# PhET: The Moving Man

Open a web browser and go to the URL:
http://phet.colorado.edu/en/simulation/moving-man

For this entire activity, you may set the values for position, velocity, and acceleration by either dragging the slider bars with your mouse or by typing the value directly into the boxes for those quantities.

**Scenario 1: So fast he doesn't seem to move at all**

a) Set the man's initial distance at halfway to the house (d = 4 m). Set velocity, and acceleration to 0.
b) Calculate the man's position after 5 s (if I don't see an equation for this, no credit for the entire lab!)
c) Run the scenario (hit the play button)
d) Compare the value you predicted to the man's actual position at 5 s.
e) Hit the "reset all" button

**Scenario 2: We're moving now!**

a) Place the man at the tree (d = -8 m). Set velocity to 2 m/s.
b) Calculate how long it will take the man to reach the house.
c) Run the scenario.
d) Compare the value you predicted to the actual time required. Explain any differences.
e) Hit the "reset all" button

**Scenario 3: Watch out for that wall!**

a) Place the man back at the tree. Set velocity to 0 m/s and acceleration to 1.5 $m/s^2$.
b) Predict what's going to happen.
c) Calculate how long it will take the man to get to the house. Is this less or more than it took in Scenario 2 to reach the house?
d) Run scenario and compare the predicted value for time to the actual value. You may not be able to "stop" the scenario in time at the house. Simply switch to "playback" mode (instead of "record"), play back the scenario, pause ***before*** he gets to the house and repeatedly hit the "slow" button to get him there.
e) Reset the scenario.

**Scenario 4: Do the boomerang!**

a) Place the man back at the tree. Set the velocity to 4 m/s and the acceleration to -0.5 $m/s^2$.
b) Predict what will happen first. Which direction will he be traveling? Will he be speeding up or slowing down?
c) Describe what you think will happen over time.
d) Calculate how long it will take the man to return to the tree.
e) Run the scenario and verify your answer.

**Scenario 5: Charting the course of a man**

a) Click on the tab that says 'Charts" at the top of the window.
b) Run scenario 2 from above.
c) What does the slope of the line on the PT graph represent?
d) What is the value of the slope on the VT graph? What does that signify? Does the AT graph agree with your answer?
e) Hit the "reset all" button

**Scenario 6: PTs, and VTs, and ATs, oh my!**

a) Click on the magnifying glasses to set the velocity and acceleration scales to the maximum.
b) Run scenario 4 from above.
c) What does the slope of the line on the VT graph represent?
d) What is the value of the slope on the VT graph? What does that signify? Does the AT graph agree with your answer?
e) Hit the "reset all" button

**Scenario 7: ALL kinds of motion**

a) Place the man at the tree. Set the velocity to 2.5 m/s and hit play for 6 seconds. Then hit pause.
b) Have the man stand still for 2 seconds.
c) Have the man run back to the tree twice as fast. What is his velocity? How long will he run at that speed to reach the tree?
d) Have the man accelerate from rest at the tree to the house at 2 $m/s^2$. Draw the PT and VT graphs representing all the motions in this problem in your lab notebook.