PHYSICS
Projectile Motion (Activity Sheet)

Name: _____   **Date:** _____ .

Course, Yr. & Sec.: _____   **Rating:** _____ .

Instruction: Use the **NewtoNexus projectile motion simulator** to explore how different launch settings affect the motion of projectiles. For each numbered question, apply the **given simulation settings**, observe the projectile's behavior, and **select the best answer** from the choices provided. You may use screenshots or record observations in a table to support your answers.

Activity 1: Angle of Launch vs. Displacement

Initial Conditions:

- Initial speed: 15 m/s
- Gravity: 9.8 m/s² (Earth)
- Initial height: 5 m
- Time (t): 1.5 seconds

1.1 If the angle is 30°, what are dx and dy?
a) dx = 19.49 m, dy = 5.21 m
b) dx = 12.99 m, dy = 8.75 m
c) dx = 15.00 m, dy = 7.50 m
d) dx = 10.61 m, dy = 10.61 m

1.2 If the angle is 45°, what are dx and dy?
a) dx = 15.91 m, dy = 9.87 m
b) dx = 12.50 m, dy = 12.50 m
c) dx = 10.61 m, dy = 10.61 m
d) dx = 18.33 m, dy = 18.33 m

1.3 If the angle is 60°, what are dx and dy?
a) dx = 11.25 m, dy = 13.45 m
b) dx = 15.00 m, dy = 15.00 m
c) dx = 9.32 m, dy = 19.49 m
d) dx = 12.99 m, dy = 12.99 m

1.4 If the angle is 90°, what are dx and dy?
a) dx = 0 m, dy = 11.54 m
b) dx = 15 m, dy = 0 m
c) dx = 7.5 m, dy = 7.5 m
d) dx = 0 m, dy = 16.46 m

Activity 2: Initial Velocity vs. Displacement (Jupiter Gravity)

Initial Conditions:

- Angle: 30°

- Gravity: 24.79 m/s² (Jupiter)

- Initial speed: 20 m/s

- Initial height: 0 m

- Time (t): 0.5 seconds

2.1 What is the horizontal displacement (dx)?
a) 8.66 m
b) 10.00 m
c) 17.32 m
d) 5.00 m

2.2 What is the vertical displacement (dy)?
a) 2.50 m
b) 1.25 m
c) 3.10 m
d) 1.90 m

2.3 What is the maximum height reached by the projectile?
a) 2.02 m
b) 2.44 m
c) 3.82 m
d) 0.98 m

Activity 3: Maximum Height Analysis

Initial Conditions:

- Initial speed: 25 m/s

- Gravity: 9.8 m/s² (Earth)

- Initial height: 0 m

3.1 Which launch angle gives the maximum height?
a) 30°
b) 45°
c) 60°
d) 90°

3.2 At 45° launch angle, what is the maximum height?
a) 10.93 m
b) 25.00 m
c) 15.93 m
d) 63.78 m

3.3 What is the total time of flight? (assuming the angle is 45)

a) 2.5 s
b) 3.60 s
c) 4.90 s
d) 5.25 s