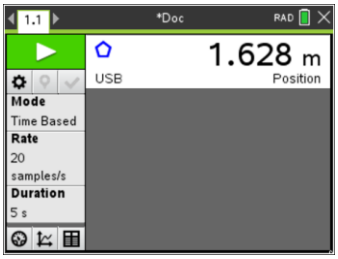
QUICK START GUIDE

Distance/Rate/Time Using a CBR™ 2 Motion Sensor and TI-Nspire™ CX II Graphing Calculator

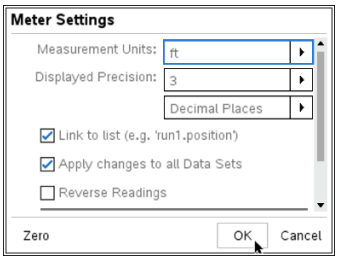
Connect the CBR™ 2 motion sensor:

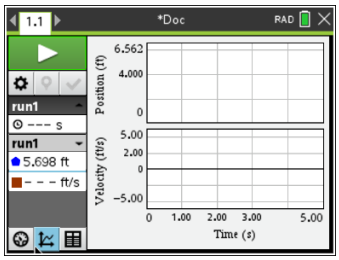
- Connect the TI graphing calculator and CBR™ 2 motion sensor.
- The Vernier DataQuest® app will automatically be added to the document.



Change the measurement units to feet, if desired:

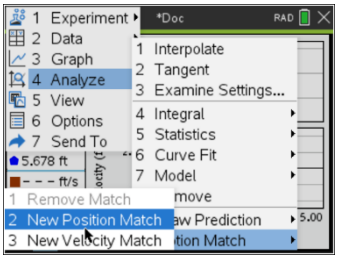
- Move the cursor to the **Position** display bar and click.
- Change the Measurement Units to ft.
- Select **OK.**
- Select the **Graph View** icon at the bottom of the screen to see a graph.

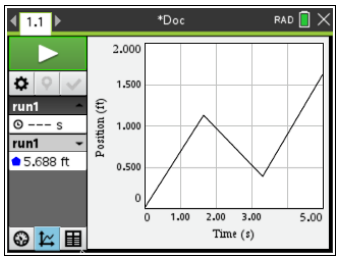




Position Match:

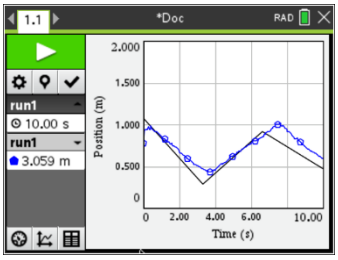
- Press **Menu > Analyze > Motion Match > New Position Match**. (Or you can hover over the graph and press **Ctrl > Menu > Motion Match > New Position Match**.)
- The graph displayed may or may not be the same as the graph image to the right.

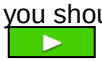




Match the Graph:

In this experiment, we are collecting data to try and match the graph. You will point the CBR™ 2 at a wall, and then move back and forth until the graph matches the Position Match graph as closely as possible.



- First, answer these questions:
  - What does the *y*-intercept represent physically?
  - In relation to the wall, where do you need to start to match the graph?
  - How fast do you need to walk each segment?
  - Where do you need to finish?
  - Is there a time when you should stand still? If so, when does that time start and end?
- Select **Start Collection**  and try to match the graph.
- To retry the experiment, select **Start Collection**  again. This will override the original data collection.

Display a new position match:

- Press **Menu > Analyze > Motion Match > New Position Match**.
- Select **Start Collection**  to override the previous data collection and try to match the new graph.

Follow up questions:

- How well did your walk match the graph?
- What would you need to do differently to better match the graph?
- What is the rate of change for each segment?
- What does the rate of change represent?
- What are the equations of the various segments?
- What are the domains and ranges of the segments?
