

PART 2. ERROR CALCULATIONS

Percent Error magnitude Experimental compared to Analytical = _____ %

Percent Error magnitude Graphical compared to Analytical = _____ %

Absolute Error in angle Experimental compared to Analytical = _____ degrees

Absolute Error in angle Graphical compared to Analytical = _____ degrees

SAMPLE CALCULATIONS

1. $F = mg =$

2. $m = \frac{F}{g} =$

3. Direction F_E opposite F_R so direction $F_R =$ direction $F_E - 180^\circ =$

4. $F_{1x} = F_1 \cos(20^\circ) =$

5. $F_{1y} = F_1 \sin(20^\circ) =$

6. $F_{R1} = \sqrt{(F_{Rx})^2 + (F_{Ry})^2} =$

7. $\theta = \tan^{-1}\left(\frac{F_y}{F_x}\right) =$

8. % Error Exp = $\frac{|\text{Experimental} - \text{Analytical}|}{\text{Analytical}} \times 100\% =$

9. Absolute Err = $\theta(\text{exp}) - \theta(\text{analytical}) =$

QUESTIONS

1. To determine the force acting on each mass it was assumed that $g = 9.80 \text{ m/sec}^2$. The value of g at the place where the experiment is performed may be slightly different from that value. State what effect (if any) it would have on the *percentage error* calculated for the comparisons. To test your answer to the question, leave g as a symbol in the calculation of the percentage error.

2. Two forces are applied to the ring of a force table, one at an angle of 20.0° , and the other at an angle of 80.0° . Regardless of the magnitudes of the forces, choose the correct response below.

The equilibrant will be in the (a) first quadrant (b) second quadrant (c) third quadrant (d) fourth quadrant (e) cannot tell which quadrant from the available information.