

Golf Ball Launching Lab¹

Physics I: High School Grades 10-12

Overview	The purpose of this lesson is for students to use kinematic equations to predict motion.
Objective	After designing their own golf ball launchers, students will predict how far their launcher will send a golf ball and get points based on accuracy.
Standards	P.1.6: Describe and measure motion in terms of position, time, and the derived quantities of velocity and acceleration. ²
Materials	Students will need: <ul style="list-style-type: none">• equations sheet• pencil• paper• calculator• anything they want to use to build their launcher (can do at home) 
Procedure	<ol style="list-style-type: none">1. Explain assignment to students. Pass out rubrics, give examples on what kinds of things are possible to use to build one.2. Answer questions students have as they are building. Give a couple days in class for building so that students can ask questions as they find things around their houses. Also include a weekend for them to test their launchers and predict distance a golf ball will travel from their launchers.3. Set up area outside (parking lot or field or something) to do launch at. Lay out tape measure.4. Launch golf balls. Measure distance each students' went. Compare to calculated value students figured in step 2.5. Hand out lab worksheet with questions about basic principles used in the lab and a few practice problems.6. Set up voting on Decing³ for students to vote on which launcher was the most creatively designed and which one was the "best" (most accurate) design.
Evaluation	Students will be graded based on the accuracy of their calculations for their golf ball launchers, as well as their scores on the worksheet handed out. The students whose launchers win most creative and most accurate awards through Decing will be awarded five points of extra credit each.

¹Lesson plan adapted from observed lab in Mr. Smiley's classroom, Harrison High School

²Indiana State Standards for Physics available at: <http://www.indianastandardsresources.org/standard.asp?Subject=sci&Grade=P&Standard=1>

³Decing application available at <http://www.decing.com/>