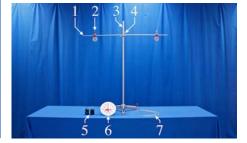
Statics of Rigid Bodies Mechanics Resolution of Forces







Concept:

Application of a free-body diagram to either of the 1 kg masses at rest, 1. 4 ft Rod where T = cable tension, gives

$$T - mg = ma = 0$$
, or

$$T = mg = (1 \text{ kg})(9.8 \text{ m/s}^2) \approx 10 \text{ N}.$$

Since the scale measures the tension in the cable, the scale reads 10 N. The pulley is assumed to have negligible friction and mass, and its role is to

Equipment:

- 2. (2) Cenco Pulleys
- 3. Large Ring Stand
- 4. Large Rod Clamp
- 5. (2) 1 kg Weights
- 6. 20 N Scale
- 7. (2) 2 ft Cables

simply redirect the tension in the cable without changing its magnitude. The cables are also assumed to have negligible mass.

Procedure:

- 1. Begin with the demo set up as shown in the top-left picture with the scale facing away from the audience.
- Ask the audience to predict the scale's reading.
- 3. Flip the scale towards the audience revealing its true reading.
- Once again turn the scale away from the audience.
- 5. Remove one of the weights, wrap the cable around the pulley, and reattach it to the scale as shown in topright picture.
- 6. Repeat steps 2-3.