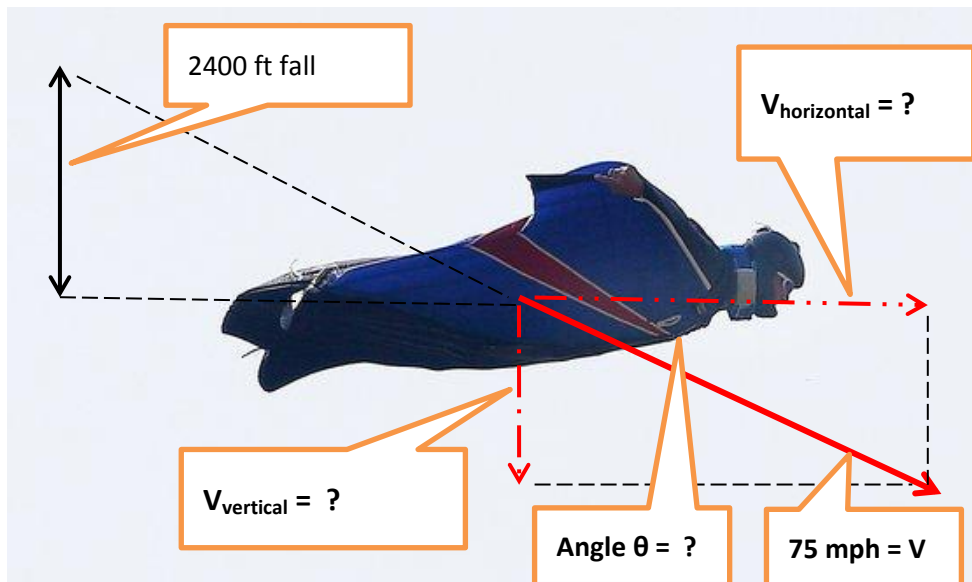


NEWTON'S 2ND LAW & KINEMATICS Units 6,7 mostly + 4 &5

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& NYTimes May 24, 2012 by Mary Pilon

Stuntman Takes a Superhero Plunge



Gary Connery reached 75 miles an hour during his 40-second descent.

A man jumped out of a helicopter Wednesday and fell **2,400 feet to the earth without deploying a parachute**. He was uninjured.

Multimedia



Video

[Successful Wing-Suit Landing \(news.sky.com\)](http://news.sky.com)



Mr. **Connery landed on a 350-foot runway** of 18,500 cardboard boxes arranged by about 100 volunteers, friends and family.

Gary Connery, a 42-year-old stunt diver from Britain, became the first person to complete a **successful wing-suit landing** without using a parachute. It was a scene fit for a Batman movie, Connery dropping from high above Henley-on-Thames, England, a dark speck in a clear blue sky. He launched from the helicopter at 3:32 p.m. and **reached a speed of 75 miles an hour during his 40-second fall**. **Cushioning his landing at Mill End Farm were over 18,500 cardboard boxes that formed a 350-foot runway** Watching a video of Connery's flight online Wednesday afternoon, Corliss said he was surprised that Connery approached the cardboard-box runway headfirst, increasing his risk of neck injury, as opposed to with his back. (Connery said he wore a helmet and neck brace for his flight.)

INTRODUCTION: Assume he was falling at constant speed from 2400 ft.

QUESTIONS: (a) Find his vertical component of velocity(mph) after falling 2400 ft in 40 s?
(b) Find angle θ ?

(c) Find $V_{\text{horizontal}}$?
Find $V_{\text{horizontal}}$ in mph.

(d) Assume he stopped in the stack of boxes in 325 ft. and his initial speed was 75 mph. Find his deceleration (in ft/s^2) ?

(e) If he had a weight of 150 lb, find the force exerted on him while stopping in 325 ft?

HINTS: 5280 ft/mile, 3600 s/hr, $W = mg$, $g = 32 \text{ ft/s}^2$, 60 mph = 88 ft/s
 $\sin \theta = \text{opp/hyp}$, $\tan \theta = \text{opp/adj}$

ANSWERS: (a) ~40.9 mph
(b) 33 degrees, (c) $V_H = \sim 62.9 \text{ mph}$
(d) $\sim 18.6 \text{ ft/s}^2$, (e) $\sim 93.1 \text{ lb}$