**Distance vs. Displacement**

1. Collect the handout from the front of the room
2. Open your textbooks and **read** pages 359 (**HINT:** look at figure 1 carefully)– to understand the difference between distance and displacement.
3. Using a ruler (to draw the path) and a calculator (to calculate both the ***distance*** and the ***displacement***) for the following:
   1. Measure the total distance and displacement from the ***reference point*** to ***each*** of following: ***A, D,*** and ***E***

***To A - Distance: \_\_\_\_\_\_\_\_\_\_\_\_ Displacement: \_\_\_\_\_\_\_\_\_\_\_\_***

***To D - Distance: \_\_\_\_\_\_\_\_\_\_\_\_ Displacement: \_\_\_\_\_\_\_\_\_\_\_\_***

***To E - Distance: \_\_\_\_\_\_\_\_\_\_\_\_ Displacement: \_\_\_\_\_\_\_\_\_\_\_\_***

Next, measure the ***total*** distance and displacement when traveling from *reference point*to **F**, then **C**, then **A** finally ending up at **G.**

***Distance: \_\_\_\_\_\_\_\_\_\_\_\_ Displacement: \_\_\_\_\_\_\_\_\_\_\_\_***

The total distance and displacement when traveling from the *reference point*to **A** ***and back.***

***Distance: \_\_\_\_\_\_\_\_\_\_\_\_ Displacement: \_\_\_\_\_\_\_\_\_\_\_\_***

In groups of 2 to 3 create some general rules about displacement and distance based on the previous exercise

**General Rules:**

* Displacement can be equal but ***never*** greater than distance

1. NOW, let’s test how Distance and Displacement can affect speed calculations (and we will shortly introduce a new term!) - Please make sure you take a **timing device** with you as we head **outside.**
2. Create a picture of your running route. (include measurements)
3. Record your time \_\_\_\_\_\_\_\_\_\_\_\_
4. Calculate your distance \_\_\_\_\_\_\_\_\_\_\_\_
5. Calculate your displacement \_\_\_\_\_\_\_\_\_\_\_\_
6. **Read page 361** – How do distance, speed, displacement and velocity relate? – Write a summary below. (include similarities and differences of the symbols used)
7. Calculate your speed and velocity from the data collected at the top of the page.

Speed Velocity

**Speed** (magnitude and units): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Velocity** (magnitude, units and direction): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Have your teacher to check this statement – then collect and complete the ***Displacement and Velocity*** worksheet to complete.