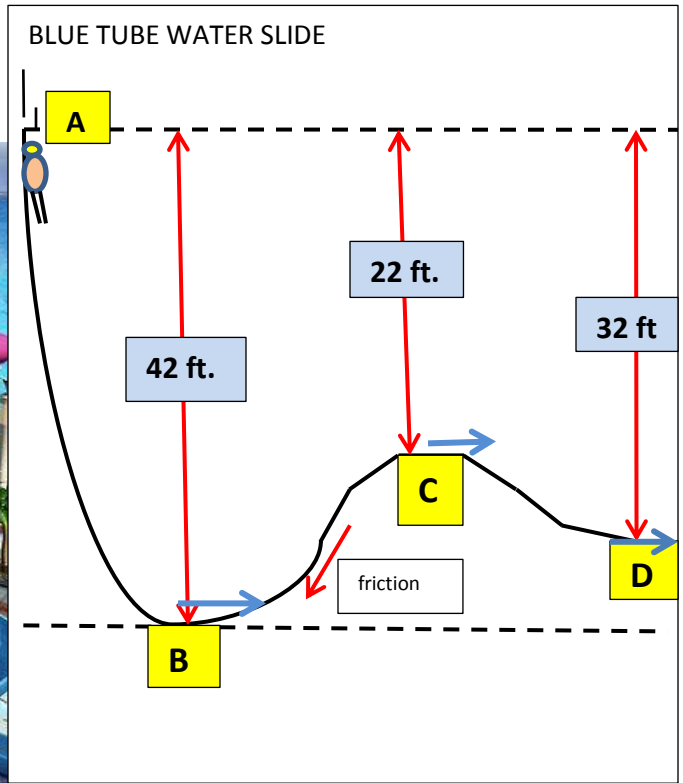


ENERGY

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Grande St., 78701, jpcise@austincc.edu & The New York Times, February 10, 2013 by Tanya Mohn

Not Letting Anything Slide



INTRODUCTION: This water slide is on the top of a cruise ship as shown above. The person sliding down the slide pipe is 160 lb. in weight. In the questions below use the concept of energy conservation. $W = \Delta K + \Delta U$ where $K = \text{kinetic energy} = 1/2mv^2$, $U = \text{gravitational energy} = mgh$, $W = \text{work done on object} = fx$. As stated in the article, the slide length from A to D is 394 ft.

QUESTIONS: (a) Assuming no friction find the sliders speed at: B ,C, & D. (b) If a 5 lb. friction force was exerted on the slider from A to D , find the sliders speed at D? (c) With 5 lb. of friction what would be slider's speed at C if distance ABC is 250 ft?

ANSWERS: (a) $V_B = \sim 51.84 \text{ ft./s}$, $V_C = \sim 37.5 \text{ ft./s}$, $V_D = \sim 45.25 \text{ ft./s}$ (b) $\sim 36.33 \text{ ft./s}$ (c) $\sim 30.1 \text{ ft/s}$

This year, according to the Cruise Lines International Association, a new champion has emerged in the longest single-rider waterslide category: [MSC Preziosa](#). When the ship debuts in March, it will set sail

(((with a 394-foot-long, 42-foot-high water slide))) called Vertigo. If **the four-story height** isn't enough to impress you, some sections of the slide will be illuminated with translucent bands of color to catch light, creating a strobe-like effect. And there's another transparent section extending over the edge of the ship, offering an unobstructed views of the ocean below. As thrilling as a water slide is, some passengers want nothing less than an aqua park. The largest one at sea will be on the [Norwegian Breakaway](#) (rendering above), according to the trade group. It will be essentially two "free-fall" side-by-side water slides, which means that guests stand up and have the floor drop from underneath them..