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"Impact" Project Technical Report

Our project "impact," tests the trajectory of a paintball fired from your average paintball gun. This

project helps people interested in the sport of paintball to learn more about the physics and science of the

sport, and maybe even help them to play the game better. Paintball is a very popular sport and is played

by millions of people around the world, and many times people wonder about the dynamics behind this

exciting game, and our project intends to offer them a little insight as to what happens after they fire the

gun, and can improve their abilities & knowledge of paintball.

What our team is trying to do is develope a C++ program that measures the trajectory a paintball

follows after being fired from a paintball gun. Our program will visually display the heigth, angle, and

distance a paintball travels after being shot, an will even include air drag. This is useful because there is a

great amount of curiosity in fans of Paintball as to the workings of the physics and dynamics of the game

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To do this, we are using mathematical equations from the field of physics and are attempting to

program them into a c++ program. We will then use Microsof Excel to visually display the data, showing

the arc, heigth, and distance a paintball will travel with different variables in the air drag and angle from

which it is shot. The equations we have so far are x=vxt and vx=vicos0 which are used to compute

horizontal displacement, and y = vyt + gt2, vy = visinϩ and vyf = vy + gt to compute vertical

displacement.

At the end of this project, we hope to have a completely functional C++ based program that

accurately displays the trajectory of a paintball fired from a standard paintball gun. We hope to incorporate

as many variables as possible, and are currently working on coding our program to compute air drag. We still

have quite a bit of work to do on our project, however, and still have a few problems to work out in our code, and

are still working with Microsoft Excel to complete the visual side of the project. But all the members of our team

are hard at work trying to make this project possible.

Our project will satisfy the curiosity of many Paintball fans everywhere, and in general give people a better

understanding of physics, and may give many avid Paintball players an opportunity to improve their playing skills.

But at it's heart, the true purpose of this project is aimed at advancing the computer skills of us [the team], and

hopefully help us learn many skills not only from tinkering with code but through

teamwork as well that we may be

able to use throughout our lives and professions.

Abstract: This projects goal is to help fans of the sport Paintball, to better their understanding of the sport,

and maybe even improve their gaming skills. This report describes our goal to create a program that charts the

trajectory of a paintball fired from a gun, the equations we are using, and describes what we have accomplished

so far, and what we hope to by the projects deadline.

method

These formulas are used to plot vertical and horizontal projectile motion without air drag.

Horizontal displacement x and and the initial horizonal velocity vx then, at time t,

x = vxt

vx = vicos□br>

Vertical displacement y and the intial vertical velocity vy then at time t

y = vyt + gt2

vy = visin□br>
vyf = vy + gt