Name

Date

Period

**Physics Projectile Motion Lab with Angles**

Station 1- Nerf soft dart projectile (Use an angle between 50-80 degrees)

-Measure the horizontal displacement.

-Eye ball the projectile angle with a protractor

-Calculate the range (hypotenuse), vertical velocity, time, and vertical displacement. The formulas are given to you.

1a) Draw the setup, THEN MAKE SURE TO COME BACK TO YOUR DRAWING and **ADD** all of the new information from your calculations!

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| 1b) Range= v2  ag (sin) 0 \*2  Rearranged equation- v2= x(ag) / sin (0 x2) | 1d) vfy= viy + ag (t) |
| 1c) viy= vi (sin 0) | 1e) y= viy (t) + 0.5 (ag)(t)2 |

Station 2- Wiffle baseball (use an angle between 30 to 50 degrees)

-Measure the horizontal displacement.

-Eye ball the projectile angle with a protractor

-Calculate the range (hypotenuse), vertical velocity, time, and vertical displacement. The formulas are given to you.

2a) Draw the setup, THEN MAKE SURE TO COME BACK TO YOUR DRAWING and **ADD** all of the new information from your calculations!

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| 2b) Range= v2  ag (sin) 0 \*2  Rearranged equation- v2= x(ag) / sin (0 x2) | 2d) vfy= viy + ag (t) |
| 2c) viy= vi (sin 0) | 2e) y= viy (t) + 0.5 (ag)(t)2 |

Station 3- Golf club (the club will determine the angle)…look on the bottom of it. (Please be cautious of people around you…the golf clubs are metal.)

-Measure the horizontal displacement.

-Eye ball the projectile angle with a protractor

-Calculate the range (hypotenuse), vertical velocity, time, and vertical displacement. The formulas are given to you.

3a) Draw the setup, THEN MAKE SURE TO COME BACK TO YOUR DRAWING and **ADD** all of the new information from your calculations!

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| 3b) Range= v2  ag (sin) 0 \*2  Rearranged equation- v2= x(ag) / sin (0 x2) | 3d) vfy= viy + ag (t) |
| 3c) viy= vi (sin 0) | 3e) y= viy (t) + 0.5 (ag)(t)2 |

Station 4- Tennis ball (use an angle between 20-40 degrees)

-Measure the horizontal displacement.

-Eye ball the projectile angle with a protractor

-Calculate the range (hypotenuse), vertical velocity, time, and vertical displacement. The formulas are given to you.

4a) Draw the setup, THEN MAKE SURE TO COME BACK TO YOUR DRAWING and **ADD** all of the new information from your calculations!

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| 4b) Range= v2  ag (sin) 0 \*2  Rearranged equation- v2= x(ag) / sin (0 x2) | 4d) vfy= viy + ag (t) |
| 4c) viy= vi (sin 0) | 4e) y= viy (t) + 0.5 (ag)(t)2 |

Station 5- Plastic straw spit ball (use an angle between 0 and 20 degrees)

-Measure the horizontal displacement.

-Eye ball the projectile angle with a protractor

-Calculate the range (hypotenuse), vertical velocity, time, and vertical displacement. The formulas are given to you.

5a) Draw the setup, THEN MAKE SURE TO COME BACK TO YOUR DRAWING and **ADD** all of the new information from your calculations!

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| 5b) Range= v2  ag (sin) 0 \*2  Rearranged equation- v2= x(ag) / sin (0 x2) | 5d) vfy= viy + ag (t) |
| 5c) viy= vi (sin 0) | 5e) y= viy (t) + 0.5 (ag)(t)2 |