

ACTIVITY: Going in Circles

Prior Knowledge: It is assumed that students know and understand the CAST Rule.

Setup: Groups of 3/4

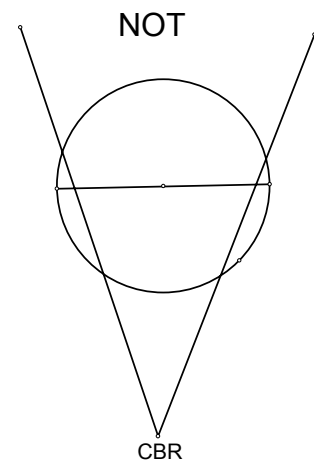
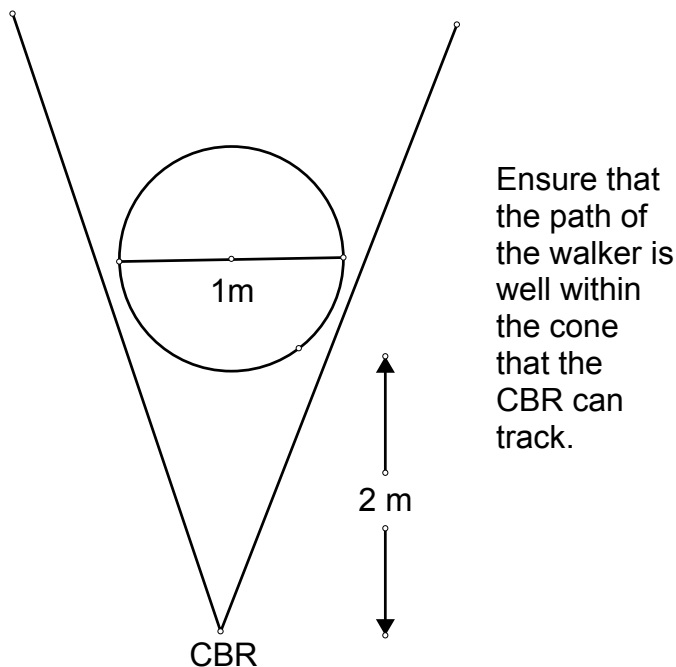
Equipment Needed: 1 CBR attached to a TI83 /83+ Graphing calculator
Measuring Tapes/Metre Sticks

Instructions: Groups of 3 will be formed. One person per group will walk in a circular path in front of a CBR.

PART 1: Hypothesize the shape of the Distance/Time Graph that will be produced. Compare hypotheses.

Test your hypothesis and justify the results.

- For groups, you will need a walker, a circle counter, and an equipment operator.
- Run the Ranger Program and set the CBR to run the experiment for 15 seconds.
- Have the walker walk in a steady circular path in front of a CBR.
- The walker should start between 2 and 3m from the circle.
- The walker should hold a book in front of him/her, so that the CBR is tracking the flat surface of the book.
- The diameter of the circular path should be about 1 m. This will keep the walker within the cone that the CBR can track. You may need to repeat the experiment until you have a path in which the walker stayed within the range of the CBR.
- Have the circle counter count the total number of circles walked.



PART 2: **“What if?”**

For each of the following, make a hypothesis, test your hypothesis, justify the results of your hypothesis.

- What if the walker starts farther away from the CBR? (i.e. move the circle's centre further from the CBR)
- What if the radius of the circular path is increased?
- What if the pace of walking is increased?
- What if the walker starts walking at a different point on the circle?
- EXTENSION: What if during the walk, the walker changes direction of walking on the circle?
- EXTENSION: What if the walker walks an elliptical path instead of a circular one?