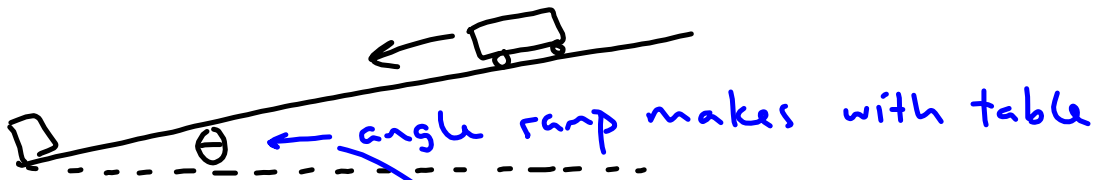


## LAB - ACCELERATION DUE TO GRAVITY

---



$$a = g \sin(\theta)$$

↳ solve for this!

↳ acceleration of cart down ramp; measure from slope of line on velocity graph

Theoretical value for "g" =  $9.8 \text{ m/s}^2$

Example:

slope of line from velocity graph

$$a = 0.39 \text{ m/s}^2$$

$$\text{angle } (\theta) = 2.5^\circ$$

$$a = g \sin(\theta)$$

$$g = \frac{a}{\sin(\theta)} = \frac{0.39 \text{ m/s}^2}{\sin(2.5^\circ)} = 9.0 \text{ m/s}^2$$

$$\% \text{ Error} = \frac{|9 \text{ m/s}^2 - 9.8 \text{ m/s}^2|}{9.8 \text{ m/s}^2} \cdot 100 \%$$

$$= 8\%$$

## Sources of Error :

- Measuring device
- Position of a motion detector
- Timing
- Friction

## Quiz Monday

- Position  $\rightarrow$  velocity  $\rightarrow$  acceleration graphs
- Motion maps with velocity and acceleration
- Word problem on motion