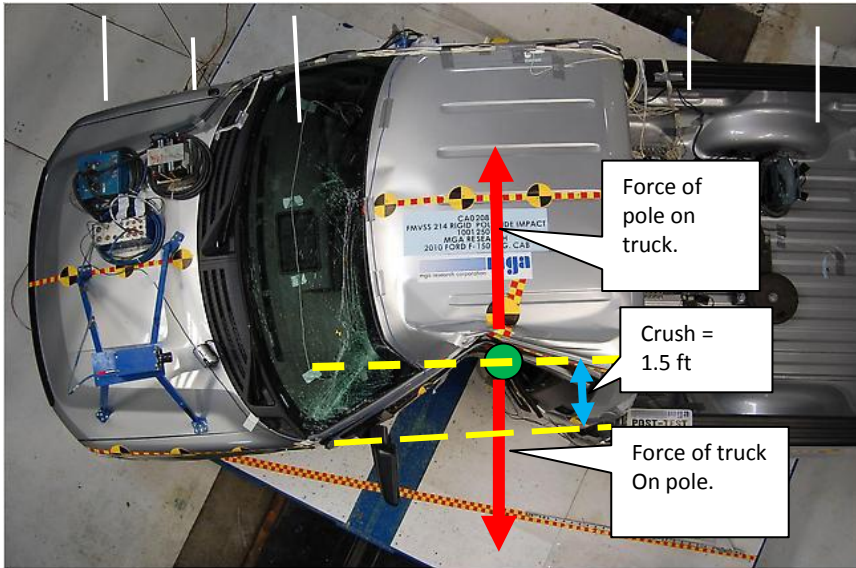


NEWTONS 2ND LAW

Unit 6 & 7 Dr John P. Cise, Professor of Physics, Professor of

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Please send me an e-mail on the context in which you used this NYTimes physics application. Thanks! Dr Cise

To Curb Grade Inflation, Safety Tests Get Tougher



INTRODUCTION: In a Dept. of transportation collision test a 4500 lb Ford F150 truck hits a steel pole broadside(at drivers door...see picture) at 20 mph. Note: Side door was pushed inward about 1.5 ft prior to the truck stopping. **QUESTIONS:** (a) Convert 20 mph to ft/s? (b) Find mass of truck?(c) Find rate of deceleration of truck as it crashes to a stop from 20 mph to zero? (d) Find the average force the pole exerted on the F150 truck? (e) Find the average force the truck exerted on the pole? **HINT: 60 mph = 88 ft/s**

INTRUSION Ford's 2010 F-150 sustained major damage in the new pole-impact test but protected a dummy well enough to meet the safety standard.



ANSWERS: (a) 29.33 ft/s, (b) 140.62 slugs, (c) $\sim -286.8 \text{ ft/s}^2$ (d) $\sim 40,331 \text{ lb}$, (e) $\sim 40,331 \text{ lb}$.

COLLISION A 10-inch diameter pole slams the side at 20 m.p.h.