual distance/direction noted. None of your moves may take you off the table. The maximum distance for each move is 1m. Make it challenging!!
6. Place the penny with the X, X side down at the point the fifth card ends. You do this so that when the other group follows your directions, they can tell if they finished where you finished. Scatter the other four pennies around the table as distracters.
7. You now have 5 cards each with a direction on it, Keep your cards in order, but again, **do not** number them!
8. Turn your cards in to your teacher.
9. When all groups are back, your group's cards will be given to another group. When you get another groups cards do not turn over the pennies. Follow their directions and see if X marks your spot. Don't move the X penny yet.
10. Now, **mix up the cards!!!** Try following the directions in this mixed up order! See if you can come out at the same spot. If you find that one of the cards has on it a direction and distance you cannot follow because of a wall or you go off the table, do the next card instead and do the other direction later.
11. When all groups are done we will see how well each did.

**Question:**

1. Does it matter whether you followed the directions in the same order as measured or can you still get to the same finish point if you follow them in a mixed up order?