## Worksheets for Exploration 6.2: The Two-Block Push



Two blocks are pushed by identical forces (**position is given in meters and time is given in seconds**), each block starting at rest at the first vertical rectangle (start). The top block is twice the mass of the bottom block,  $m_1 = 2m_2$ . <u>Restart</u>. The graphs and tables are initially blank. <u>Animation without Graphs and Tables</u>.

- a. Which object has the greater kinetic energy when it reaches the second vertical rectangle (finish)? Why? (Use the animation without graphs).
  - i. Consider the definition of work.
  - ii. Is there a measurement you can make to test your answer?

iii. Make the appropriate measurements to predict KE2<sub>25m</sub>/KE1<sub>25m</sub>.

- b. Once you have answered the above question, click <u>Animation with Graphs and Tables</u>, to see if you were correct. Consider both the graphs and the tables.
  - i. How does the blue area on the graph relate to work and kinetic energy?

- ii. At the end rectangle the masses are not traveling the same speeds. Can you predict the speed of one mass compared to the other here? (given the ratio of masses). Remember the objects are pushed with the same force through the same distance.
- c. If you were incorrect in your answer (your prediction for the ratio of Kinetic Energies), can you figure out why you answered incorrectly? What is the correct rationale you should have used to answer this question? Use the graphs and tables where appropriate.