

Lab Group Names _____
AP/PreAP Physics

"Shoot for your Grade"

Objective: Predict the landing spot of a projectile launched horizontally from an elevated platform.

Materials: ruler with center groove, a couple of textbooks, steel ball, meter stick, paper target sheet, carbon paper

Procedure

IMPORTANT: *The steel ball must never leave the table when taking data. Only when you are ready to shoot for your grade will the ball be allowed to land on the floor.*

1. Use textbooks and the ruler to build a ramp (for best results, use a ramp height of 8-15 cm).
2. Roll the ball down the ramp and allow it to travel along the flat lab table.
3. Take any measurements needed to compare the vertical and horizontal velocities of the ball.
4. Using the launch velocity and vertical drop, predict by *calculation* the landing spot of your projectile.
5. Turn in a copy of your calculations to the teacher. You must include the distance from the ramp that you expect the ball to land.
6. When all calculations have been turned in, order of fire will be determined by random roll of an icosahedral solid.
7. Measure this calculated distance. Place the target sheet at this position, making sure the ball's velocity vector is aligned with the center of the paper. Place the carbon paper shiny side down on top of the target.
8. Grade for the project will be determined by landing position of the steel ball. If the grade is satisfactory to you, no lab report need be written, beyond a page of neat calculations entered in your lab notebook.
9. If grade is unsatisfactory, up to 2 letter grades (20 points) may be added with a full written lab report, including error analysis.

Launch order # _____

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(HINT! Make a ramp on a lab table such that the ball rolls across the table for a while before launching into the air. How far did it roll on the table? How long did it take to roll that far?)

Grading: The position of the ball on the scoring target will determine the lab grade. A 100-point grade requires no further report. A copy of this sheet will be made for each group member's lab notebook. Grades of 90 or less may have up to 20 points added (not to exceed a 100 point total grade) by completing a written lab report.

Draw a neat diagram of the proposed projectile motion here. Include measurements.

Show your calculations here.

The center of the target will be placed _____ (horizontal distance) from the end of the table.

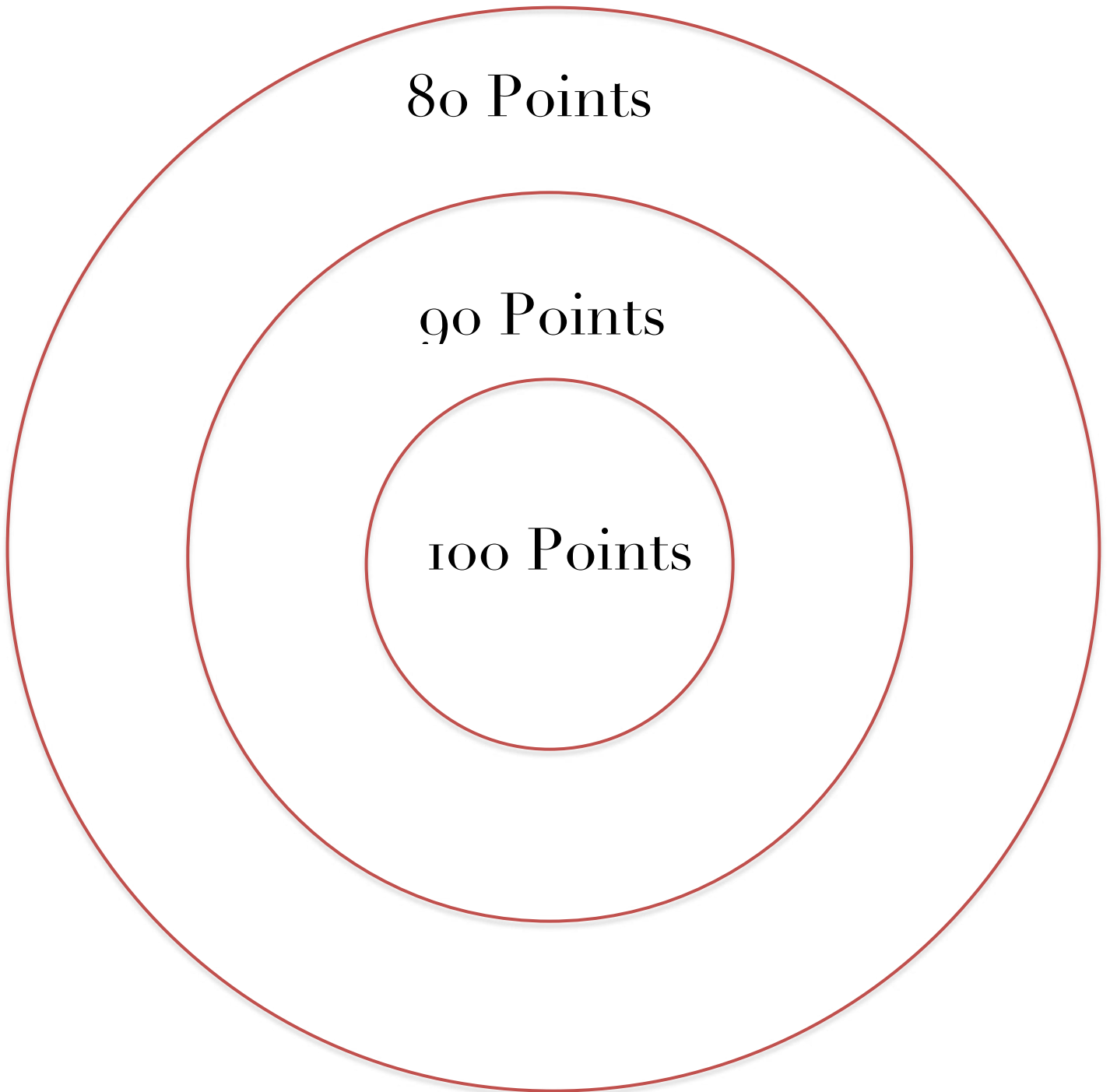
Results: Ball landed in the _____ point zone.

70 Points

80 Points

90 Points

100 Points



75

80

85

90

95

100 Points!

95

90

85

80

75