WORK, KINETIC ENERGY,PE

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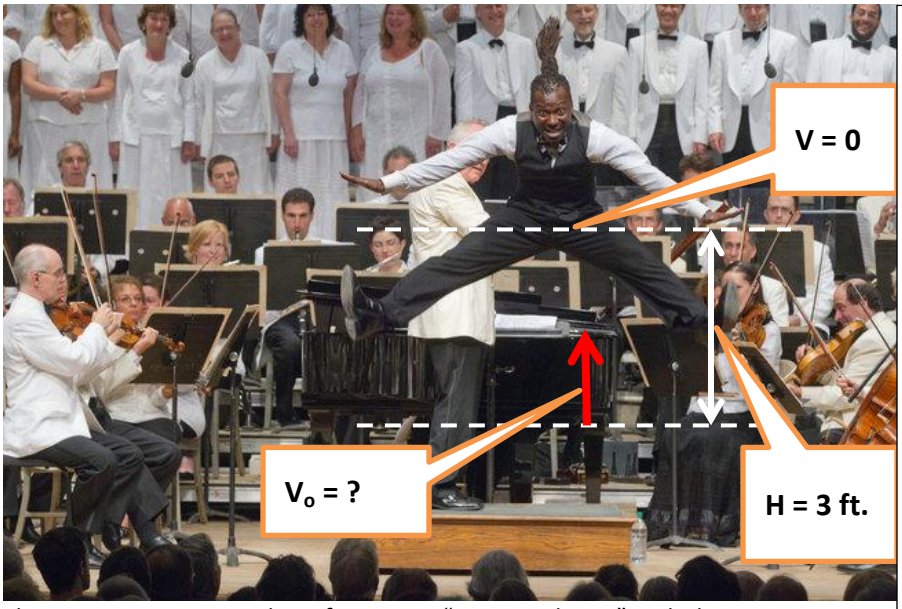
MUSIC REVIEW

A Classic That Still Vexes as It Pleases

LENOX, Mass. — On Friday evening a hurricane raged toward the Atlantic coast. At the same time one roared onstage here at the Tanglewood Festival, threatening the lives of the inhabitants of Catfish Row, the South Carolina ghetto that is the setting of George Gershwin's opera "Porgy and Bess."



The tenor Jermaine Smith performing in "Porgy and Bess" with the Boston Symphony directed by Bramwell Tovey, and the Tanglewood Festival Chorus..

INTRODUCTION: Jumping takes energy to do work. In this rise the performer must first do work to gain the initial kinetic energy. Then, the initial kinetic energy is converted into all gravitational potential energy after the three foot rise. Energy is never lost. Energy just changes from one form to another. In doing these solutions you may use the work energy theorem[W =ΔK +ΔU] where K = kinetic energy and U = potential energy. Or, you might just say what is lost is gained.

QUESTIONS: (a) What was his increase in U if his weight is 140 lb.? (b) How much work did he do initially in order to attain enough kinetic energy to leap 3 feet? (c)What was his initial velocity V_o as he left the floor? (d) If he bent his knees down 2 feet on the floor and pushed up to attain the initial velocity and kinetic energy, what was the force (F)he pushed up with?

HINTS: weight = mg, g = 32 ft/s^2
U = mgh , K = 1/2mV^2 , W = Fx

ANSWERS: (a) 420 ft. lb., (b 420 ft. lb. (c) 13.86 ft/s , (d) F = 210 lb.