

## Phys 220 – Rotational Equilibrium/Center of Mass

*Materials and Equipment:* meter stick, hanging masses, lab stand, string

### Procedure:

- Suspend the meter stick from its center of mass.
  - For each combination below
    - calculate the unknown position,
    - determine the position experimentally, and
    - determine percent *error* between the calculated and experimental values.
1. If a 350g mass is placed at the 70cm mark, where should a 150g mass be placed to keep the meter stick in rotational equilibrium?
  2. If a 100g mass is placed at the 90cm mark and a second mass is placed at the 20cm mark, what should the second mass be to keep the meter stick in rotational equilibrium?
  3. In 2, above, add 50g to each mass at its current location. Determine whether the meter stick is still in rotational equilibrium.
  4. If a 20g mass is placed at the 70cm mark and a 300g mass at the 90cm mark, where should a 500g mass be placed to keep the meter stick in rotational equilibrium?

Now suspend the meter stick from the 30cm mark.

5. If a 400g mass is placed at the 10cm mark, where should a 200g mass be placed to keep the meter stick in rotational equilibrium?

### Question

- 1) Why are tire irons longer than a normal wrench?

