HW 1.5 Horizontal Projectiles Name

Reading

College Physics '3.4 Motion in Two Dimensions' (pgs 60 - 64). Concentrate on vectors and the horizontally launched projectiles.

Conceptual Question

A projectile is launched horizontally from a projectile launcher mounted on the roof of a building.

- a) What is the direction of the acceleration at the point of launch (1)
- b) What is the direction of the acceleration half way through its flight? (1)

Multiple Choice 1 (2)

A 2.0 kg ball is thrown horizontally at 4.0 m/s from a height of 3.0 m. Another ball of mass 1.0 kg is also thrown from the same height at 8.0 m/s. Compared to the first ball, the time taken for the second ball to hit the ground is:

- A) Half as long
- B) Twice as long
- C) The same time
- D) Four times as long

Multiple Choice 2 (2)

A 2.0 kg ball is thrown horizontally at 4.0 m/s from a height of 3.0 m. Another ball of mass 1.0 kg is also thrown from the same height at 8.0 m/s. Compared to the first ball, the range for the second ball is:

- A) Half as far
- B) Twice as far
- C) The same distance
- D) Four times as far

Free Response

A student with a potato gun fires a potato horizontally with a speed of 50.0 m/s from the top of Gibb's Hill Lighthouse (108 m from sea level).

a) Draw a labeled diagram (2)

b) Assume for a moment that it hits the sea, calculate the time-of-flight. (3)

c) Assuming that the lighthouse is 500 m from the sea, will the potato hit the water or the land? (3)