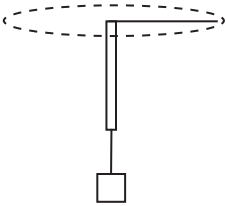


In today's lab, you will be determining the mass of an unknown object as it travels in a circular path.

Materials:

- unknown mass
- hanging mass
- string
- PVC pipe
- meter stick
- timer

Set-up:



- Attach the unknown mass to the string.
- Run the string through the PVC pipe.
- Attach the string to the known, hanging mass.

Procedure:

- Spin the unknown mass in a steady, circular path (as horizontal as possible), so the hanging mass remains stationary.
- Measure the period of revolution and the radius of the circular path.
- Repeat for multiple trials to minimize experimental error.

Data:

Hanging mass value: _____ g = _____ kg

Trial	Period (s)	Radius (m)
1		
2		
3		
Average:		

Analysis:

1. If the hanging mass were heavier, how would you keep the unknown mass in a constant circular path?
2. Draw the free-body diagram for the hanging mass.
3. Determine the force of tension in the string using your free-body diagram above.
4. Draw the free-body diagram for the unknown mass (assume the string is horizontal).
5. Using the force of tension in the string, determine the mass of the unknown object (assume the string is horizontal).

Questions to consider:

1. If the hanging mass were heavier, what would you have to do to keep the unknown mass in a constant circular path?

2. If the string were to break, in what direction would the unknown mass travel?

3. Were you able to get the string attached to the unknown mass completely horizontal? If not, explain why.
