## 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 $4.0 \mathrm{~m} / \mathrm{s}$ from a height of 3.0 m . Another ball of mass 1.0 kg is also thrown from the same height at $8.0 \mathrm{~m} / \mathrm{s}$. 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 $4.0 \mathrm{~m} / \mathrm{s}$ from a height of 3.0 m . Another ball of mass 1.0 kg is also thrown from the same height at $8.0 \mathrm{~m} / \mathrm{s}$. 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 $50.0 \mathrm{~m} / \mathrm{s}$ 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)

