Which Way Do I Have to Walk?

Lesson Objective: In this activity students will be using the CBR along with the TI-73 to observe the effects of moving away from the CBR, toward the CBR, and not moving at all.

Materials Needed:
1 CBR (Calculator Based Ranger
1 overhead TI73 Calculator or TI84
1 overhead projector
handout for students

Activity: Students will create three types of graphs.

Trial 1:
- Students will stand a minimum of .5 meters from the CBR but not more than 1 meter.
- Students will walk slowly, but steadily, away from the CBR for 15 seconds.
- Students will record a copy of the graph that is produced on the screen.
- Samples can be repeated if necessary.

Trial 2:
- Students will stand about 5 meters from the CBR.
- Students will walk toward the CBR at a slow but steady speed.
- Students will record a copy of the graph that is produced on the screen.
- Samples can be repeated if necessary.

Trial 3:
- Students will stand about 2 meters from the CBR.
- Students will stand still during the data collecting.
- Students will record a copy of the graph that is produced on the screen.
- Samples can be repeated if necessary.

Follow Up: Discussion will take place about the three graphs and students will be asked to think about:
- Why does the plot on Trial 1 go up as it moves from left to right? (Use words "time" and "distance" in your explanation.)
- Why does the plot on Trial 2 appear to be moving downward? (Use words "time" and "distance" in your explanation.)

- Why is the plot on Trial 3 a flat line? (Use words "time" and "distance" in your explanation.)
- Write a short paragraph summing up how the direction in which you move affects the plot of your distance from the CBR with respect to time?

Extension of Activity:

- Combine the three graphs into one graph
- First have the students predict what a graph would look like if a student starts close to the CBR, walk away slowly but steadily, for 3 seconds, STOP for 3 seconds, and then walk toward the CBR slowly and steadily. They should first draw a picture and then support why they have drawn their particular picture.
- Check the graph by doing the motion with the students.
- Have students think about other graphs.
- When have they seen a graph that goes UP?
- When have they seen a graph that goes DOWN?
- When have they seen a graph that is horizontal?