Simulation Worksheet: Magnetic Force – Three Wires

Name: _____

Date: _____

- 1. Your challenge is to rank the three wires based on the magnitude of their currents, from largest to smallest. You should be able to do this without doing any calculations. First, drag the wires around the screen, putting them into whatever position you wish, to determine the ranking. Select the correct ranking from the list of six options at the bottom of the screen, and press the "Check Answer" button in the menu at the right to see if you are correct.
- 2. Figure out a system for determining the ranking that works for you every time (note that pressing the "Get new currents" button gives you a different set of currents with, most likely, a different ranking). Write a short description of how your system works.

- 3. Now, un-check the "Wires are draggable" checkbox at the top right so that the charges are fixed in position at the corners of an equilateral triangle. Check the "Show helpful lines" button to view lines that connect the corners of the triangle, as well as lines that run from the center of the triangle to each corner. Your goal now is to determine a new system of ranking the currents that does not involve moving the wires around the screen.
- 4. See if you can come up with a system for ranking the wires based on the magnitude of their currents when you cannot move them. Briefly describe the system you come up with when the wires are fixed in place at the corners of the equilateral triangle.