Lab

## Calculations \& Questions:

1 What is the ratio of starting height to loop diameter for both angles? Show the numbers you used as well as the final answer.
$\frac{\text { Starting height }(\mathrm{m})}{\text { Loop Diameter } \mathrm{m})}=$
Starting height $(\mathrm{m})=$
Loop Diameter m)
2 Does the angle of the ramp affect the g's felt if the starting height of the marble is the same?
$\qquad$
$\qquad$
$\qquad$
$\qquad$

Use the numbers relating from the "First track angle" to answer these questions.
3 How fast was the marble traveling when you released it at the top of the track $(\mathrm{m} / \mathrm{s})$ : $\qquad$
4 Use energy relationships to calculate how fast the marble was traveling when it traveled over the top of the loop ( $\mathrm{m} / \mathrm{s}$ ): $\qquad$
All heights are in meters.
Speed at the loop's top $=\sqrt{(2)(9.80)(\text { Starting height on ramp - ball's height at the loop's top) }}$ Show your numbers and calculations here:

Lab

5 Use the $\mathrm{a}_{\mathrm{c}}$ formula to calculate the centripetal acceleration of the marble as it traveled over the loop's top ( $\mathrm{m} / \mathrm{s}^{2}$ )

$$
a_{c}=\frac{(2)(9.80)(\text { starting height on the ramp }- \text { ball's height a the loop's top })}{\left(\frac{1}{2}\right)(\text { ball's height at the loop's top })}
$$

Show your numbers here:

$$
a_{c}=\ldots(2)(9.80)(
$$

$$
(1 / 2)
$$

ANSWER: $\qquad$

6 Calculate the g's experienced on the marble.

$$
\text { g's experienced }=\frac{(2)(\text { starting height on the ramp }- \text { ball's height a the loop's top })}{\left(\frac{1}{2}\right)(\text { ball's height at the loop's top })}
$$

Show your numbers here:
g's experienced = $\qquad$ (1/2)

7 How do the g's experienced by the marble compare to the acceleration due to gravity on the surface of the Earth? G's on the Earth's surface equals, "1 g."

