

What's the Vector Victor?

Objective: The objective of this lab is to analyze the vector nature of forces using the phenomena of equilibrium.

Procedure: 1. Set up the force table so that the ring is over the center post and the three strings are extending away from the ring and over the three pulleys.

2. For each of the following situations, find the mass or angle that balances out the situation.

A. 25 g at 0°
___ at 180°

B. 32 g at 0°
35 g at 30°
___ at 195°

C. 71 g at 90°
25 g at 180°
75 g at ___

D. 32 g at 300°
54 g at 30°
___ at 180°

E. 30 g at 0°
40 g at 90°
50 g at ___

F. 10 g at 270°
8 g at 30°
9 g at ?___

G. 15 g at 0°
5 g at 90°
___ at 180°

3. Now, go back and calculate the mass or angle required to balance the system. Be sure to include a free-body diagram with each calculation.

4. After you have calculated the theoretical mass or angle that will balance the system, calculate for each situation the absolute and relative error.