Name: _____ Period: _____ Date: _____ Clwk # _____

Reference Points & Relative Motion Investigation

1)Reference Point

Question: How do you describe the location of an object?

Procedure: Take turns with your partner.

a. Choose an object in the classroom that is easy to see.
b. Without pointing, describing, or naming the object, give directions for your partner to find the object.
c. Ask your partner to identify the object. If your partner does not correctly identify the object, try to give directions in a different way. Identify how many attempts it took your partner to identify the object.

Date Table: (10 pts) If you have 2 partners, use both rows.

Partner's Name	**# of attempts**	If it took more than 1 attempt, was it because of the directions or something else? **Explain**.
		_____ _____ _____
		_____ _____ _____

Assessment/Analysis Questions: (5 pts) Remember, assessment questions on ALL labs are individual work!!

1. Define a reference point: _____

   _____

2. Why do you need two locations to describe the position of an object? _____

   _____

   _____

3. McAuliffe Middle School is next door to the shopping center. Which of these locations is an example of a reference point? _____

4. Create your own example of a reference point: _____

   _____

2)Relative Motion

Question: How does your frame of reference affect the motion of an object?

Procedure: Take turns walking SLOWLY while throwing and catching a ball in a straight line your partner.

Each person will walk and toss the tennis ball two different times, once for Trial 1 and again for Trial 2!

While your partner is walking and tossing the tennis ball, take notice of how the ball appears to be moving. Hint: does the ball appear to moving in a straight up and down line or does the ball appear to moving in an up and down arc?

a. Use a piece of tape to mark the start and finish of a **4 meter** distance.
b. While your partner walks and tosses the tennis ball, you will stand at the **finish line** for the 1st trial and then about halfway down the sideline for the 2nd trial to make your observations.
c. **Sketch** a diagram of the observed motion of the **tossed ball** (not the person) below.

Observation

Include a brief description to clarify your sketches.

Trial 1: **finish line**

Trial 2: **sideline**

1 2 3 4

1 2 3 4

Assessment/Analysis Questions: (5 pts) Remember, assessment questions on ALL labs are individual work!!

1. Define frame of reference: _____
2. Define relative motion: _____
3. Use the terms frame of reference and relative motion to explain the **difference** in relative motion that you observed as your frame of reference changed from the finish line to the sideline. _____

3) Relative Motion II

Question: How do graphs of motion differ based on your reference point?

Procedure: a. Mark of 10.0 m of space using your meter stick and 2 pieces of tape.

b. 1 group member should stand at each piece of tape. 1 of these must hold the timer

c. 1 group member will walk the 8.0 m track while holding 8-10 sugar packets

d. When ready the timer keeper will say start and the walker will begin moving.

e. Evry2.0 seconds the timer will say drop and the walker will drop a sugar packet, Repeat until course is completed.

f. Measure the distance from your start to each sugar packet. And record in a data table. Note the direction the walker is moving with regards to you

g. Have the non- walkers switch places and repeat the process.

h. Trade places again and repeat until each person has walked twice.

i. Create graphs for each person's motion(4 graphs Total) on Graph paper

Data

Questions

1. **How did the walker movement stay the same as you changed postions?**

   _____

   _____

2. **How did the walkers movement Change as you changed positon?**

   _____

   _____