



X Marks the Spot! (Understanding Vector Diagrams)

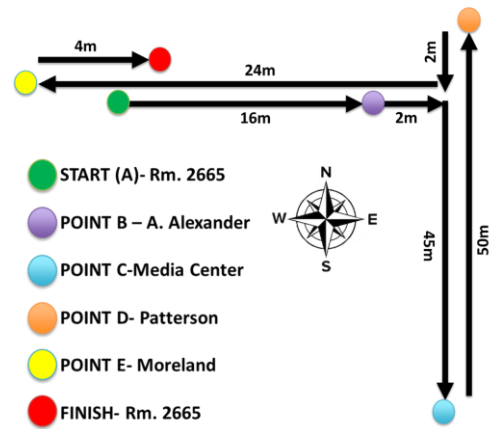
INTRODUCTION: If there was buried treasure 500 meters from you, you'd want to know where it is, right?! Well, just knowing that it's 500 meters away doesn't help much. We don't know its **POSITION**, it's exact location. While we know its **DISTANCE**, how far away it is, we don't know its **DISPLACEMENT** from you, how far in a certain direction. Maps exist to help us determine and establish our position and the position of other landmarks or destinations. A **VECTOR DIAGRAM** is a series of connected **VECTORS**, arrows detailing the **MAGNITUDE** and **DIRECTION** of a quantity. You are going to create your own vector diagram detailing the location of places around your neighborhood, home, or school!

PURPOSE: To illustrate the concept of vectors, distance and displacement

PROCEDURE:

- 1) Brain storm a list of five locations in your vicinity and label them in order Point A to E
- 2) Use your knowledge, phone compass, OR establish the direction you believe POINT B is from POINT A
- 3) Use a meter stick, measuring tape, OR your own scale of measurement to determine the distance from POINT A to B
- 4) Repeat steps 2 & 3 until you get to POINT E
- 5) Draw your measurements as **VECTORS** (arrows with a clear starting point) from tail to tip, make sure the **LENGTHS** align relatively with the distances

*Use an online system such as Google Maps if you are doing your neighborhood



LET'S APPLY!

- 1) What is the **TOTAL DISTANCE** traveled throughout your route?
- 2) What is the **DISTANCE** from POINT A to B?
- 3) If your POINT E ended where POINT A is, what would your **DISPLACEMENT** be? Why?
- 4) If 1 million dollars was located at point B and **ALL** the **ONLY** piece of information you had about it was your answer to number 2, would you be able to find it? Explain why or why not.

EXTENSION: Make your vector diagram and add additional landmarks and objects passed along the way!

