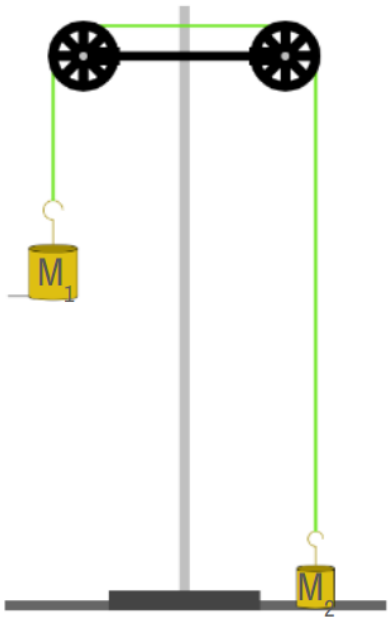
Physics Aviary | Atwood Unknown Mass Problem

☐ *Success Criteria: I can determine the acceleration of a mass in an Atwood machine using a kinematic equation and solve for the unknown mass through system analysis, verifying my solution using the Physics Aviary simulation.*

Getting Started: Select one problem for the ***Physics Aviary Atwood Unknown Mass Problem***



Step 1: An Atwood consists of two masses that are connected together using a massless string draped over a pair of pulleys, as shown. Using your specific aviary, fill in the table with your given values:

Givens	Value	Units
Mass 1 (m_1)	unknown	kg
Mass 2 (m_2)		kg
Distance above the table for m_2		meters
Time for m_2 to fall to the table.		seconds

Step 2: Determine the acceleration of Mass 1 **(m_1)** using the correct Kinematic Equation. Highlight or circle the correct equation: Show all your steps / work.

$v_{fy} = v_{iy} + a_y t$

$\Delta y = \frac{1}{2}(v_{fy} + v_{iy})t$

$\Delta y = v_{iy} t + \frac{1}{2} a_y t^2$

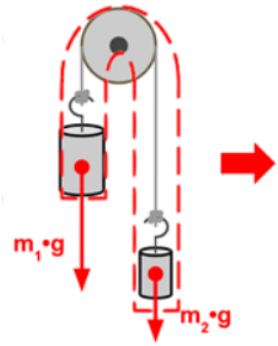
$v_{fy}^2 = v_{iy}^2 + 2a_y \Delta y$

Acceleration = _____ m/s^2

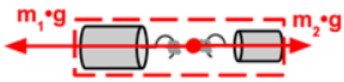
Physics Aviary | Atwood Unknown Mass Problem

☐ *Success Criteria: I can determine the acceleration of a mass in an Atwood machine using a kinematic equation and solve for the unknown mass through system analysis, verifying my solution using the Physics Aviary simulation.*

Step 3: Using the System Analysis approach presented in class, solve for the unknown Mass $\mathbf{m_1}$. You must show all your equations, steps and work.



Mass = _____kg



Step 4: Enter your values into the Physics Aviary and confirm your answers. Include a screenshot with your name and serial number, showing successful completion below: