

Name \_\_\_\_\_  
Honors Physics  
Period \_\_\_\_\_



Date \_\_\_\_\_  
Vectors/Projectiles WS #9H  
Mrs. Nadworny

### MORE Horizontal Projectiles

**Directions** - Solve the following problems using the GUESS method. Show ALL work neatly using proper units and significant figures.

- A ball is thrown horizontally from the top of a building with an initial velocity of 15 meters per second. At the same instant, a second ball is dropped from the top of the building. The two balls have the same
  - path as they fall
  - initial horizontal velocity
  - final velocity as they reach the ground
  - initial vertical velocity
- The flight time of a horizontal projectile is dependent upon all of the following EXCEPT
  - initial horizontal velocity
  - gravity
  - height
  - air resistance
- A ball is rolled down a ramp and projected horizontally from a height of 1.6 meters. It lands 2.3 meters away. Calculate its initial speed. [Hint: You will need to solve for time first.]

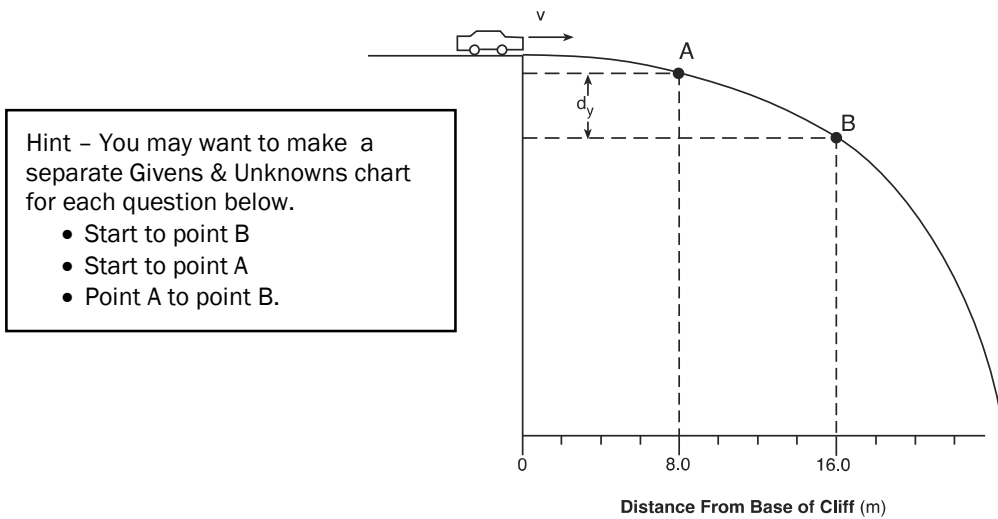
	x	y
d		
t		
a		
$v_i$		
$v_f$		

- The ball from question 3 is now raised to a height of 2.0 meters. Where is it going to land? [Hint: The initial velocity does not change with a height change, but the time does. This is also a two step question.]

	x	y
d		
t		
a		
$v_i$		
$v_f$		

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5. The path of a stunt car driven horizontally off a cliff is represented in the diagram below. After leaving the cliff, the car fall freely to point A in 0.50 second and to point B in 1.00 second.



- a. Determine the magnitude of the horizontal component of the velocity of the car at point B. [Neglect friction.]
  
- b. Determine the magnitude and direction of the vertical velocity of the car at point A.
  
- c. Calculate the magnitude and direction of the vertical displacement,  $d_y$ , of the car from point A to point B. [Neglect friction.]

Answers in size order: 2.6, 3.7, 4.0, 4.9, 16.0