PROJECTILE MOTION

HOW DOES THE ANGLE OF PROJECTION AFFECT THE RANGE OF A PROJECTILE?

First up - go to the website:

http://phet.colorado.edu/new/simulations/sims.php?sim=Projectile_Motion

What to do…

Using this simulation… (no air resistance)

1) Collect **sufficient and relevant** empirical data to support the claim that for any initial velocity v there is a "best angle" theta θ_{ba} that yields the largest horizontal displacement Δx.

2) In your own words, describe why there is a "best angle" theta. Why do **both** smaller and larger launch angles give less horizontal displacement?

3) Derive a physics/mathematics proof for the value of θ_{ba}.

How you will be graded…

1) Supply the raw data (sufficient and relevant) from your experiments as well as an analysis of the data.

2) Write something that makes sense. Take you time and think. Give examples.

3) If you have a hard time doing the third step, that is OK. Just bring in all of your work.

Your evidence and work must be able to stand trial in the court of physics (the honorable Judge M.OB presiding). The development of your argument, including a logical step-by step process, is more important than your final answer.